

Australia's contribution to achieving global food security: to what extent can reform of the federal research and development tax incentives assist?

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**Australia's contribution to achieving global food security: to what extent can reform of the
federal research and development tax incentives assist?**

by

Victoria Jennifer Roberts

(Student Number. 3123796)

A thesis in fulfilment of the requirements for the degree of

Doctor of Philosophy



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This thesis proposes a legislative model Research and Development Tax Incentive (RDTI) for Australia to stimulate greater private investment in agricultural research and development (R&D), thereby increasing Australia's contribution to global food security. A review of the food security literature demonstrates that under-investment in agricultural R&D is diminishing the world's capacity to sustainably provide food security for all. The international literature on tax policy and reform, whilst generally silent on the specific challenge of food security, does confirm the positive role that taxation measures can potentially play in assisting with contemporary social challenges. Guided by pragmatism, this socio-legal reform orientated thesis undertakes comparative case studies of RDTIs from Japan, South Africa and the United States to elicit their strengths and weaknesses and identify best practice. These findings, together with a critical analysis of the existing Australian RDTI law, are drawn together in developing the proposed legislative model. The merit of the model is also considered in terms of the widely accepted criteria of a good tax system, namely certainty and administrative efficiency (including simplicity and compliance costs), in conjunction with the potential to contribute to global food security. In an attempt to integrate taxation and innovation with other economic objectives, the model RDTI legislatively incorporates national strategic research priorities to produce a more cohesive approach to R&D reform. This approach is designed to direct finite government funding towards targeted areas of national concern. It is envisioned that the model Australian RDTI could be adopted by other tax jurisdictions, or alternatively, adapted to encourage innovative approaches to other social challenges (domestic or global) in a relatively flexible and timely manner. The thesis demonstrates both the potential and merit for innovative tailoring of tax provisions which embrace benevolent aspirations alongside national economic objectives. The model RDTI is an example of how well-drafted legislation underpinned by clear policy intent can drive meaningful and strategic tax reform for the betterment of society as a whole.

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ABSTRACT

This thesis proposes a legislative model Research and Development Tax Incentive (**RDTI**) for Australia to stimulate greater private investment in agricultural research and development (**R&D**), thereby increasing Australia's contribution to global food security. A review of the food security literature demonstrates that under-investment in agricultural R&D is diminishing the world's capacity to sustainably provide food security for all. The international literature on tax policy and reform, whilst generally silent on the specific challenge of food security, does confirm the positive role that taxation measures can potentially play in assisting with contemporary social challenges. Guided by pragmatism, this socio-legal reform orientated thesis undertakes comparative case studies of RDTIs from Japan, South Africa and the United States to elicit their strengths and weaknesses and identify best practice. These findings, together with a critical analysis of the existing Australian RDTI law, are drawn together in developing the proposed legislative model. The merit of the model is also considered in terms of the widely accepted criteria of a good tax system, namely certainty and administrative efficiency (including simplicity and compliance costs), in conjunction with the potential to contribute to global food security. In an attempt to integrate taxation and innovation with other economic objectives, the model RDTI legislatively incorporates national strategic research priorities to produce a more cohesive approach to R&D reform. This approach is designed to direct finite government funding towards targeted areas of national concern. It is envisioned that the model Australian RDTI could be adopted by other tax jurisdictions, or alternatively, adapted to encourage innovative approaches to other social challenges (domestic or global) in a relatively flexible and timely manner. The thesis demonstrates both the potential and merit for innovative tailoring of tax provisions which embrace benevolent aspirations alongside national economic objectives. The model RDTI is an example of how well-drafted legislation underpinned by clear policy intent can drive meaningful and strategic tax reform for the betterment of society as a whole.

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TABLE OF CONTENTS

ABSTRACT.....	I
ACKNOWLEDGMENTS.....	II
TABLE OF CONTENTS.....	III
LIST OF TABLES.....	VIII
LIST OF FIGURES	IX
LIST OF RELATED AWARDS, PRESENTATIONS AND ACHIEVEMENTS	X
LIST OF ABBREVIATIONS AND ACRONYMS.....	XI
LEGISLATION	XV
CHAPTER 1 INTRODUCTION	1
1.1 Overview of the thesis.....	1
1.2 Background to the thesis.....	2
1.3 Aim of the thesis	4
1.4 Significance of the thesis	5
1.5 Scope of the thesis	6
1.6 Methodology of the thesis.....	9
1.7 Structure of the thesis.....	10
CHAPTER 2 GLOBAL FOOD SECURITY	13
2.1 Overview of the chapter.....	13
2.2 What is food security?.....	13
2.2.1 Origin of food security	15
2.2.2 The law, food security and Australia.....	16
2.3 Global food insecurity	17
2.3.1 Supply side factors	21
2.3.2 Demand side factors	23
2.3.3 Summary.....	26
2.4 Current methods to address global food insecurity	27
2.4.1 Food aid.....	27
2.4.2 Other responses to food insecurity	29
2.4.3 Australia's response to food insecurity	30
2.4.4 Summary.....	31
2.5 Proposals to address food insecurity	32

2.5.1 International reports: overview	32
2.5.2 Common findings	34
2.5.3 Proposed solutions.....	39
2.5.4 Australia's role in assisting global food security	41
2.6 Conclusion.....	43
CHAPTER 3 TAX INCENTIVES	44
3.1 Overview of the chapter.....	44
3.2 Boundaries of investigation	45
3.3 Trend of public and private investment in agricultural R&D.....	46
3.4 Australian agriculture	48
3.4.1 Overview of Australia's agriculture	48
3.4.2 Australia's investment in agricultural R&D.....	49
3.4.3 Current funding of agricultural R&D investment in Australia.....	51
3.4.4 Rationale for funding agricultural R&D in Australia	51
3.5 Type of government involvement	53
3.5.1 Tax expenditures	54
3.5.2 Incentives for private R&D	55
3.6 Conclusion.....	58
CHAPTER 4 THE AUSTRALIAN 'R&D TAX INCENTIVE'	60
4.1 Overview of the chapter.....	60
4.2 History of Australia's R&D tax reform.....	61
4.2.1 Reasons for R&D reform in Australia	62
4.3 Powering Ideas with National Innovation Priorities.....	66
4.4 Current legislation: Division 355 <i>Income Tax Assessment Act</i> 1997 (Cth).....	69
4.4.1 Overview of the R&D Tax Incentive	70
4.4.2 Key provisions of the R&D Tax Incentive	72
Subdivision 355-A Object	73
Subdivision 355-B Meaning of R&D activities and other terms	76
Subdivision 355-C Entitlement to tax offset.....	90
Subdivision 355-D Notional deductions for R&D expenditure	95
Subdivision 355-F Integrity rules	97
Subdivision 355-W Other matters	99
4.4.3 Summary of the Australian R&D Tax Incentive	100

4.5 Preliminary evaluation of the R&D Tax Incentive	101
4.6 Conclusion.....	103
CHAPTER 5 R&D TAX INCENTIVES: INTERNATIONAL MODELS	105
5.1 Overview of the chapter.....	105
5.2 Research framework and method	105
5.3 Case study of Japan	113
5.3.1 Rationale for selecting Japan	113
5.3.2 Agriculture in Japan	114
5.3.3 Overview of Japan's Tax System	117
5.3.4 R&D tax incentives in Japan	120
5.3.5 Critical analysis	126
5.4 Case study of the United States.....	127
5.4.1 Rationale for selecting the United States	127
5.4.2 Agriculture in the United States.....	128
5.4.3 Overview of the United States' Tax System.....	130
5.4.4 R&D tax incentives in the United States	133
5.4.5 Critical analysis	141
5.5 Case study of South Africa.....	142
5.5.1 Rationale for selecting South Africa.....	143
5.5.2 Agriculture in South Africa.....	143
5.5.3 Overview of South Africa's tax system.....	147
5.5.4 R&D tax incentives in South Africa.....	147
5.5.5 Critical analysis	151
5.6 Evaluation of R&D tax incentives from Australia, Japan, USA and SA.....	153
5.6.1 Certainty	155
5.6.2 Administrative efficiency	157
5.6.3 Potential to improve global food security	162
5.6.4 Summary.....	167
5.7 Conclusion.....	167
CHAPTER 6 AUSTRALIAN MODEL R&D TAX INCENTIVE	169
6.1 Overview of the chapter.....	169
6.2 The role of comparative research in reforming Australian tax policy	169
6.3 Model Australian R&D Tax Incentive	171

6.4 Explanation of modifications	273
6.4.1 Explanation A: pragmatism	273
6.4.2 Explanation B: simplicity	276
6.4.3 Explanation C: international trend	280
6.4.4 Summary	282
6.5 The R&D Tax Incentive within the Australian innovation system	283
6.5.1 Explanation D: social	283
6.5.2 Introduction of R&D Tax Incentive regulations	285
6.6 Conclusion.....	291
CHAPTER 7 CONCLUSION	293
7.1 Overview of the thesis	293
7.2 Contribution to the literature.....	296
7.3 Limitations of this research.....	298
7.4 Future directions for this research	299
7.5 Concluding remarks	299
REFERENCES	300
APPENDIX A VOL II – DEFINITIONS AND PRIORITIES	318
National Innovation Priorities	318
Rural Research and Development Priorities.....	319
Comparison of R&D definitions	320
Notional deductions	321
Strategic Research Priorities.....	322
APPENDIX B VOL II – CASE STUDY LEGISLATION	323
USA: <i>Internal Revenue Code (1986)</i>	323
26 U.S. Code § 174 - Research and experimental expenditures.....	323
26 U.S. Code § 41 - Credit for increasing research activities.....	326
South Africa: <i>Income Tax Act 1997</i>	347
11D - Deductions in respect of scientific or technological research and development.	347
Australia: <i>Income Tax Assessment Act 1997 (Cth)</i>	353
Division 355—Research and Development	353

APPENDIX C VOL II - AUSTRALIAN MODEL RESEARCH AND DEVELOPMENT TAX INCENTIVE.....	387
Australia: <i>Income Tax Assessment Act 1997</i> (Cth).....	387
Division 355—Research and Development	387
Australia: Income Tax Assessment Regulations 1997 (Cth).....	411
Division 61 – Generally applicable tax offsets.....	411

LIST OF TABLES

Table 3.1 Comparison of government contributions via tax incentives and RDC funding..	56
Table 4.1 Select provisions of Division 355 (ITAA97)	72
Table 4.2 Section 355-5 Object	73
Table 4.3 Section 355-25 Core R&D Activities	77
Table 4.4 Section 355-30 Supporting R&D Activities	84
Table 4.5 Subsection 355-35 R&D entities	88
Table 4.6 Section 355-100 Entitlement to tax offset.....	90
Table 4.7 Section 355-105 Deductions under this Division are notional only.....	93
Table 4.8 Section 355-210 Conditions for R&D activities.....	95
Table 4.9 Section 355-400 Expenditure incurred while not at arm's length.....	98
Table 4.10 Section 355-705 Effect of findings by Innovation Australia	99
Table 6.1 Current verse proposed legislative section	172
Table 6.2 Wholly or partially preserved provisions in line with pragmatism.....	274
Table 6.3 Affected provisions to achieve simplicity	276
Table 6.4 Provisions affected by international trend.....	281
Table 6.5 Subsection 355-100(1)	286
Table 6.6 National R&D Priorities	289

LIST OF FIGURES

Figure 1.1 Structure of the thesis	12
Figure 2.1 The Food Price Index long-term trend	18
Figure 2.2 Trade policy effect on rice prices	23
Figure 2.3 World population growth rates: 1950-2050	25
Figure 5.1 Outline of RDTI operation in Japan.....	121

LIST OF RELATED AWARDS, PRESENTATIONS AND ACHIEVEMENTS

Presentations

2010 Australasian Tax Teachers' Association (Sydney)

2011 Tax Researchers' Symposium (Queensland)

2011 Australasian Tax Teachers' Association (Melbourne)

2011 U21 Graduate Research Conference University of Nottingham (Malaysia)

2012 Kyoto University (Japan)

2012 Vermont Law School (USA)

2014 15th Global Conference on Environmental Taxation (Copenhagen, Aarhus University)

Awards

'Patron's Prize for Best PhD Presentation' at the 2011 Australasian Tax Teachers' Association (Melbourne)

Competitively selected to represent UNSW at the U21 Graduate Research Conference hosted by the University of Nottingham (Malaysia)

'Inter-Disciplinary Research Peer Award 2011' for a team poster presentation at the U21 conference

International Practicum Exchange scholarship funding in 2012 to attend University of Cape Town (South Africa)

Research practicums

2012 Kyoto University (Japan) – Professor Shuji Hisano

2012 Vermont Law School (USA) – Professor Janet Milne

2012 University of Cape Town (South Africa) – Associate Professor Debbie Collier and Senior Lecturer Tracy Gutuza

LIST OF ABBREVIATIONS AND ACRONYMS

ABS. Australian Bureau of Statistics

ACIAR. Australian Centre for International Agricultural Research

AIRC. Alternative Incremental Research Credit

AKST. Agricultural, Knowledge, Science and Development

AMT. Alternative Minimum Tax

ARRDC. Australian Rural Research and Development Council

ASC. Alternative Simplified Credit

ASTEC. Australian Science and Technology Council

ATO. Australian Taxation Office

AusAid. Also known as Department of Foreign Affairs and Trade

AusIndustry. Also known as Department of Industry Single Business Service

BERD. Business Expenditure on Research and Development

BRC. Basic Research Credit

BRICS. Brazil, Russia, India, China and South Africa

CGIAR. Consultative Group on International Agricultural Research

CRC. Cooperative Research Centres

CSE. Consumer Support Estimate

CSIRO. The Commonwealth Scientific and Industrial Research Organisation

Cutler review/Cutler. Venturous Australia

DFAT. Department of Foreign Affairs and Trade

DI. Department of Industry

DIISR. Department of Industry (formerly known as Department of Industry)

DIISRTE. Department of Industry, Innovation, Science, Research and Tertiary Education

DST. Department of Science and Technology (South Africa)

EM. Explanatory Memorandum or Memoranda

EPAC. Economic Planning Advisory Council

EPR. End Point Royalty

ERC. Energy Research Credit

ESAP. East and South Asia and Pacific

EU. European Union

FAO. The Food and Agriculture Organisation of the United Nations

Frontier Report. International Drivers of Rural R&D

FY. Financial Year

G8. The Group of 8

GAAR. General Anti-Avoidance Regime

GDP. Gross Domestic Product

GE. General Electric

GE04. Global Environment Outlook Report 4

GIEWS. Global Information and Early Warning System

GMO. Genetically Modified Organism

GSSE. General Services Support Estimate

GVA. Gross Value Added

IAASTD. International Assessment of Agricultural Knowledge, Science and Technology for Development

ICESCR. International Covenant on Economic, Social and Cultural Rights

IFAD. International Fund for Agricultural Development

IFPRI. International Food Policy Research Institute

IMF. International Monetary Fund

Index. FAO Food Price Index

IP. Intellectual Property

IPCC. Intergovernmental Panel on Climate Change

IRS. Internal Revenue Service

LDP. Liberal Democratic Party

MAFF. Ministry of Agriculture, Forestry and Fisheries

Minister. Minister of Science and Technology (South Africa)

MNE. Multinational Enterprise

NGO. Non-Government Organisation

NRM. Natural Resource Management

NTA. National Tax Agency (Japan)

OECD. Organisation for Economic Co-operation and Development

PES. Payment for Environmental Services

Productivity report. Rural Research and Development Corporations Productivity Commission Report

PSE. Producer Support Estimate

R&D. Research and Development

RD&E. Research Development & Extension

R&E. Research and Experimentation

RRC. Regular Research Credit

RRDC. Rural Research and Development Corporation

RRDC report. National Strategic Rural Research and Development Investment Plan

RTDI. Research and Development Tax Incentive

S&T. Science and Technology

SA. South Africa

SAP. Structural Adjustment Program

SARS. South African Revenue Service

SME. Small and Medium Enterprise

SSA. Sub-Saharan Africa

TLIP. Tax Law Improvement Project

TSE. Total Support Estimate

UDHR. Universal Declaration on Human Rights

UN. United Nations

UNDP. United Nations Development Programme

UNEP. United Nations Environment Programme

US or USA. United States of America or the United States

USDA. United States Department of Agriculture

US Treasury. U.S. Department of Treasury

VAT. Valued Added Tax

WFP. World Food Programme

WHO. World Health Organisation

WTO. World Trade Organisation

LEGISLATION

Acts, Bills and Regulations

Australia

Acts

IRD86. *Industry Research and Development Act* 1986

ITAA36. *Income Tax Assessment Act* 1936 (Cth)

ITAA97. *Income Tax Assessment Act* 1997 (Cth)

Income Tax Rates Act 1986

Income Tax (Transitional Provisions) Act 1997

Land and Income Tax Assessment Act 1895 (NSW)

Primary Industries and Energy Research and Development Act 1989

Tax Administration Act 1953

Taxation Laws Amendment (Research and Development) Act 2001

Bills and Regulations

Income Tax Assessment Amendment (Research and Development) Bill 1986

ITAR97. Income Tax Assessment Regulations (1997)

Income Tax Rates Amendment (Research and Development) Bill 2010

Tax Laws Amendment (2007 Measures No.5) Bill

Tax Laws Amendment (Research and Development) Bill 2010

United States of America

Acts

American Taxpayer Relief Act of 2012

Economic Recovery Tax Act of 1981 (P.L. 97-34)

Emergency Economic Stabilisation Act of 2008 (P.L. 110-343)

Energy Policy Act of 2005 (P.L. 109-58)

Farm Bill. *The Food, Conservation and, Energy Act* of 2008 (including references to later versions)

GFS Act. *Global Food Security Act* of 2009(U.S.A)

Health Care and Tax Relief Act of 2006 (P.L. 109-432)

IRC. *Internal Revenue Code*

IRC86. *Internal Revenue Code* of 1986

Omnibus Budget Reconciliation Act of 1989 (P.L. 101-239)

Small Business Job Protection Act of 1996 (P.L. 104-188)

Tax Reform Act of 1986

Tax Relief and Health Care Act of 2006 (P.L. 109-432)

Technical and Miscellaneous Revenue Act of 1988 (P.L. 100-647)

The American Recovery and Reinvestment Act of 2009

The Economic Stimulus Act of 2008

Japan

Acts

Basic Law. *Food, Agriculture and Rural Areas Basic Act* 1999

Law Regarding R&D Capacity Strengthening and Efficient Promotion of R&D through R&D System Reform Law No.63 of June 2008

Science and Technology Basic Law No. 130 of 1995

STML. *Special Taxation Measures Law*

Republic of South Africa

Acts

Constitution of the Republic of South Africa No.108 of 1996

Income Tax Act of 1914

ITA62. *Income Tax Act No.58 of 1962*

Mining Taxation Act of 1910

Value-Added Tax Act 89 of 1991

International Conventions

Convention on Biological Diversity 1992: United Nations

FAC. Food Aid Convention 1999 (expired 30 June 2012)

FASC. Food Assistance Convention 2013

International Covenant on Economic, Social and Cultural Rights 1966: United Nations

OECD Model Tax Convention on Income and on Capital: condensed version (July 2010)

United Nations Framework Convention on Climate Change 1997: Kyoto Protocol

Universal Declaration of Human Rights 1948: United Nations

INTRODUCTION

1.1 Overview of the thesis

This thesis considers how the tax system could be utilised to assist with the social challenge of addressing global food insecurity. Food insecurity exists when not ‘... all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life’ (FAO, 2002, p. 2). In 2008, a spike in food prices saw approximately 47 countries face food crises (FAO, 2008, p. 19) and by 2009, it was estimated that 1,020 million people were facing hunger (FAO, 2009, p. 1). This level of price rise has remained constant, suggesting this protracted food crisis is so serious that it must be described as global food insecurity. Moreover, global food insecurity results less from food scarcity than poverty (World Bank 1986, cited in Gonzalez, 2011, p. 501).¹

Generally, tax policy scholars have recognised that ‘Tax policy can function as an economic and social tool to influence behaviour’ (Hymel, 1998, p. 13). In this instance, the behaviour to be influenced is Research and Development (**R&D**) investment in agriculture. The catalyst for such change and the key drivers for this thesis are chiefly the International Assessment of Agricultural Knowledge Science and Technology Development (**IAASTD**) (IAASTD, 2009a) report and the World Bank Agriculture for Development report (**WDR**) (World Bank, 2008). These reports submit that increased investment in agricultural R&D is urgently required to ensure long-term global food security. This thesis analyses and makes recommendations to help alleviate this problem increasing the devastation of the situation.

Adopting a pragmatic approach, this thesis proposes that government intervention is required to encourage greater investment in agricultural R&D by the private sector and that this result could be achieved using the existing tax framework (World Bank, 2008, p. 8).² Australia will be the primary case study based on its competitive export-oriented agricultural industry, robust tax system and contribution to global food supply. The

¹ It is important to note, poverty does not imply starvation or famine (Sen, 2003).

² It is acknowledged that tax reform is but one potential strategy to address this multi-faceted challenge.

objective of the thesis is to propose a model Australian Research and Development Tax Incentive (**RDTI**). The model RDTI will be informed by best practice drawn from international comparative case studies of Japan, South Africa (**SA**) and the United States of America (**US**). The term ‘best practice’ as it will be used throughout this thesis refers to the process of identifying successful and unsuccessful learnings from overseas jurisdictions in relation to the design of their R&D tax regime (Vesely, 2011).³ The rationale for selecting Japan, SA and the US was guided by four factors: 1) the existence of a RDTI; 2) their geographic significance; 3) their domestic agriculture and 4) geopolitical stance on global food security.⁴

In concluding this overview, the remainder of the chapter will introduce the key themes of this thesis. Next, an outline of the literature on food production, Australia’s role in global agriculture and the purpose of taxation in assisting with global food security is presented. This discourse is an abridged attempt to join these three intersecting topics in which a chapter is devoted to each. Following that discussion, the chief objective of the thesis, to reform the RDTI, is established. Next, the major justifications for the thesis are explained. Then, the scope of the thesis is stated, which specifically excludes the topics of water, biotechnology and climate change. Next an overview of the research methodology is presented. Finally, there is a summary of the seven chapters along with a diagrammatical representation of the structure of the thesis.

1.2 Background to the thesis

Food is currently produced as part of an economic process whereby profits are the goal (Roberts, 2008; Gonzalez, 2011). Yet, food is more than just an edible commodity; it is a basic human necessity. The right to food is enshrined in Article 25 of the Universal Declaration on Human Rights (**UDHR**) and Article 11 of the International Covenant on Economic, Social and Cultural Rights (**ICESCR**). The imbalance in priorities between earning profits from food production and fulfilling a human right to provide food has resulted in long-term failure of the food system, contributing to food insecurity (Roberts, 2008; Gonzalez, 2011). It is the responsibility of the government of each country to

³ It is conceded that ‘there is no consensus on what “best practice” is, or how “good practice” research should be conducted’ and that many authors avoid definitions (Myers, Smith, & Martin (2004) p. 4, cited in Vesely (2011) p. 100). However it is asserted that lack of academic definition should not prevent the term from being used.

⁴ Further explanation is provided at section 5.2.

engage their corporate and individual citizens to share a common vision of how best to eliminate food insecurity and how to work together to translate this vision into reality on the scale required (FAO, 2008, p. 5). Despite the world's good intentions, such as the Millennium Development Goals,⁵ the cycle of poverty and food insecurity continues.

Previous studies have focused mostly on the productive capacity of the Earth's natural resources to feed future generations, rather than how to achieve current, as well as future, food security goals sustainably (Pinstrup-Anderson & Herforth 2008, p. 2; Cohen, 1995; Susiarjo, Sreenath & Vali, 2006; Pimentel & Pimentel, 1999; Brown, Gardner & Halweil, 1999). However, recent international reports by the OECD (2013d), AGree (Pardey, Altston & Chan-Kang, 2013), and the Government Office for Science (2011), support the World Bank's (2008) shift in thinking toward increased government intervention. 'Agriculture ... offers great promise for growth, poverty reduction and environmental services, but realising this promise also requires the visible hand of the state – providing core public goods, improving the investment climate, regulating natural resource management, and securing desirable social outcomes' (World Bank, 2008, p. 2).

The Australian government has recognised the need for intervention in certain national interests. In August 2008, the Australian government released 'Venturous Australia – building strength in innovation', a panel review of Australia's national innovation system to ensure Australian innovation plays a key role in boosting productivity and global competitiveness (Cutler, 2008). The report outlines five national priorities for innovation which require immediate attention. Of the priorities, one is 'agriculture and food security' (Cutler, 2008, p.144). Further research conducted by the Australian Centre for International Agricultural Research (**ACIAR**) recommends investment in R&D to enable better technology for increased yields, whilst minimising agricultural impacts on the global environment. The Henry Review, the most recent comprehensive examination of the Australian tax and transfer system, acknowledged the impact of population growth, the fragility of ecosystems and the strong link between economic growth and environmental sustainability. It concluded that the tax system could play a greater role in influencing sustainable policy outcomes (Henry, 2009, pp. 9-10).

⁵ The Millennium Development Goals aim to halve poverty by 2015. It is a promise that was made by 189 leaders at the United Nations Millennium Summit in 2000 http://www.un.org/millenniumgoals/pdf/MDG_Report_2009_ENG.pdf.

This background leads cogently into the crux of the thesis which is Australian tax reform in the broader sense of providing a paradigm to better the world. The literature of Infanti (2012), Barker (2005) and Stewart (2002) are constructive in helping shift the discourse of tax reform from its traditional form of furthering economic growth to its potential to improve human development⁶ and the environment. From this premise tax expenditures constitute an integral part of tax reform and, if used appropriately, can significantly ‘serve the public good’ (Infanti, 2012, p. 218). Equally, in building upon the extensive literature demonstrating that innovation spurs economic growth (OECD, 2008; Lederman & Saenz, 2005; Parham, 2007), in this instance it is argued that R&D policy incorporating a tax expenditure, can assist both economic and social goals (Surrey, 1970).

Australia plays a vital role in global food supply, exporting two-thirds of its agricultural production (Grant, 2012, p. 52). Directly and indirectly this capacity helps feed the 7.15 billion people in the world (United States Census Bureau, 2014). When Australia experienced the 2006/07 drought, a 0.75 per cent drop in Australian GDP resulted (Gunasekera, Kim, Tulloh & Ford, 2007, p.671). In less fortunate parts of the world, Australia’s drought contributed to food riots in over 30 countries (Cribb, 2008, p.1). Such behaviour is particularly relevant as Australia is projected to be one of the most adversely affected countries by climate change in terms of decreased agricultural production and exports (Grant, 2012). Reduced global food supply and exacerbated food insecurity is inevitable. A vested interest in putting in place the right incentives to ensure future agriculture is environmentally sustainable and internationally competitive seems assured. If Australia seeks to assist global food security, this thesis proposes that the most effective incentive can be implemented by a tax policy to increase R&D investment in agriculture (IAASTD, 2009; The World Bank, 2008).

1.3 Aim of the thesis

This thesis will use inductive reasoning to argue that an appropriately reformed RDTI targeted at generating sustainable agricultural innovation in Australia can assist with achieving global food security. Taxation literature is awash with information on RDTIs but is lacking on analysis linking RDTIs and food security (Sadiq, 2010; Lattimore, 1997).

⁶ The definition of Human Development can be unique to each individual and what they value as a human being. The UNDP have endeavoured to synthesise these values in Human Development: Definitions, Critiques, and Related Concepts (Alkire, 2010).

Analysis of the role Australian RDTIs can play in achieving global food security forms an original contribution to the body of knowledge.

This thesis will examine the global food crisis of 2008 along with past and proposed long-term solutions. The literature reveals a strong link between R&D investment in agriculture and food production (World Bank, 2008). In accordance with international authorities (IAASTD, 2009a), increased investment in agricultural R&D can assist in alleviating global food insecurity. Taxation, in particular the policy, law and design of R&D incentives, is chosen as one possible vehicle to improve R&D investment in agriculture. The Australian tax, agriculture and R&D system is critically analysed in this thesis, specifically the RDTI. Similar analysis is conducted on comparable incentives from Japan, SA and the US. The strengths and weaknesses of each RDTI are assessed according to the evaluation criteria of (Sneed, 1965): certainty, administrative efficiency (includes simplicity) and potential to improve global food security.⁷ Acknowledging the literature on tax culture (Richardson, 2000) and legal transplants (Kahn-Freund, 1966), only select elements of international best practice are used to inform the drafting of a model Australian RDTI. The aim of the reformed RDTI is to enable increased investment in R&D agriculture in Australia and thereby assist in achieving global food security.

1.4 Significance of the thesis

This thesis is significant because food is the staff of life – everyone needs it. Scholars world over cannot deny this ‘uncomfortable reality’ (Ikerd, 2008, p. 2), and international institutions are voicing their concern. World Bank (2008, p. 2) research suggests traditional agriculture (not industrial) can be instrumental to producing faster economic growth, while simultaneously reducing poverty, improving global food security and sustaining the environment. For the most part, industrial farming is keeping the world fed, but also destroying the environment, displacing rural landholders, diminishing biodiversity and fuelling hunger uprisings (IAASTD, 2009a). Add the impact of climate change, water shortages, financial crises, oil crises, conflict and terrorism, and it becomes strikingly clear that inaction will be worse than action (Fullbrook, 2010). Although there is concern about corporate domination of food production (Gonzalez, 2011; Roberts, 2008; Ikerd, 2008), this thesis does not denigrate their powerful status in the food system,

⁷ Section 5.6 provides detail on the evaluation of R&D tax incentives. The potential to improve global food security is elaborated in Chapter Two.

as these corporations have a vital role in agricultural R&D investment. According to the Organisation for Economic Co-operation and Development (**OECD**) (2008), Multinational Enterprises (**MNE**) account for almost half the world's total R&D expenditure. Some MNEs spend more than entire countries.

The importance of looking beyond the current agricultural industry status quo and toward the less obvious or seemingly unimaginable solutions cannot be over emphasised. Any taxpayer can innovate or develop, if sufficient incentives are available to encourage and assist them. Leading authorities (Solow 1957 & Romer 1990, cited in OECD, 2001, p.104 & 117) suggest technical change is the major source of productivity growth in the long-run. Although R&D is not the only source of new technology, high spill-over effects with positive social returns are well established. This thesis is a timely investigation of how Australia can assist in achieving global food security by building on the taxation mechanisms already in place to reform the RDTI.

1.5 Scope of the thesis

Given the aim of the thesis, discussion will cross a number of interdisciplinary boundaries and engage material from topics such as: climate change, politics, taxpayer culture, tax reform, environment, biotechnology, water, international best practice and agriculture. As a whole, the thesis weaves together threads from the various issues to address its aim. However space precludes detailed analysis of every issue. Although water, biotechnology and climate change are significant components of global food security policy, they will not be analysed for the reasons provided below.

Water

Water, specifically freshwater, is vital to human existence. The Earth's ecosystem is intrinsically connected - an imbalance in one part, induces a change in another. Water and food security are linked by the basic premise that without water, there can be no food.⁸ The international evidence to support this proposition and which are relied upon in this section include: the Intergovernmental Panel on Climate Change assessments: Climate Change and Water (2008); Agenda 21 (2002); World Water Forum (2009); the Millennium Ecosystem Assessment (2005); Comprehensive Assessment of Water Management in Agriculture: Guiding Policy Investments in Water, Food, Livelihoods and Environment (2007); and the World Water Development Report (2009). The availability of freshwater

⁸ It is acknowledged sea-level rise could lead to coastal flooding which would also affect food production.

is seriously threatened by climatic and non-climatic drivers. Climatic drivers are changing precipitation patterns, reduced snow cover, melting ice and changes in soil moisture and run off. Non-climatic drivers are human induced, such as: population growth, changes in food consumption, lifestyle, economic policy and technology.

Demand for water is rising; with irrigation for agriculture as the dominant reason. Although 80 per cent of global agricultural land is rain-fed, irrigated crops yield on average two to three times more than their rain-fed counterparts producing about half the world's total grain supply (FAO, 2003). This statistic demonstrates how integral water is to food production; any reduction in water supply will significantly affect agriculture and food security. Several gaps in knowledge still exist within the literature of water, and there is much debate concerning the truths and non-truths of water scarcity. This thesis is not the appropriate platform to analyse such matters, and for these reasons, further discussion on water and its relationship to food security is beyond the scope of this thesis.

Biotechnology

Biotechnology,⁹ and in particular Genetically Modified Organisms (**GMO**), is most commonly associated with agricultural applications to produce superior crops or animals by deleting or introducing particular genes (Parekh, 2004). This form of genetic manipulation has caused global controversy transcending the boundaries of religion and ethics. The FAO (2003), whose primary role is to defeat hunger, acknowledge the potential benefits biotechnology could bring to food production, however it also recognises the potential risk GMOs could pose to human and animal wellbeing and the environment. The same degree of prudence is demonstrated in the IAASTD (2009a) report which recognises biotechnology as an option to increase food supply; however it does not advocate the use of biotechnology due to the uncertainty of its success. Until further research and technologically sustainable advancements are made, this thesis proceeds on the evidence of the FAO and IAASTD in erring on the side of caution and by considering biotechnology beyond the scope of this thesis.¹⁰

⁹ Biotechnology is defined as 'any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products of processes for specific use' (Convention on Biological Diversity 1992, Article 2, United Nations Treaty Collection, 5 June 1992).

¹⁰ There is limited discussion on GMOs as part of the context to SA's case study.

Climate Change

Leading reports such as the Intergovernmental Panel on Climate Change (IPCC) Climate Change 2007 assessment, Stern Review (2007) and Australia's Garnaut Climate Change Review (2008) confirm the existence of climate change – the rising of the Earth's average temperature caused by increased greenhouse gases which result in change to weather patterns. Based on these reports, this thesis accepts climate change is a reality and that it does impact on global food security.

The key element of climate change is greenhouse gas emissions (IPCC, 2007, p. 5). Agriculture is one of the main drivers of greenhouse gas, because industrial agriculture involves extensive fossil fuel use; clearing of land; and natural animal gases, all of which produce emissions. Agriculture will also be one of the most adversely affected industries because, a result of the Earth's warming is erratic weather. This weather instability will potentially have significant effects on agricultural yields due to its uneven and unpredictable nature. In some countries, unseasonal flooding, frost, drought or pest outbreaks that disrupt local food production are predicted. In other countries, bumper crops may occur due to optimum weather conditions. These possibilities point to global trade and not food sovereignty as the better option in responding to these weather uncertainties. Global trade may be the only existing infrastructure available to buffer the effects climate change will have on food production, to ensure food can be efficiently distributed to countries adversely affected.

Critics of climate change who advocate business-as-usual (Prothero, 2012) can undermine public support for climate change initiatives. Testing opposing theories and their impact, if any, on global food security is outside the scope of this thesis.

Summary

This thesis proceeds on the assumption water supply is diminishing, climate change is a reality and biotechnology is not necessarily the solution to the emerging food security challenge. As such, the topic delineated in this thesis is well-grounded in international evidence, in particular the IAASTD (2009a). The scope of this thesis must be narrow to enable expanded analysis of tax issues. The use of RDTIs is limited to agriculture, in particular to internationally traded food commodities. Legislative reform is targeted at federal taxation laws in Australia. This thesis focuses on an analysis of tax issues, therefore discussion on economic or trade matters is minimal. The focus is on increasing private

sector R&D investment in Australian agriculture. Because agriculture is multifunctional, the R&D should also fulfil development, environment and sustainability goals (IAASTD(b), 2009).

1.6 Methodology of the thesis

This is a socio-legal reform-orientated thesis that analyses the law in relation to a social situation and aims to recommend reform within the context of Australia. The law in question is the R&D tax legislation and the social situation is global food insecurity. The thesis incorporates cross-national case studies to examine the R&D tax regimes of Japan, SA and the US to distil best practice and consolidate in a model Australian RDTI. Within the overarching research approach are three tiers of research framework: 1) social, 2) law, and 3) comparative tax. Each has contributed to the design of the research, its methodology, methods and finally, the knowledge claims made. Pragmatism and inductive reasoning are also instrumental in the research design.

Briefly turning to each of these research components, the social component relates to the core problem this thesis is seeking to address – the global social challenge of food insecurity. Why it exists, how it can be addressed and what role can Australia and taxation play in the solution. The lens through which the social issue of food insecurity is viewed is law. From this premise the ‘reform-orientated’ component is introduced. The aim is to accomplish change in the law, i.e. design a model RDTI (McKerchar, 2010, p. 9). The third research component is tax. According to Lamb (cited in Marian, 2010, p. 421) ‘... comparative tax law is not a method of research in its own right, but rather an application of comparative law methodologies to the study of tax laws’. Comparative knowledge can enable prospective reformist countries to borrow traits from an existing foreign model, but then modify to neutralise contextual differences and take into account local differences (Marian, 2010, p. 439). The Australian RDTI is the starting point from which the reform takes place.

In addition, the paradigm of pragmatism guides this thesis. Pragmatists focus on addressing the research problem using whatever method is best suited to answering the research aim, and this framework influences the methodology (Creswell, 2003). The research problem is global food insecurity and how the Australian tax system can assist. Qualitative methodology is utilised and with inductive reasoning, this thesis builds a theory of how the Australian RDTI can encourage investment in agricultural R&D and thereby contribute to improving global food security. To build this theory, this thesis uses a mixed-method

approach, involving historical, doctrinal and cross-national case studies. Historical analysis is employed to critically dissect global food insecurity and to review current R&D tax laws and underlying policy rationale in Australia, Japan, SA and the US. Doctrinal analysis is used to evaluate international literature proposed to address food insecurity. Comparative analysis is adopted to analyse the R&D tax laws of selected countries in search of best practice.

In selecting the countries suitable for comparative research with Australia's RDTI, four factors were relevant.¹¹ Firstly, each country selected required a R&D tax regime. Secondly, the country needed to be in a region most likely to be affected by global food insecurity. Thirdly, the thesis sought diverse agricultural systems to allow broad comparisons of the effectiveness of R&D incentives as they apply to differing farming styles. Fourthly, the thesis sought countries with different geopolitical views to enable exploration of the wider social issues that may impact on the role of government intervening with R&D tax measures to address declining R&D investment in agriculture (World Bank, 2008).

A final remark on methodology, this is not a quantitative thesis in pursuit of statistically proving a link between a country's RDTI and investment in agricultural R&D. The function of the cross-national case studies is qualitative. It is to address this central question – 'Whether the RDTIs are effective in *enabling* the desired investment?' In evaluating effectiveness, emphasis is on the pragmatic design of each country's RDTI and underlying policy, whether it is in line with the international recommendations¹² and the likelihood the RDTI may sufficiently enable investment in agricultural R&D.

1.7 Structure of the Thesis

This thesis comprises seven chapters, as shown in Figure 1.1. Chapter One introduces the underlying issues, their inter-relatedness and the gap in the literature that this thesis intends to address.

Chapter Two examines the concept of global food insecurity, exploring its definition, drivers and solutions. The chapter provides the rationale for why food insecurity is a problem which deserves attention. The analysis in Chapter Two relates primarily to the

¹¹ Refer to section 5.2 for detail.

¹² Refer to Chapter Two for detail.

2008 food price crisis and concludes that greater R&D investment in agriculture is one of the solutions. This provides the foundation for the subsequent chapters.

Chapter Three examines the trend of investment in agricultural R&D. It provides an overview of Australian agriculture, including current funding arrangements. It considers strategies to increase private R&D investment in agriculture, and briefly introduces the role of tax expenditures. It is concluded that the RDTI is the preferred incentive to encourage R&D agricultural investment in Australia.

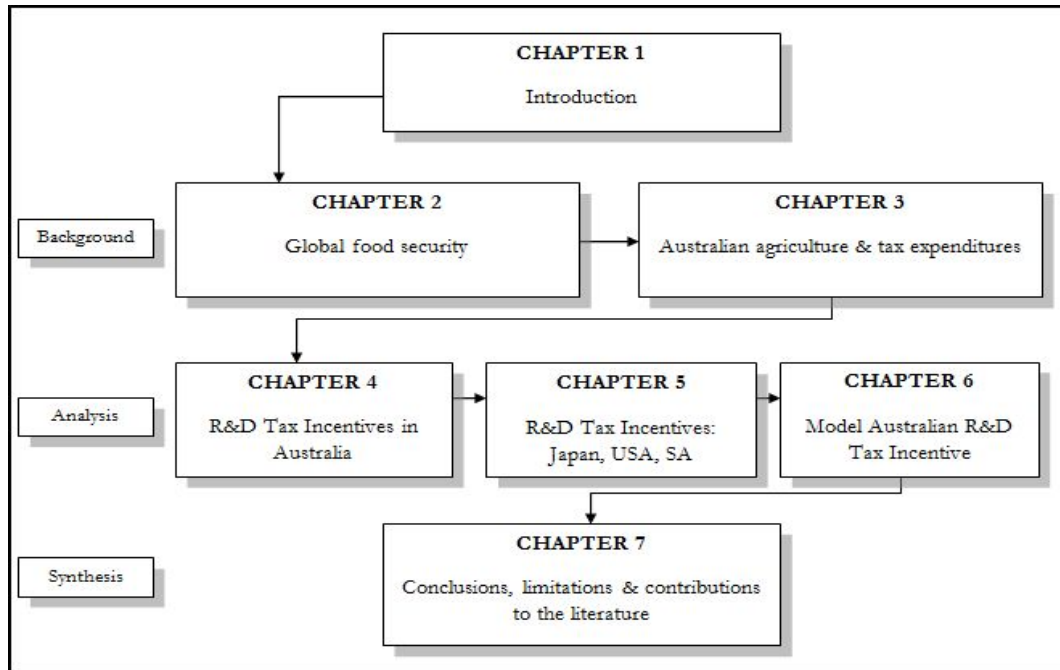
Chapter Four analyses the RDTI in Australia. A doctrinal examination starts with the history and policy rationale of the legislation and concludes with the current status of the legislation.

Chapter Five examines RDTIs in Japan, SA and the US. These countries form the basis of the comparative analysis with Australia. Key themes from the analysis are explored and best practice is identified. Model tax criteria are (Sneed, 1965), outlined and applied to evaluate each RDTI.

Chapter Six brings together the learning from Chapters Three through Five, to formulate a model RDTI for Australia.

Finally, Chapter Seven summarises this thesis and provides recommendations consistent with the conclusions reached. It re-visits the contribution of this thesis to the existing literature; discusses the strengths and limitations of the research; areas for future research; and the implications of this thesis for Australian policy and practice.

Figure 1.1 Structure of the thesis



Chapter 2

GLOBAL FOOD SECURITY

2.1 Overview of the chapter

This chapter offers a literature review of global food security. It takes stock of various international reports and research undertaken on this multifaceted challenge. Given the expansive nature of global food security, this chapter does not seek to summarise or challenge all the international literature (OECD, 2013). The main purpose is to extract from this literature; understanding as to why global food insecurity is a social problem that needs to be addressed. It then explores the main priorities for ensuring long-term global food security and attempts to distil the key recommendations to achieve this. From these, one particular recommendation is pursued in this thesis; the increasing of R&D investment in agriculture (Pardey & Alston, 2012). More widely, this chapter seeks to provide context in understanding the global food security problem and its relationship with agriculture. Later chapters build upon this knowledge to address how agricultural R&D investment could be increased, the role of Australia and the concept of tax reform.

Chapter Two is divided into five parts. Firstly, it begins by providing an overview of the chapter. Next it analyses the term food security. This entails examining the definition of food security, its legal and political origins, and Australia's international obligation to assist in achieving global food security. Thirdly, attention turns to the numerous international reports which establish the existence of global food insecurity and the possibility, of worse to come if the world does not act. At this point the broad topic of global food security is narrowed to focus on food availability from the supply side. Fourthly, there is discussion of the current methods of addressing global food insecurity and the need for change. Lastly, there is analysis of the chief internationally proposed solutions to address global food insecurity and an explanation as to why R&D investment in agriculture has been selected for further analysis.

2.2 What is food security?

The most frequently cited definition for food security, adopted by the FAO is: 'Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for

an active and healthy life' (FAO, 2002; The World Bank, 2008, p. 94).¹³ Four elements are central to the attainment of food security: availability, access, stability and use. For food security to be realised, all four objectives must be reached simultaneously (FAO, 2008, p. 1). The first three elements will be reviewed in this chapter, with particular emphasis on 'availability'; the fourth element, food utilisation, is beyond the scope of this thesis.¹⁴

Food availability

Food availability requires sufficient quantities of food to be available on a consistent basis (US Aid, 1992, p. 2). This addresses the supply side of the food security equation and is comprised of food production, stock levels and net trade (FAO, 2008, p. 1). Currently the world produces more food than ever before (FAO, 2008, p.4) however; getting that food to those who need it has continually proved to be an elusive goal. Food availability can be met with local production or international trade. Developing countries are not in a position to produce enough food to feed their nation because they lag behind in agricultural research and appropriate inputs for production compared with developed countries (UNEP, 2009, p. 82). Although total agricultural R&D spending in developing countries has increased 1.6 per cent annually¹⁵ – the additional investment has not kept pace with the growth in food demand.

Food access

Food access requires having sufficient resources to obtain appropriate food for a nutritious diet, through physical access and/or affordability (WHO, 2009). This element is growing in importance as demographic trends show that by 2017 the urban population in developing countries will equal the rural population, and by 2030 the urban population will be 60 per cent of total population (FAO, 2003). Any gap between food supply and demand could be met by food imports from developed countries. Regarding accessing affordable food, the future is less bright, as this is determined by the long-term trend in food prices, which is likely to rise over the next decade and then eventually decline (UNEP, 2009, p. 89). One dominating factor affecting food prices is high energy costs. Energy price rises, lead to increased cost of fertiliser, pesticide, transport and storage (UNEP, 2009, p. 91). This adverse coupling of food and energy prices provides strong motivation

¹³ This will be the food security definition used throughout the thesis.

¹⁴ For completeness, food utilisation is encompasses nutritional intake, healthcare and food safety (Pinstrup-Anderson & Herforth, 2008).

¹⁵ This spending was mostly in Asia, China accounts for 18 per cent and India 10 per cent (UNEP, 2009, p. 81).

for food production to become more environmentally sustainable and less reliant on artificial inputs.

Stability

Stability refers to ensuring the other three elements of food security are achieved over time (FAO, 2008, p. 1). Achieving stability is difficult due to high price volatility. Global food prices are volatile because the share of food traded on the global market is not reflective of actual food supply available. Statistics¹⁶ show that food supplies to the world market can reduce by one-third or increase two-fold (UNEP, 2009, p. 84). Whereas global market demand for food does not follow this pattern – it often moves in the opposite direction depending on poor harvests (UNEP, 2009, p. 83). With this discrepancy in food demand and supply, developing countries are highly vulnerable to the fluctuations of open markets. Adding to this uncertain situation is the increase in conflict in developing countries. Violent conflict disrupts the food supply, makes food aid and/or imports hazardous and farmers reluctant or incapable of investing in land (UNEP, 2009, p. 85).

2.2.1 Origin of food security

Originally food security was narrowly described ‘... as enough food is available ...’ (Pinstrup-Anderson, 2009, p.1). However during the 1970s, the world experienced its first global commodity crisis (Heady & Fan, 2008, p.1). Attention turned to food supply problems. Scholars determined that availability of food did not necessarily assure access to food, or enough calories to assure a healthy and nutritional diet. The issue of timely distribution of food was recognised (Pinstrup-Anderson, 2009, p.1).

The definition of food security widened after the publication of Amartya Sen’s 1981 seminal book, ‘Poverty and Famines: An Essay on Entitlement and Deprivation’. Sen’s writing dispelled the notion that food insecurity is mostly a result of lack of food. In 1983, the FAO emphasised the importance of ‘access’ by including the demand side of the food security equation into the definition (FAO, 1983). The World Bank (1986) report ‘Poverty and Hunger’ introduced the distinction between chronic food insecurity and transitory food insecurity. Chronic food insecurity is long-term and persistent. People are unable to meet their minimum food requirements over a sustained period of time (FAO, 2008, p. 2). Transitory food security is short-term, caused by a sudden drop in the ability to produce or access sufficient food, brought about by adverse weather or conflict (FAO,

¹⁶ Based on cereals trend.

2008). To ensure transitory food security is not ignored, the words ‘at all times’ have been inserted in the definition of food security. In 1987, the Brundtland report – ‘Our Common Future’ introduced the concept of sustainable development (United Nations, 1987). More importantly, it linked sustainable development with food security and helped initiate the shift in governments’ policies (United Nations, 1987).

During the 1990s research was conducted on the links between hunger and malnutrition; the need for food safety standards; and the human right to food preference (UNDP, 1994). As a result, at the World Food Summit in 1996, the definition of food security became all encompassing (Mechlem, 2004). The addition of ‘safe and nutritious’ emphasises food safety and the link between hunger and continued malnutrition in life. The inclusion of ‘food preferences’ changes the concept of food security from mere access to enough food, to access to preferred food.¹⁷ The definition was refined again in ‘The State of Food Insecurity in the World’ report (FAO, 2001). The word ‘social’ was introduced to emphasise individual consumption, relating to the demand side of the food security equation. The concept of seasonal food security emerged to describe a ‘cyclical pattern of inadequate availability and access to food’ often caused by seasonal fluctuations in weather, labour demand or disease (FAO 2008, p. 2). Therefore, the definition of food security was broadened to ‘access of all people at all times to enough food for an active, healthy life’.

2.2.2 The law, food security and Australia

Having analysed the definition of food security and provided a history of its evolvement, the next section attempts to contextualise the relevance of food security and its connection to Australia. Food security is a policy concept – it does not have any legal standing. Within the international arena, food security is referenced only in non-binding instruments such as the World Food Summit (FAO, 1996) and the World Food Summit Five Years Later (FAO, 2002), and has not been given a normative content (Mechlem, 2004, p. 643). This means Australia has no legal obligation to pursue global food security.

However, Australia is legally obligated to fulfil its international commitments under Article 25 of the Universal Declaration of Human Rights (United Nations, 1948) and Article 11

¹⁷ The interpretation of food preferences is based on cultural, ethical and religious preferences, not the broader interpretation of individual freedom of choice (Pinstrup-Anderson, 2009, p. 2).

of the International Covenant on Economic, Social and Cultural Rights (**ICESCR**) (United Nations, 1966) to pursue the ‘right to food’. The right to food is defined as ‘the right of everyone to have physical and economic access at all times to food in adequate quantity and quality or to means of its procurement’ (United Nations, 1966). Notably, it closely resembles the definition of food security and has been the subject of comparative analysis by Mechlem (2004). Mechlam (2004) concluded that the right to food is more encompassing and wider than food security. This thesis concurs with that proposition but also asserts any policy strategies addressed at achieving food security also make progress towards the broader goal of achieving the right to food and thereby assists in fulfilling Australia’s legal duties. This interpretation, elevates the importance of Australia contributing to global food security from a moral and political desire to an indirect international legal obligation. Significantly Article 11 of the ICESCR (United Nations, 1966) specifically encourages States Parties to recognise the fundamental right of everyone to be free from hunger and to individually, and through international co-operation, implement measures, including specific programmes:

2 (a) To improve methods of production, conservation and distribution of food by making full use of technical and scientific knowledge, by disseminating knowledge of the principles of nutrition and by developing or reforming agrarian systems in such a way as to achieve the most efficient development and utilization of natural resources; (emphasis added)

Under the ICESCR (United Nations, 1966) a State Party is obliged to demonstrate that every effort has been made to use all the resources at its disposal in an effort to satisfy obligations. In conclusion, the pursuit of global food security stems from an international legislative framework (albeit indirect). Therefore, any research undertaken such as this thesis, with its objective to design a more efficient RDTI aimed at assisting global food security is contributing to the Australian government’s commitment to meet international legal obligations and uphold its moral standing.

2.3 Global food insecurity

This thesis proceeds on the basis there is global food insecurity - that is, not all four elements: availability, access, stability and utilisation are being simultaneously achieved. Based on research following the 2008 food price crisis, international public policy documents mostly inform the analysis in this section. These reports include: Development

Dimensions of High Food Prices (Abbott, 2009), OECD-FAO Agricultural Outlook 2009-2018 (OCED-FAO, 2009), Poverty Effects of Higher Food Prices (De Hoyos & Medvedev, 2009), A Note on Rising Food Prices (Mitchell, 2008), Global Food Prices Essays (IFPRI, 2008), Anatomy of a Crisis (Fan & Heady, 2008), Comprehensive Framework For Action (HLTF, 2008), Food Security Assessment 2008-09 (USDA, 2009) and The State of Food Insecurity in the World 2008 (FAO, 2008).¹⁸

This section places the definition of global food insecurity into the broader framework of the food system and attempts to distil the key issues. Since the 1960s, the Food and Agriculture Organisation of the United Nations (**FAO**) measure the price of food using a monthly Index (**Index**).¹⁹ As shown in Figure 2.1, in the early 2000s the Index hovered around 100 points, before gradually, then suddenly increasing to 201.4 points in 2008 (FAO, 2014). Over the next two years the Index dropped (but not to its previous norm of 100 points) before spiking again to 229.9 in 2011. The Index has since declined slowly, but as of January 2014, the Index remains high at 203.4 points. FAO forecasts suggest food prices should stabilise and subsequently fall, however they will remain above their pre-2004 trend level for the foreseeable future (FAO 2008, p.9).

Figure 2.1 The Food Price Index long-term trend



Source: FAO 6/2/2014 <http://www.fao.org/worldfoodsituation/foodpricesindex/en/>

¹⁸ This list is not exhaustive.

¹⁹ The FAO Food Price Index is a measure of the monthly change in international prices of a basket of food commodities. It consists of the average of five commodity group price indices, weighted with the average export shares of each of the groups for 2002-2004 (FAO, 2014).

Although the food price index hovering around 200 points is significant, it is not the ultimate problem. Prior to the price hike of 2008, when the price index remained constant at around 100 points, there were still people suffering from food insecurity (OECD, 2013). Therefore it is necessary to analyse food price rises in perspective of other commodity price rises. Since mid-1999, when corn, soybeans, rice and wheat indices were about equal, food commodity prices rose 98 per cent until March 2008 (Trostle, 2008, p. 3). The index for all commodities rose 286 per cent; and the index for crude oil increased 547 per cent over the same time period (Trostle, 2008, p. 4). From this perspective, a 98 per cent increase does not seem too adverse, however, as stated in Chapter One, food must not be viewed as a standard economic commodity. Food is a basic human necessity and when prices rise, many low income consumers suffer severe hardship deserving of urgent attention.

It needs to be stressed that the world is not short of food; however people are deprived of food because of poverty and inadequate incomes (OECD, 2013). Before progressing it is valuable to distinguish global food insecurity from related terms to avoid confusion. Starvation, famine and poverty are easy to picture. Sen (2003, p. 2) suggests these can be diagnosed, ‘– like a flood or a fire – even without being armed with a precise definition.’ Global food insecurity is not the same. Its definition is vague and multidimensional. According to Sen (2003, p. 1), ‘Starvation is the characteristic of some people not *having* enough food to eat. It is not the characteristic of there *being* not enough food to eat.’ Famine is a violent outburst of starvation and causes widespread death (Sen, 2003). Poverty is the state of ‘... relative deprivation as opposed to absolute dispossession’ (Sen, 2003, p. 2). Therefore it is possible to have poverty (even acute) without serious starvation, and decline of food supply can be one of the many possible causes. To ascertain what the precise causes are requires a factual investigation (Sen, 2003).

Current thinking about global food insecurity suggests the principal cause is lack of access (OECD, 2013). That is, people do not have the ‘... adequate resources (entitlements) to acquire appropriate foods for a nutritious diet’ (Schmidhuber & Tubiello, 2007, p. 19703). Sen (2003) has propounded the ‘entitlements’ approach which describes a unique bundle of entitlements (wider than just money) each person owns. These entitlements could be derived from anywhere, such as farming (own the harvest), barter (swapping items), inheritance or gifts (personal transfer) or working (own labour). These entitlements can

be exchanged for food – however, if a person does not have enough total entitlements then this may lead to lack of access to food. On a national level, given the ease and ubiquity of trade, the critical question is not about whether there is enough food available, but whether the government has sufficient monetary and/or non-monetary resources at their disposal to access adequate quantities of food for their populations (Schmidhuber & Tubiello, 2007, p. 19703). Thus as will be seen in Chapter Five; a country, such as Japan, does not need to be self-sufficient to be food secure because of their reliance on international trade.

As stated earlier, to achieve global food security all four elements must be met.²⁰ Therefore, research conducted on any element is a contribution towards addressing global food insecurity. This thesis examines ‘food availability’ which historically has not been a concern, despite periods of severe price spikes (OECD, 2013, p. 26).²¹ Today, food availability concerns many because of the tightening of the food market, coupled with the unpredictable effects of climate change. The food price rise of 2008 demonstrated how vulnerable the world is to a possible food shortage. It highlighted the basic facts world leaders appeared to have become oblivious to: firstly, that global food reserves are low, secondly global investment in agricultural R&D has declined, and lastly that natural resources are diminishing. Too much skewed attention had focused on population growth, which can be traced back to the often misunderstood Malthus fear that the world would run out of food if the population expanded too much. Whereas Malthus²² merely stated the obvious ‘... that human, like animal, populations would multiply at some such rate if they were not held in check by counteracting forces’ (Flew, 1957, p. 7). This thesis brings attention back to factors the world can control – the available supply of food. This particular factor Australia can greatly assist with because of the export-orientated nature of its agriculture industry.

The next section will explore the factors affecting food availability. In economic terms, the 2008 food crisis resulted from long-term underlying growth in demand for food, coinciding with short-term cyclical factors adversely affecting food supply. Ultimately demand for food continues to outstrip growth in food supply (FAO, 2008, p. 9). Of the

²⁰ The four elements are: availability, access, stability and utilisation.

²¹ Such as during the two world wars and in the 1970s involving oil.

²² Referring to *An Essay on the Principle of Population as it Affects the Future Improvement of Society, with remarks on the Speculations of Mr. Godwin, M. Condorcet, and other Writers* first published in 1798. However his later essays, in particular *A Summary View of the Principle of Population*, clarified his initial proposal (Flew, 1957, p. 10).

supply and demand factors examined below, several factors are controversial as to their role in the global food crisis. However, they are included because they are relevant to the wider understanding of global food security.

2.3.1 Supply side factors

This section examines the supply side factors of global food security.

Global stock reserves

In 2007/08, world cereal stocks²³ dropped to 19.4 per cent, their lowest in thirty years (FAO, 2008, p. 9). This could have been the result of two colliding factors - high stock reserves of the 1990s that led to complacency or disincentive for farmers to produce more yields, and the recent adoption of biofuel production by the major cereal producers in China, the European Union (EU), India and the US (Fan & Hady, 2008). Consequently as food stock shortages were replaced by food from global reserves, the price to consumers remained the same, thereby muffling market signals indicating demand was on the rise. Since farm production lags demand, demand for food has outstripped supply of food.

Production shortfalls

Agricultural yields are naturally weather dependent, but cereal producers are spread throughout the world, therefore adverse climate in one region is often offset by plentiful crops in another. Although droughts and floods affected major cereal producing countries between 2005-2007 causing world cereal production to fall by 3.6 per cent in 2005 and 6.9 per cent in 2006 (FAO, 2008, p.10), long term trends show that these dips are not exceptional. Thus weather shocks alone did not cause the global food crisis. They merely interacted with other events to exacerbate the situation (Fan & Hady 2008, p. 8).

Petroleum prices

Energy and agricultural prices have become increasingly intertwined. High energy prices have made agricultural production more expensive by raising the cost of inputs, such as fertilisers and irrigation. In 2006-08, as petrol prices rose, the cost of fertiliser trebled and the cost of transport doubled (Fan & Hady, 2008, p. 9). Fertiliser prices contribute approximately 15-20 per cent of total costs for wheat and corn (Fan & Hady, 2008, p. 9).

²³ When discussing food prices, many statistics refer to cereal and/or grain indices because wheat, corn, soybeans and rice account for most of the world food consumption of grains (Trostle, 2008, p. 2).

The higher that oil prices rise, the more incentive there is for alternative sources of energy, namely biofuels.²⁴

Biofuels market

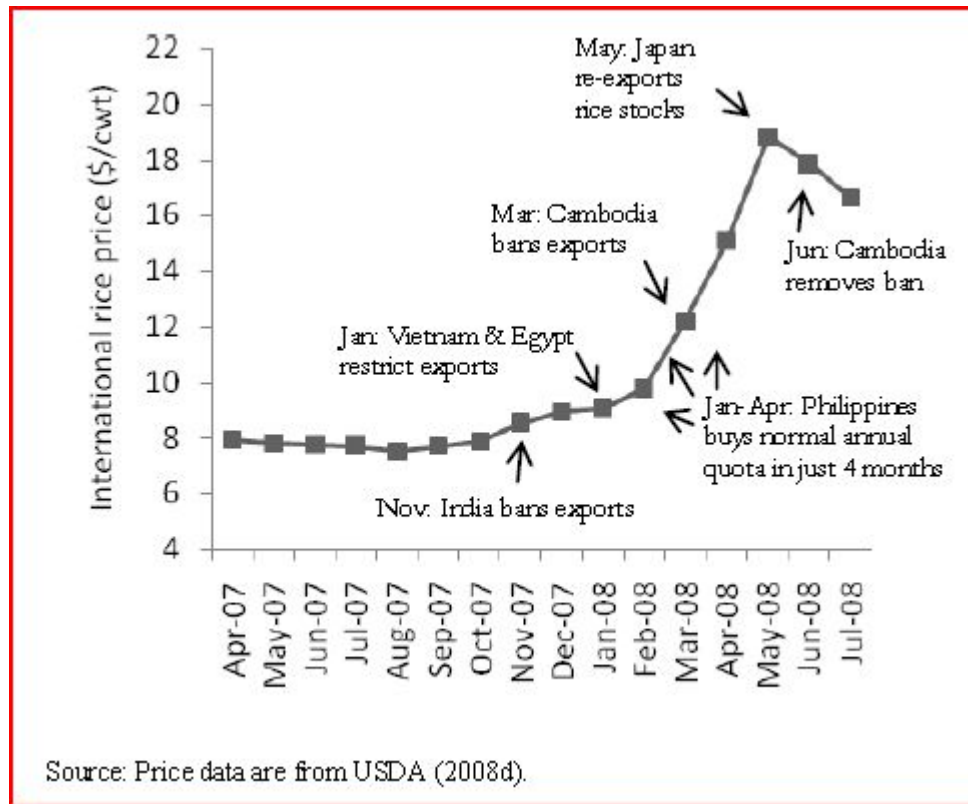
The emerging biofuels market has caused a surge in the price of maize, cassava, oilseeds and palm oil translating directly into increased food prices. Between 2000 and 2007 it is suggested biofuels production was responsible for 30 per cent of the cereal price increase (von Braun, 2008, p.1). The World Bank has confirmed that ‘... the most important factor [in the global food crisis] was the large increase in biofuels production in the US and the EU’ (Mitchell, 2008, p. 1).

Trade policies

The adoption of export restrictions and bans by some countries has reduced global food supply, aggravated shortages and eroded trust among trading partners. Rice is an example where export restrictions may largely explain the rapid price spikes. Figure 2.2 (Fan & Heady, 2008, p. 7) shows how each time a country changed their trade policies, the price of rice fluctuated. The instability in the rice market during 2008 strengthens the importance of continued global trade and the need for internationally co-operative solutions, of which R&D tax reform is proposed.

²⁴ The benefit behind biofuels is its supposed carbon neutral effect. The carbon dioxide absorbed when the crops are grown equal the carbon dioxide released when the fuel refined from those same crops is burned <http://www.energybulletin.net/node/21736>.

Figure 2.2 Trade policy effect on rice prices



2.3.2 Demand side factors

This section examines the demand side factors of global food security.

Consumption patterns

Globalisation has contributed to the global food crisis. By improving the living standards and purchasing power of many developing countries, globalisation has influenced change in consumer dietary preferences. The result is an increase in the overall demand for complex food. Greater consumption of meat and dairy products, which are heavily dependent on cereal inputs, have placed added demand on agricultural commodities (FAO, 2008, p.11). The composition of food budgets has transitioned from grain to vegetables, fruits, fish and ready-to-eat foods (von Braun, 2007, p. 1). In South Asia the demand for rice is projected to decline while the consumption of milk and vegetables is forecast to increase by 70 per cent and consumption of meat, eggs and fish is expected to increase by 100 per cent (von Braun, 2007, p. 1). How the food supply keeps up with consumer preferences will require R&D investment today to ensure the type of food demanded can be produced tomorrow.

Strong growth

Developing regions have all experienced sustained growth. Of the world's 34 most food-insecure countries, 22 experienced average annual growth rates ranging from 5 to 16 per cent between 2004 and 2006 (von Braun, 2007, p. 1). In Asia, the economies of China and India saw real GDP increase '... by 9 per cent each year between 2004 and 2006' (von Braun, 2008, p.1). This growth has prompted speculation that China and India, as they become more affluent, are consuming more food adding pressure to food prices.

However, FAO (2008) research shows the recent high commodity prices do not appear to have originated in developing Asia. 'Cereal imports by China and India have declined from an average of about 14 million tonnes in the early 1980s to roughly 6 million tonnes in the past three years, suggesting that changes in consumption patterns have largely been met through domestic production' (FAO, 2008, p. 11). This conclusion was also reached by Fan and Heady (2008, p. 5) who '... unequivocally reject rising demand from China and India as an important cause of the crisis'. They suggest the only plausible manner in which China or India could have contributed to the global food crisis is through indirect channels, such as increased demand for oil and global trends in stock.

Population

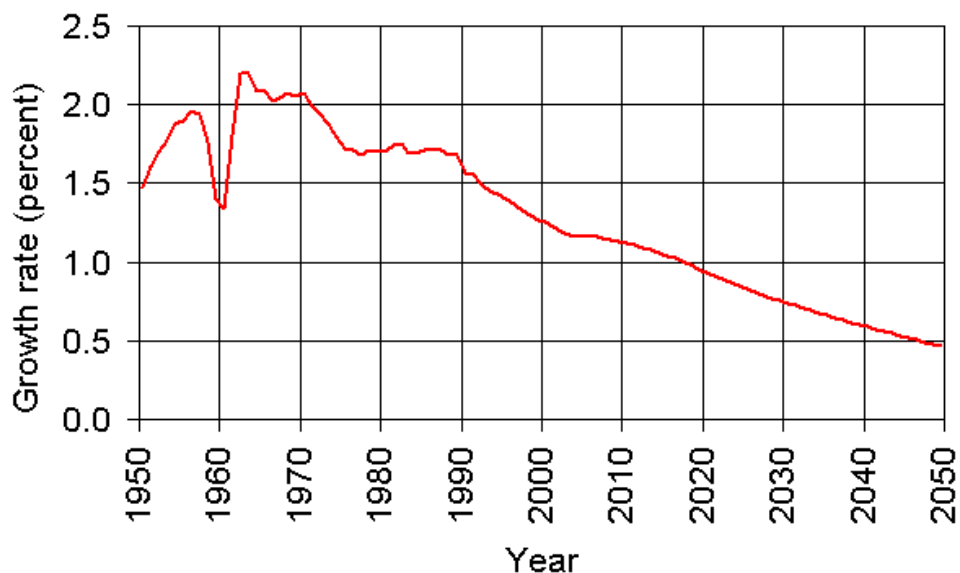
The reading of Thomas Robert Malthus²⁵ (Flew, 1957) coupled with media publicity suggest population growth is a threat to human survival. However, as shown in Figure 2.3, the world population growth rate has declined since the 1970s,²⁶ primarily due to later marriages, education of women and use of contraception. Whereas the life expectancy of humans has increased with, improvement in medical treatment and decreased mortality rates. Overall, with the population growth rate decreasing into the future; provided current food production can be maintained sustainably, then population growth is not a significant contributor to the global food crisis. However, global food security is threatened by the birth rate in developing countries. The current population growth rate in the developed world is 1.2 per cent per year, compared to 2.3 per cent in the developing world (United Nations, 2010, p. 1). Specifically, the domestic growth rate of developing economies is unable to keep pace with demand, underscoring the need for global policy

²⁵ *An Essay on the Principle of Population as it Affects the Future Improvement of Society, with remarks on the Speculations of Mr. Godwin, M. Condorcet, and other Writers* first published in 1798. However his later essays, in particular *A Summary View of the Principle of Population*, clarified his initial proposal (Flew, 1957, p. 10).

²⁶ The sharp dive in the growth rate from 1959 to 1960 was due to social change, natural disasters and decreased agricultural production in China, which caused China's death rate to rise significantly and its fertility rate to fall by almost half.

reform and additional investment in agriculture (OECD-FAO 2009, p. 12). This presents a challenge to the developed world to produce enough food to feed its citizens and assist developing countries.

Figure 2.3 World population growth rates: 1950-2050



Source: U.S. Census Bureau, International Data Base, June 2009 Update.

Financial markets

The global financial crisis of 2007/08 initiated distrust in the traditional asset market. Investors moved to derivative markets based on agricultural commodities in the hope of achieving better returns. Substantial, but inconclusive evidence, suggests that speculation in the agricultural financial markets may have contributed to the global food price increases IFPRI (2008). The theory posits that as food shortages occurred, some countries imposed restrictions on grain export. The restrictions resulted in large price increases, given the thinness of markets for major cereals. Some countries then adopted retail price controls, resulting in perverse incentives for producers. Speculative price spikes built up and the gap between spot and futures prices widened, stimulating overregulation and trader policing in some countries and causing some commodity exchanges in Africa and Asia to halt grain futures trading (von Braun, 2009, p. 1).

These government reactions began as consequences, not causes, of the price crisis, but they exacerbated the crisis and increased the risks posed by high prices. These reactionary policies impeded the free flow of food to where it was most needed and the free flow of

price signals to farmers. These market failures resulted in enormous efficiency losses on the global food system, hitting the poorest countries hardest (Robles, Torero & von Braun 2009, p. 1).

Land availability/tenure

As the impact of climate change and environmental degradation erode fertile land, wealthy countries are seeking to secure investment of agricultural land in poor countries. Although the recipient country benefits in terms of stimulating productivity growth, likelihood of higher farm wages and increased foreign exchange earnings, the dangers of exploitation of fragile lands and displacement of rural populations looms large (OECD, 2009). The scarcity of fertile land is also contributing to land conflicts. Such conflicts have traditionally been associated with precious resources (diamonds, oil) which fuel violent illegitimate land grabbing. However, this trend is now spreading to agricultural land, exacerbating political insecurity (von Braun, 2009, p. 2).²⁷

2.3.3 Summary

This section attempted to provide context around the definition of global food security. Importantly, it has taken a broad topic and guided readers through its complexity to signpost the direction of this socio-legal tax thesis. The precise connection tax reform has with global food security is from the supply side of food availability. In later chapters, attention will turn to addressing production shortfalls and consequently, raising global stock reserves through attracting greater private sector investment in agricultural R&D. Such investment will be needed because the UN predicts world population will reach 9.3 billion by 2050 (Alexandratos & Bruinsma, 2012 cited in OECD, 2013). Yet the UN remains optimistic that with current food productivity rates the world will be able to achieve the extra 60 per cent increase in food production required (Alexandratos & Bruinsma, 2012 cited in OECD, 2013). The OECD (2013, p. 27) believes the greatest challenge in terms of food availability will relate to how the increase in food production is achieved: ‘more food can be produced, but it must be done sustainably, taking into account constraints on natural resources and the effects of climate change.’ This thesis fills that literature gap; it offers insights that aim to improve food availability from the supply side, in a sustainable manner, as part of Australia’s contribution to assist global food security.

²⁷ Example: Between pastoralists and farmers in Sudan (von Braun, 2009).

To learn from current food security solutions, the next section will canvas the traditional methods of addressing global food insecurity.

2.4 Current methods to address global food insecurity

Having established the urgency of global food security, and the timely need for this thesis and its recommendation for R&D tax reform, it is now necessary to examine what the world is currently doing to address global food insecurity. Food aid will be examined first. Although often mired with controversy, food aid has been the one constant international remedy since 1954 (IATP, 2005). Next, a brief outline of the international responses to the 2008 food crisis is considered, followed by a focussed discussion of Australia's approach to food security. This section is written with caution, as even poorly designed and badly managed food aid saves lives. Given the internationally tight fiscal climate, it would be easier for governments to cut overseas aid than to continue to finance such aid (IATP, 2005). This section does not aim to change the status quo which is highly organised and well-entrenched. It provides an informed and unbiased articulation of existing weaknesses within the system and further strengthens the thesis objective of using tax reform as an additional tool to assist global food security.

2.4.1 Food aid

Food aid refers to the international flow of food (or funds or goods to be exchanged for food) from developed countries to developing countries, which is provided at concession (free or below commercial price) (IATP 2005; Moussea 2005). Despite its importance, '... food aid constitutes less than 2 per cent of all food traded internationally. It is a tiny proportion of world food production: about 0.015 per cent' (IATP, 2005, p. 8).

Food aid originated in the US in 1954 (IATP, 2005, p. 3); a product of part charitable, economic and strategic thinking. Providing free food as a way to peacefully buy allies during the Cold War, assist underdeveloped countries, dispose of surplus food production and build future export markets (IATP, 2005, p. 3). Approximately sixty years later, nothing much has changed except the fears of the Cold War have been replaced by terrorism, and surplus food (grain) production can now be more profitably disposed of in the biofuels market.

Sources of food aid

The advancement of ulterior objectives is well entrenched in the food aid system. The way food aid is sourced and distributed, perpetuates known weaknesses. Food aid can be sourced through direct transfers/ tied aid, triangular purchases and local purchases (OECD, 2006, p. 51). Direct transfers are the least effective²⁸ because the food aid originates in the donor country. This food aid results in great benefits to the donor by supporting their own country's agricultural industry, along with the bagging, logistic, and shipping industries and as of recent the GMO industry. Quite often, direct transfers are conditional, resulting in recipient countries being forced to accept food that may not conform to their cultural, nutritional or traditional beliefs. Triangular purchases and local purchases are the most effective sources of food aid. Local purchases are procured and used as food aid in the same country, it is identified as the ideal form of aid (OECD, 2006, p. 51). However, if local produce is insufficient, triangular purchases are the next best. Triangular purchases involves food sourced in one country (not the donor's) and used as food aid in another country (OECD, 2006, p. 51). This type of food aid promotes regional markets by purchasing the food from a neighbouring country and also by reducing transport costs.

It is the combination of the source and distribution method of food aid that determines its effectiveness. According to the OECD report on The Development Effectiveness of Food Aid (2006), financial aid rather than food aid is the preferable option, regardless of the mode of distribution. However, food aid will always be necessary for emergency situations. The report also found that direct transfers cost the donor 30 per cent more than if they financed commercial imports (OECD, 2006, p. 12). Also, the actual cost of direct transfers is approximately 50 per cent more costly than sourcing food locally, and 33 per cent more costly than triangular purchases (OECD, 2006, p. 12). If international donors untied their food aid there would be an additional three million tonnes of commodities and US\$790 million of saved donor aid expenditure on procurement and shipping (OECD, 2006, p. 17). These statistics help contextualise why food aid is contentious. Despite all the years food aid has been operating, there are still large areas of inefficiency which international institutions and donors are aware of, but are reluctant to

²⁸ Unless used for emergency aid only.

improve. Coupled with the fact there are still food insecure populations, confusion is understandable as to the merit of long-term food aid.

2.4.2 Other responses to food insecurity

The 2008 food price crisis prompted governments and international agencies to consider new responses. The immediate reaction by affected governments in developing countries included reducing import taxes, introducing price controls, drawing down on food grain stocks and restricting exports, in an effort to maintain stability (Mittal, 2009, p. 15). Reliance on food aid was not a guaranteed option because food aid tends to be pro-cyclical. When world food prices are high, budget allocations for food aid buys less food, and surplus donor food can fetch greater profits on the international markets (IATP, 2005, p. 26). When world food prices are low, food aid is more affordable, and more surplus food can be donated to food aid.

International responses to the food price crisis have varied. The United Nations (UN) established the High Level Task Force on the Global Food Crisis, which produced a Comprehensive Framework for Action – which has to an extent overlapped with other UN initiatives (HLTF, 2008). The World Bank and the IMF have continued to advocate market-based instruments to deal with the crisis this is despite the World Bank having produced the 2008 World Development Report, which highlighted weaknesses in the existing agricultural sector (Mittal, 2009, p. 17). Research undertaken by the Independent Evaluation Group conclude the World Bank's agricultural programmes in Sub-Saharan Africa (SSA) over the past two decades have not actually increased agricultural productivity to sufficiently control rising hunger, diminishing the credibility of World Bank programmes (Bretton Wood Project, 2007). The Group of 8 (G8), the IAASTD and to some extent the World Bank have called for greater public investment in agriculture (Mittal, 2009, p. 19). Such a shift in agricultural policy is one step closer to addressing the root causes of hunger and accepting that market forces alone cannot deliver on food security. Agricultural development is a long-term vision – which requires gradual building of infrastructure and acquisition of skills that sustain economic growth (Perry, 2008, p. 64). Food aid should be treated as a temporary measure until the longer-term strategies are successfully implemented. These reports will be examined extensively at section 2.5.

2.4.3 Australia's response to food insecurity

The Australian government is committed to tackling the impact of rising food prices and shortages. At the peak of the food price crisis Australia provided \$30 million to the UN emergency appeal, \$50 million to a World Bank agriculture trust fund, and \$3 million to a North Korea World Food Program (Smith, 2008).

Australia's approach to food security is to provide aid dollars when crucial, but to aim for long-term solutions. Thus, Australia continues to produce food to be used for emergency relief, while building agricultural capacity in developing countries until those countries can become self-reliant (Smith, 2008). As one of the most advanced countries in Asia-Pacific, Australia spent approximately 76 per cent of bilateral aid in this region, which is appropriate given Australia's geographic location and the fact few international donors commit aid to Asia-Pacific (OECD, 2009, p. 14). Specifically 50 per cent of Australia's aid is donated to countries of precarious stability which reflects the moral imperative resulting from Australia's informal peace keeping role to protect the overall economic and security interests of the region (OECD, 2009, p. 11).

Food aid in Australia is primarily distributed through the Department of Foreign Affairs and Trade (**DFAT**), which is responsible for administering Australia's international aid programs. Since 2004, Australia's aid program and volume has significantly improved, following years of quasi-stagnation in real terms (OECD, 2009, p. 13). In 2009–10, Australia provided approximately \$3.818 billion in total, or 0.31 per cent of gross national income in assisting developing countries (AusAID, 2008, p. 26). The government is committed to increasing Australia's official development assistance to 0.5 per cent of gross national income by 2015–16, and will likely reach the 0.7 per cent UN target in time (AusAID, 2008, p. 26). 2006 marked tremendous improvements in Australia's aid delivery and effectiveness, by establishing the Office of Development Effectiveness and making the decision to untie aid (OECD, 2009, p. 18). Since then Australia has also signed the Accra Agenda for Action, which commits participants to undertake actions to accelerate progress towards the goals of the Paris Declaration (AusAID, 2010). In 2009, Australia was the first country to commit to a \$180 million guaranteed four-year funding contract with the World Food Program (**WFP**). The UN WFP has described Australia as a model donor, a leader in providing prompt, generous and flexible responses to global hunger (Smith, 2009). In June 2014, the Liberal government announced strategic tests for

providing aid, which focus on: 1) Australia's national interest and influence, 2) promoting growth and reducing poverty, 3) reflecting Australia's value-add and leverage, and 4) performance (Bishop, 2014).

Underpinning Australia's food security strategy is the desire for countries to be self-reliant through comparative advantage and international trade (AusAID, 2006, p. 2). Such strategies require long-term planning, which is why a large component of Australian aid is directed to agricultural research conducted by the Australian Centre for International Agricultural Research (**ACIAR**) (AusAID, 2006, p. 3). The importance of Australia's aid program is strongly supported by the Australian public, with 91 per cent of those surveyed in 2005 in agreement with Australia's long-term aid investments rather than emergency relief (OECD, 2009, p. 29). Such overwhelming support may stem from Australians' growing recognition that the national interest is intrinsically tied to the development issues of its neighbours.²⁹

2.4.4 Summary

So far Chapters One and Two have laid the foundation for this thesis. Firstly, by describing the research problem; people are suffering from food insecurity because they cannot access sufficient food. Yet the problem is not due to a shortage in food supply. It is the mechanics of the global food supply and demand market that is creating the food price crisis. Despite the ongoing nature of the problem, and the fact humankind have made numerous attempts to rectify global food insecurity as described in section 2.4, there has been no success in eradicating or significantly reducing the number of people who suffer from food insecurity. With every crisis there is opportunity for positive change, as demonstrated in the food crisis of 1974 which saw the emergence of the WFP, International Fund for Agricultural Development (**IFAD**), Consultative Group on International Agricultural Research (**CGIAR**), Global Information and Early Warning System (**GIIEWS**) (Fan & Heady, 2008, p. 20). Today these international tools and institutions are instrumental in the global effort to improve food security. The next section will critically review the leading proposals that have transpired out of the 2008 food price crisis.

²⁹ Unstable neighbouring nations could bring trans-boundary threats such as HIV/AIDS, terrorism, illicit drugs and organised crimes (OECD, 2009, p. 33).

2.5 Proposals to address food insecurity

The proposed solutions put forward by the many international institutions, academic thinkers and world leaders in relation to addressing global food insecurity and to some extent sustainable agriculture, are best understood in context of the world's past efforts, the consequences left behind and the fragility of the world's future. Hence, the historical progression of this chapter to ensure greater appreciation of the evolutionary shift in human consciousness that these new proposals entail.

Three major international reports from The World Bank, the IAASTD and the UNEP will take precedence in this analysis, as they are to date the most comprehensive and credible literature on the topic. To ensure unbiased coverage, analysis will also include discussion on The Chicago Council on Global Affairs report which contradicts some of the IAASTD findings, but needs to be examined as its influence led to the creation of the *Global Food Security Act of 2009* (US).³⁰ This section is written according to common themes from each report, starting with a general overview, followed by an outline of their opening premise, suggestions for change and concluding with their solutions of how to implement the changes.

2.5.1 International reports: overview

The IAASTD report was a multi-stakeholder and multidisciplinary intergovernmental process undertaken over four years and involving about 400 independent world experts (IAASTD, 2009a). The purpose of the report was to assess '... the role of agricultural knowledge, science and technology (**AKST**) in reducing hunger and poverty, improving rural livelihoods and facilitating environmentally, socially and economically sustainable development ...' (IAASTD, 2009a, p. 3).

Agriculture for Development is the World Development Report (**WDR**) for 2008 produced by the World Bank. The WDR provides guidance to governments and the international community on designing and implementing agriculture-for-development agendas that can help achieve global food security (The World Bank, 2008, p. xiii). The last WDR on agriculture was completed in 1982 (The World Bank, 2008, p. 8). During

³⁰ U.S. Congress. House. *Global Food Security Act of 2009*. H.R. 3077. 111th Cong. 1st sess. (June 26, 2009) & U.S. Congress. House. *Global Food Security Act of 2009*. Sec.384. 111th Cong. 1st sess. (Feb 5, 2009). At time of writing this Act was awaiting congressional debate, but is now dead – due to the two year Congress time expiration.

this time investment in agricultural R&D worldwide dropped from US\$ 6 billion to US\$ 2.8 billion (GDRC, 2008, p. 1).

The GEO4 report, prepared by the UNEP is the end result of a comprehensive consultative process that commenced in 2004, involving a group of subject experts to provide assessments of the interactions between environment and society (UNEP, 2007, p. 5). Although the GEO4 is not focused on agriculture, its significance stems from the UN's recognition that a healthy environment underpins and contributes to the achievement of food security and other sustainable goals (UNEP, 2007, p. 462). Hence any tax reform suggested by this thesis should incorporate the needs of the environment (UNEP, 2007, p. 471).

What makes these three reports significant is the clear shift in thinking from humankind's original narrow desire to produce food at whatever cost, to a broad mandate to consider other world issues in the production of food such as urbanisation, globalisation, conflict, energy, environment and migration (IAASTD, 2009, p. 4). It is from this common premise that the reports have designed their proposed food security solutions. The reports recognise that 25 years of modern agricultural production has left the world in a vulnerable predicament. Years of agricultural and environmental policy neglect, underinvestment and mis-investment in agriculture has now collided with rising resource scarcity and mounting externalities (The World Bank, 2008, p. 2). It is acknowledged that there needs to be continued technological development, however it must be accompanied with organisational capacity and policy and institutional development (IAASTD, 2009, p. 16).

The food security solution suggested by the IAASTD and the WDR is to raise agricultural production whilst ensuring sustainable development (IAASTD, 2009, p. 4; The World Bank, 2008, p. 2). The emerging vision of the World Bank and echoed in the IAASTD is for agriculture to redefine the roles of producers. There will continue to be smallholder farmers and commercial farming, but with a labour intensive focus, rather than machinery (The World Bank, 2008, p. 8). The IAASTD is realistic in confronting the fact small scale farms with diverse ecosystems may not survive in developing countries, given the impact of climate change on water constraints and poor soil (IAASTD, 2009, p. 5) therefore it is still important developed countries increase productivity yields to enable surplus to be exported. The private sector will continue to drive the industry, however governments will need to actively correct market failures, regulate competition and support smallholder

farmers (The World Bank, 2008, p. 8). The IAASTD reiterates these suggestions, encouraging the targeting of small-scale agricultural systems by forging public and private partnerships, with the intention of possibly replicating these small-scale successes on large-scale farms (IAASTD, 2009, Finding 12).

How these reports propose to fund these solutions is with greater R&D investment in agriculture. It is acknowledged that public funding is more able to incorporate broader objectives such as the poor and the environment (IAASTD, 2009, p. 16). 'Public investments in AKST can have economic rates of return in the order of 40-50 per cent ...' (IAASTD, 2009, p. 16). The World Bank further states the solution '... requires the visible hand of the state – providing core public goods, improving the investment climate, regulating natural resource management, and securing desirable social outcomes' (The World Bank, 2008, p. 2). However increasing R&D investment by for-profit firms will also be part of the solution (IAASTD, 2009, p. 497). According to the World Bank and repeated in the GEO4 and IAASTD, the first step is getting the incentives right, an issue that will be discussed later (The World Bank, 2008, p. 2).

The result of the IAASTD assessment is a selection of 22 options for action which governments and institutions may refer to when making policy and management decisions on issues such as agriculture, poverty, hunger, natural resources, environment and innovation, which they may have previously addressed independently (IAASTD 2009a, p. 4). The WDR is a comprehensive account of the state of agriculture, it does not mandate what governments should do, instead it puts forward solutions to consider. The GEO4 examines in detail the various policy tools that are available to governments and institutions to lead the world down a more environmentally sustainable path. The reports leave the responsibility of designing appropriate policies, decision processes and mobilising of citizen support to each country (The World Bank, 2008, p. 2).

2.5.2 Common findings

The IAASTD analysis is grouped around its options of action, whereas the WDR and GEO4 have related their analysis to specific areas of concern. This section will compare the findings from each report to highlight topics of commonality which are explored in detail below according to themes relevant to this thesis; agriculture, innovation and environment.

Agriculture

Before the IAASTD, UNEP and the World Bank could formulate potential solutions to the global food security crisis, the status of global agriculture needed to be examined. Based upon their own research the reports identified the following assumptions pertaining to agriculture and food security:

- It is accepted that AKST has contributed to substantial increases in agricultural production over time and thereby food security. These yield increases have been due to increased inputs (water, agrochemicals) and mechanisation (IAASTD, 2009, Finding 1).
- Projections of 'business as usual' over the next 50 years indicate there will be greater demand for food in developing countries (IAASTD, 2009, Finding 5) and less resources and reliable climate to continue food production without change.
- To commence agricultural change it is necessary to understand that agriculture operates within complex systems and is multifunctional in its nature (IAASTD, 2009, Finding 6).
- Public policy, regulatory frameworks and international agreements are critical to implementing more sustainable agricultural practices (IAASTD, 2009, Finding 15).
- Any change will require addressing environmental issues while maintaining and increasing productivity (IAASTD, 2009, Finding 7).

From this foundation, each report spent much time focussing on the role of the environment and innovation, as discussed below.

Environment

The World Bank states there is a need for environmental costs associated with agriculture and food production to be internalised to minimise compromising the sustainability of future production and affecting natural ecosystems (The World Bank 2008, p. 50). As global food prices increase, with no likelihood of returning to lower prices, the focus has switched to 'purchasing power' rather than availability (The World Bank 2008, p. 50). The GEO4 reiterated this view suggesting industries should be made to internalise their environmental costs, so that consumers commence paying the full price of the use of ecosystem services (United Nations Environment Programme, 2007, p. 471). The environment can no longer be treated as a free input its use has a cost that everyone must bear. This will require fundamental changes in industry structure, technologies and input factors (United Nations Environment Programme, 2007, p. 472). The kind of changes

the World Bank and IAASTD envisage involve integrating natural resource management (**NRM**). Incorporating NRM professionals could lead to creative opportunities for farmers, researchers and policy makers to share knowledge and input in shaping NRM policy (IAASTD, 2009a, p. 18). It is asserted that a holistic approach can address more of these difficult issues simultaneously across different ecologies, locations and cultures (IAASTD, 2009a, p. 18).

The WDR states ‘The bottom line is that if society wants farmers to undertake NRM practices that have benefits outside the farm, society needs to compensate them’ (The World Bank, 2008, p.197). Previous short-term measures have been employed around the world, such as: concessionary loans for investment, food-for-work programs, and conservation incentives like providing free seeds (The World Bank, 2008, p. 197). Research shows these efforts are not long-lasting. All three reports advocate Payment for Environmental Services (**PES**) may be the solution (The World Bank, 2008, p. 197; IAASTD, 2009, Finding 18; United Nations Environment Programme, 2007, p. 471). PES is a voluntary system whereby service providers receive payments conditional on their providing the desired environmental services (The World Bank, 2008, p. 198). The thesis does not follow the PES path because it has been established that PES is more suitable for situations where there are only ‘... one or two large service users with fairly clear actual or potential environmental threats – and when the causes and effects between farm activities and environmental outcomes are fairly well understood’ (The World Bank, 2008, p. 198).

Another option suggested in all three reports is the use of incentives. Between 1970 and 1995 different regions of the world increased agricultural yields in either of two ways: intensification (Asia) or extensification (SSA and Latin America) of agriculture (The World Bank, 2008, p. 180). Research shows that both methods had costs and benefits (IAASTD, 2009, Finding 3). Common to both agricultural approaches was the lack of incentive by farmers to mitigate offsite effects (The World Bank, 2008, p. 180). The IAASTD extends this thinking to trade. Intensive export orientated agriculture has increased open market operations but has been accompanied by both benefits and adverse consequences. The GEO4 put forward the idea of compulsory broad technical standards – which may serve as an incentive for technical development and innovation that improves the environment (United Nations Environment Programme 2007, p. 469).

The WDR stress the importance of incentives to overcome environmental problems in agriculture. The design process must start with ‘a good understanding of private incentives of individual resource users and ways to manage resources more successfully from society’s point of view’ (The World Bank, 2008, p. 181). Changing farmer behaviour will require significant and targeted incentives, which it is proposed in this thesis could be achieved via reformed R&D tax concessions. Changes in consumer preferences for local organic production, stringent supermarket standards and government intervention (such as RDITs) are powerful forces which if combined may motivate farmers to choose environmentally sustainable agriculture voluntarily (The World Bank, 2008, p. 189).

Innovation

Given the ‘... increasing scarcity of land and water, productivity gains will be the main source of growth in agriculture and the primary means to satisfy increased demand for food and agricultural products’ (The World Bank, 2008, p. 158). This will involve investments in agricultural R&D to generate new technologies, followed by linking technological progress with institutional innovations and markets to ensure maximised productivity (The World Bank, 2008, p. 158). The IAASTD echoes these thoughts in Finding 10 which suggests agriculture could be more innovative by integrating existing AKST with new approaches for agricultural and natural resource management (IAASTD, 2009, Finding 10). Secondly, the IAASTD reiterate the need for innovative institutional arrangements to ensure successful design and adoption of ecologically and socially sustainable agricultural systems (IAASTD, 2009, Finding 16).

Technology for development must go well beyond raising yields; to saving water and energy, reducing risk, improving product quality and protecting the environment (The World Bank, 2008, p. 158). One area of research requiring attention is maintenance R&D, which comprises ‘A third to a half of current R&D investments in crop breeding ... leaving reduced resources to address productivity advances’ (The World Bank, 2008, p. 161). For example, the potential spread of Ug99 a form of stem rust that can destroy wheat, highlights the significance of maintenance R&D (The World Bank, 2008, p. 161). Each pest outbreak is an alarm bell to the world to develop appropriate maintenance research strategies together with global co-ordination, surveillance and financing (The World Bank, 2008, p. 162).

There also needs to be a change of R&D focus to market driven or demand side innovations (The World Bank, 2008, p. 158). The users of agriculture need to have a louder voice in agricultural innovation, with emphasis on sustainable innovations. Finally the new R&D technologies must not divide the world – each country must share in this agricultural R&D revolution, regardless of how little some countries contribute. A major obstacle to successful agricultural innovation is continued underinvestment in R&D. The WDR puts forward three reasons: first, political favour with voters blurs the importance of long-term R&D investments (10 years or more); second, trade distortions and subsidies are a disincentive for R&D investment; and third, R&D spill over can discourage R&D (The World Bank 2008, p.166). The World Bank recommends the following actions which may overcome these hurdles:

- Improve the environment for innovation: Provide a prize to reward developers of specific agricultural technologies. Possibly link the monetary amount of the reward to the economic benefits generated (The World Bank, 2008, p. 169).
- Greater involvement of research universities: Offer competitive grants to universities to research specific agricultural issues (The World Bank, 2008, p. 169).
- Encourage collective action and partnerships: This framework could pool complementary actors to optimise innovation progress and investment (The World Bank, 2008, p. 170).
- Promote humanitarian licenses: To encourage R&D investment in agricultural issues that will primarily benefit the poor, the government could provide monetary incentives for the developer if they market the R&D under a humanitarian license (The World Bank, 2008, p. 171).
- Encourage agricultural extension: Promote collaboration of ideas and technologies amongst farmers, to bridge the knowledge divide between poor farmers in developing countries and wealthy farmers in developed countries. The government could fund excursions and training (The World Bank, 2008, p. 171).

2.5.3 Proposed solutions

The IAASTD acknowledges there is no ‘best strategy’ to advance development and sustainability throughout the world (IAASTD, 2009, p. 25). Whatever strategy that is followed requires treatment of the multiple functions of sustainable agricultural systems (e.g. production, livelihoods, ecosystem services) and recognition of country-specific solutions (IAASTD, 2009, p. 26). Indeed the integration of expertise from other sectors such as communication, energy, health, culture and arts may lead to solutions that increase productivity, protect natural resources and minimise agriculture’s negative impact on the environment (IAASTD, 2009, p. 26).

All three reports agree ‘the ecological footprint of industrial agriculture is already too large to be ignored and projected increases in future global environment changes could make the footprint even larger’ (IAASTD, 2009, p.33). It is from this premise the concept of this thesis stems. The aim is to find a way to minimise the current and future agricultural footprint, while still producing enough food to feed the growing global population. The solution put forward in this thesis is to use the R&D tax concession in an integrated manner to encourage natural resource managers to adopt environmentally sustainable agriculture in Australia and thereby contribute to global food security. This important aspect will inform the design of the evaluation criteria explained at section 5.6.

Integration will play a key role in the success of this solution because it is predicted that ‘some of these policies could increase competition for resources’ (IAASTD, 2009, p.34). The intention is for targeted RDTIs that are tailored to advancing AKST and localisation, while reducing reliance of agriculture on fossil fuels, agrochemicals, machinery, transport and distribution (IAASTD, 2009, p. 35). Global research efforts on alternative energy sources could help realise multiple benefits for sustainability and the environment (IAASTD, 2009, p. 35).

It is noted in the reports that the private sector are currently major suppliers of inputs and innovations to agriculture (IAASTD, 2009, p. 38), therefore it is imperative that the reformed R&D model provides incentives for the private sector to continue its active role. However this time, the private sector must address their negative externalities and limit their monopolistic behaviour to fall favour of RDTIs (IAASTD, 2009, p. 38).

The IAASTD asserts ‘Policies that promote sustainable agricultural practices (e.g. using market and other types of incentives to reward environmental services) stimulate more technology innovation, such as agroecological approaches and organic farming to alleviate poverty and improve food security’ (IAASTD, 2009, p. 33). This gives international institutional credibility to the theory of this thesis that targeted agricultural RDTIs could achieve environmentally sustainable agriculture and improved global food security.

Both the IAASTD and GEO4 describe the various taxes currently in use in some countries which aim to reduce the negative footprint of agriculture, including taxes on carbon, agrochemical use and water pollution (IAASTD, 2009, p. 34). These taxes are seen as a positive way to reach use-reduction targets, support resource-conserving and low-emission technologies (IAASTD, 2009, p. 34). The IAASTD suggest ‘the long-term sustainability and equity of the benefits generated by these systems is an area for further research’ (IAASTD, 2009, p. 34). The thesis aims to partially fill this recognised gap in the literature.

‘Incentives are needed to influence the choices individuals make’ (IAASTD, 2009, p. 4). This further strengthens the argument for targeted R&D tax concessions. Ultimately the three reports assert that the challenges facing the world and the choices people make at this juncture in history will determine how the world protects the planet, civilisation, and future generations (IAASTD, 2009, p. 4). The more externalities that can be internalised and financially borne by the consumer the closer the world will be to achieving global food security (IAASTD, 2009, p. 6).

In this thesis guidance is taken from the GEO4 report in drafting the proposed R&D reform. The GEO4 suggest solutions need to focus on transforming the drivers (population and economic growth, resource consumption, globalisation and social values) of the environmental problem for any effective policy to succeed (United Nations Environment Programme, 2007, p. 458). Before a government introduces green taxes or similar initiatives, the GEO4 recommend creating a receptive atmosphere, which is likely to harness support from political parties and constituents. An educated and more involved population will be more amenable to policies that influence social attitudes and values (United Nations Environment Programme, 2007, p. 459).

Next, governments should learn from successful application of environmental policies around the world (United Nations Environment Programme, 2007, p. 461). Take

knowledge from these ideas and then replicate in their own country subject to cultural differences. The need for basic legislation is to reduce industry burden and any likelihood for corruption. It also enables a smoother transfer of legislation to developing countries. Developing countries often do not have the capacity to develop innovative policies, but may have the capacity to replicate proven solutions from developed countries if the design is simple enough (United Nations Environment Programme, 2007, p. 464).

2.5.4 Australia's role in assisting global food security

The IAASTD (2009c) conducted an assessment on each of the different regions of the world. Australia was classified part of East and South Asia and Pacific (**ESAP**) along with: Bangladesh, Bhutan, China, India, Laos, Maldives, Philippines, Palau, Solomon Islands, Timor-Leste and Vietnam.³¹ Out of the list of ESAP countries, the IAASTD classified the advanced industrial countries as Australia, New Zealand and Japan, with Australia and Japan as the two countries of food security significance (IAASTD, 2009c, p. 20). The less developed countries are generally prone to high incidence of natural disasters, erratic climate and have high human population to land ratio (IAASTD, 2009c, p. 9) which is likely to decrease production, worsen poverty and have other spill over effects (IAASTD 2009c, p. 11). Also research shows 'ESAP accounts for the largest number of environmentally displaced people in the world' (IAASTD, 2009c, p. 9).

Given this backdrop, the IAASTD examined the various agriculture challenges facing the region. Input intensive cultivation (e.g. in China, India and Australia) is a major cause of environmental degradation (IAASTD, 2009c, p. 10). The report finds 'even if corrective mechanisms are put in place through environmental policies, technological and institutional changes, the existing trends of degradation are likely to continue for some years before benefits are realised' (IAASTD, 2009c, p. 10).

Armed with this information, the IAASTD provide options for action for ESAP. The IAASTD accepts that it is farmers who make the production decisions in response to market-based price incentives (IAASTD, 2009c, p. 23). However the IAASTD do not suggest how these incentives should be set up, leaving that issue to each country to determine (IAASTD, 2009c, p. 23). The urgency of implementation is conveyed succinctly 'Without this commitment from key decision makers, the downward spiral towards

³¹ The list of ESAP countries can be found at table 1-1, page 3, IAASTD report, Volume II.

socioeconomic turmoil and ecological degradation may be very rapid and even irreversible' (IAASTD, 2009c, p. 12). Many of the options for action re-iterate the global recommendations such as: view the role of farmers as more than just producers of food, but as critical managers of ecosystems (IAASTD, 2009c, p. 13); and broaden the skill base of agriculture to include social, economic, political and legal knowledge (IAASTD, 2009c, p. 13). The WDR emphasised the opportunity for countries to invest in agricultural R&D and share their knowledge with developing countries. Example is made of Australia as a technologically distant dry land continent. Despite Australia's geography, Australia has one of the highest intensities of public R&D investment in the world.³²

The GEO4 also make comment on the need for 'lead market' countries. Lead market countries are those that lead in adopting innovation, 'they serve as a model for, and their technologies and related policies are often adopted by other countries' (United Nations Environment Programme, 2007, p. 474). Although Australia is currently not thought of as a 'lead market' in innovations, there is no reason why Australia cannot be a champion in agricultural R&D, considering Australia is a key food, feed and fibre producer and exporter. However for Australia to corner a lead market in agricultural R&D it will require constant promotion of environment measures and direct political intervention in the market (United Nations Environment Programme, 2007, p. 474). Australia already has geographical advantage in Asia-Pacific. There will need to be a long-term integrated approach with favourable framework conditions to encourage innovation (United Nations Environment Programme, 2007, p. 474). Lead market countries in agricultural R&D who would be willing to share their knowledge and technologies with other countries, will be key actors in solving the global problem of food insecurity.

It is necessary to state that of the sixty country stakeholders, only three countries, Australia, Canada and the US did not fully approve the report (IAASTD, 2009, p. 2). The reservation Australia put forward for not accepting the IAASTD report was due to the diverse range of observations and views, of which Australia did not agree to all. Australia did not elaborate further, perhaps one of the issues disagreed upon was the onus on Japan and Australia, as the only developed countries in ESAP to 'hold major responsibility for

³² More than 4 per cent of agricultural GDP.

financing [the] transformations' associated with greenhouse gas emissions (IAASTD, 2009, p. 21).

Overall, Australia agreed the IAASTD report was an important exercise and '... will be used for considering the future priorities and scope of AKST in securing economic growth and the alleviation of hunger and poverty' (IAASTD, 2009, p. 25). Since the report, this view has been re-iterated by the government, with Dr Simon Hearn,³³ one of the Australian experts involved in the IAASTD highlighting the importance of '... assisting other countries to address these issues through collaborative agricultural research, extension and training, given that many developing countries experience similar agricultural production and environmental challenges as Australia' (Pyper, 2008, p.144). Further, the Cutler (2008) review – *Venturous Australia* has listed agriculture and food security as one of five national priorities requiring immediate attention. Although Australia did not officially endorse the IAASTD report, it appears the Australian government have taken heed of its findings and are incorporating their options for action into future policy.

2.6 Conclusion

This completes the analysis of the three prominent documents, the IAASTD (2009) report, GEO4 (2007) report and the WDR (2008). It appears the unwritten meaning behind all the tactful prose is the inescapable conclusion that developed nations have mostly contributed to the destruction of the earth's fragile ecosystem and although industrial farming may currently feed the world, it cannot continue unfettered without jeopardising the planet and society. Governments the world over, but more so in developed countries, need to take responsibility for past actions and the world's future by implementing environmentally sustainable policies, fund agricultural R&D investment and enforce industry to internalise environmental costs. As stated earlier the intention of this thesis is to demonstrate how reforming the Australian RDTI can address the food security aspect of 'availability' through the supply side. Consequently of the three suggestions above this thesis will consider how to increase funding of agricultural R&D investment sustainably. Chapter Three will briefly introduce the role of tax expenditures within the existing tax system to achieve this purpose. Chapter Three will also discuss Australia's agricultural industry, R&D investment trends and funding arrangements.

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Chapter 3

TAX INCENTIVES

3.1 Overview of the chapter

Before embarking on Chapter Three, it is timely to re-state the key points addressed thus far with reference to the initiating document, the IAASTD Global Report (IAASTD, 2009a), which motivated this reform orientated socio-legal thesis. The IAASTD describes today's agriculture as multifunctional: 'the challenge is to simultaneously meet development and sustainability goals while increasing agricultural production' (IAASTD, 2009a, p. ix). It is this challenge the thesis is attempting to address via the tax system, using Australia as the primary case study.

Chapter One emphasised the need for these goals to be placed in the context of a '... rapidly changing world of urbanisation, growing inequities, human migration, globalisation, changing dietary preferences, climate change, environmental degradation, a trend toward biofuels and an increasing population' (IAASTD, 2009a, p. ix). It is acknowledged that the cumulative impact of these conditions '... are affecting local and global food security and putting pressure on productive capacity and ecosystems' (IAASTD, 2009a). Chapter Two examined some of the '... challenges ahead in providing food within a global trading system where there are other competing uses for agricultural and other natural resources' (IAASTD, 2009a). Consistent with Chapter Two findings, the IAASTD concluded that '... **AKST** (Agricultural Knowledge, Science and Technology) alone cannot solve these problems, which are caused by complex political and social dynamics, but it can make a major contribution to meeting development and sustainability goals. *Never before has it been more important for the world to generate and use AKST*' (IAASTD, 2009a, p. ix).

The purpose of Chapter Three is to introduce the concept of tax to global food security and in the context of Australian agriculture. It will briefly explain the role of tax expenditures in helping generate this much needed AKST by increasing investment in agricultural R&D in Australia, and thereby contributing to global food security. Chapter Three commences with an outline of the parameters under investigation, followed by analysis of the trends of public and private investment in agricultural R&D and the

recommendations found in the international literature. Next is an overview of Australian agriculture, including current rural funding arrangements, rationale and strategies for government intervention. Concluding this chapter is discussion of the Australian RDTI as the appropriate vehicle to bring to life some of the recommendations from Australian and international literature on addressing global food insecurity.

3.2 Boundaries of investigation

Pragmatism underpins this research in concert with inductive reasoning. The nature of pragmatists is to focus on feasible solutions to problems (Creswell, 2003, p. 11). Consequently this chapter will not canvas all possible incentives that could increase R&D investment in agriculture, and there will be limited discussion on tax expenditures. Consistent with pragmatic research, the starting point for this analysis is the intended consequences considered through the reflexive lens of social justice and political aims (Creswell, 2003, p. 12). The intended consequence of this research is to increase investment in Australian agricultural R&D via private sector investment without detriment to the wider social and political goals of environmental sustainability.

As mentioned in the Henry Review (Henry, 2008), there is no quest to invent more taxes or add greater complexity to the tax system. Australia already has 125 separate taxes in place, 99 of which are levied by the federal government (including 67 agricultural levies) (Henry, 2008, p. 10). To borrow the words of Dr Ken Henry (2008, p. 5) 'It makes economic sense to design the tax-transfer system in a way ... that achieves the intended outcomes with minimal complexity'. Consequently, the current RDTI will be the starting point for reform.

This pragmatic thinking is also reflected in the GEO4 report (UNEP, 2007, p. 464) which promotes the design of taxes upon the capacities of other stakeholders, including developing countries, to avoid over-sophisticated legislation. As stated in Chapter One, food insecurity is a global problem and will require global co-operation for a successful solution. The key to this solution will be sharing knowledge and best practice amongst developed and developing countries. The UNEP (2007, p. 464) acknowledge that often developed countries modify their legislation to such an extent it becomes '... almost incomprehensible' hindering the ability to transfer any successful policy instruments to developing countries. If the RDTI is to be effective in generating additional investment in agricultural R&D, ideally the tax design could be adopted in other countries (provided

they have an existing robust tax system) – without resorting to further bureaucracy or complexity. This is an important issue for three reasons which have been outlined by Pardey and Alston (2012, p. 31). Firstly, there is a growing divide between rich and poor countries in the amount of money spent on the conduct of and thus the innovations emanating from agricultural R&D. Secondly, there is a growing divergence between developed-country R&D research agendas and the priorities of developing countries, meaning fewer spillovers adaptable to suit developing country needs. Thirdly, the economic structure of developing countries can often impede multinationals from penetrating agricultural markets and coupled with weak IP and regulatory regimes reduces the profitability and desire to access their markets.

This thesis will not canvas agricultural trade, prices and subsidy policy reforms. It is acknowledged international trade plays a significant role in global food supply, the World Bank (2008, p.96) estimates such policies ‘... depress international commodity prices by about five per cent on average and suppress agricultural output growth in developing countries’. The WDR (World Bank, 2008) and Foresight (GOS, 2011) reports suggest removal of certain subsidies to correct agricultural policy and investment failures in order to accelerate growth and reduce poverty. Trade reform, however, is a contentious political issue and as such is beyond the scope of this thesis.

3.3 Trend of public and private investment in agricultural R&D

The approach of Chapter Three is to start with the conclusions reached in the IAASTD (2009), Foresight (GOS, 2011) and WDR (2008) reports to ascertain what role Australia can play in contributing to global food security. The key theme of these reports is the promotion of state intervention to increase public sector spending in agricultural R&D, because public funding can incorporate wider social objectives (World Bank, 2008; IAASTD, 2009). On average, investment in agricultural R&D is growing but at a decreasing rate (World Bank, 2008, p. 2). Approximately only 5 per cent of total global R&D is oriented to food and agriculture (Pardey & Alston, 2012, p. 24). The trend shows public agricultural R&D³⁴ is concentrated in a small circle: the US, Japan, China, India and Brazil (IAASTD, 2009a, p. 498). Only six per cent of the agricultural R&D investment in 2000 was conducted in the rest of the world (IAASTD, 2009a, p. 498).

³⁴ Public agricultural research includes research performed by government, higher education and non-profit agencies (IAASTD, 2009a, p. 499).

There has been a shift toward private agricultural R&D investment, which is estimated at 37 per cent, with almost all the R&D performed in industrialised countries (IAASTD, 2009a, p. 501). In the absence of state intervention, it is likely private firms will under-invest in this type of research because of its public good characteristics – non-rival and non-excludable (IAASTD, 2009a, p. 505). Many researchers agree (Evenson & Westphal, 1995; Scotchmer, 1999; Shavall and van Ypserle, 2001 cited in IAASTD(b) 2009, p. 512) that without complete appropriation of research benefits, private returns to R&D are smaller than economic returns (Pardey & Alston, 2012).

On first consideration it appears reliance on the private sector is not a sustainable solution. However the alternative of governments having to find additional funding in a time of competing priorities appears more fanciful. This reality is echoed by the Australian Rural Research and Development Council (**ARRDC**) (2011, p. 24) ‘The funds available to invest in rural RD&E (**Research Development & Extension**) are not limitless. Investments need to be efficient and effective in achieving results’. The Foresight report (GOS, 2011, p. 42) recommends that the world should not adopt ‘... *a priori* position on the utility or acceptability of any possible approaches for addressing future challenges’. This highlights the imperative of this thesis to look beyond what currently is, and explore alternate financially viable options.

Despite the apparent preference for increased public agricultural R&D, the reports state increasing R&D investment by for-profit firms will also be part of the solution (IAASTD(b), 2009, p. 497). The IAASTD recognise the diverging private sector involvement amongst OECD countries. In Belgium, Sweden and Switzerland approximately 80 per cent of total agricultural R&D spending was conducted by the private sector, whereas in Australia private sector investment was below 25 per cent. (IAASTD(b), 2009, p. 501). Australian research confirms these findings, Grant (2012) approximates 76 per cent of all agricultural R&D investment is funded by the public sector, contributing the remainder to the private sector. Despite Australia’s strong agricultural trade performance, private R&D spending is ten times less than in the US. This disparity may be explained because of the site specificity of agricultural R&D due to ‘... the biological nature of agricultural production ...’ (Pardey & Alston, 2012, p. 33). Each time the R&D needs to be modified to cater for the ‘... climate, soil types, topography, latitude, altitude, and distance from markets’ (Pardey & Alston, 2012, p. 33). Australia has a small

market size, distinct weather patterns and is geographically distant from the rest of the world; consequently it is not viewed a lucrative market for private sector agricultural R&D investment (Grant, 2012).

3.4 Australian agriculture

This section provides context of Australia's agricultural industry.

3.4.1 Overview of Australia's agriculture

Australian agriculture exhibits a few characteristics, a tropical North and temperate South, encompassing rain-fed and irrigated approaches, as well as broad-acre and intensive farming (Grant, 2012). Australia is the sixth largest country by land area, with approximately 52 per cent used for agriculture (Australian Bureau of Statistics, 2014; OECD, 2013). Lack of water and large stretches of old and infertile soils³⁵ are the main impediments to greater agricultural production (OECD, 2013). Agriculture contributes only about 3 per cent of GDP, however it has generated over \$30 billion annually for the past ten years (Australian Government, 2012). In human terms, Australian food production contributes to the diet of 60 million people and through research, development and training, approximately 400 million people annually (D'Occhio, 2011, cited in Australian Government, 2012). Finally, between 60 to 70 per cent of Australia's total agricultural production is exported (Grant, 2012).

Australia's geographic location combined with its competitive agricultural industry enable it to contribute significantly to the Asia-Pacific food bowl. The main customers for exports of agricultural commodities include Japan, China, the Republic of (South) Korea and Indonesia; as well as the US and the Middle East (ABS, 2010). Australia has benefited greatly from the rapid transformation of Asian economies and it is expected to lead to further demand for Australia's agricultural commodities (Brown, Laffan & Wight, 2008, p. 16). The adverse impact of climate change and water scarcity in other countries is likely to further expand Australia's export market (Brown 2009, p. 1). Australia's capacity to increase export markets in a sustainable manner is attainable. Currently Australia achieves its large contribution to global agriculture with only 3 per cent government support compared to the OECD average of 22 per cent government support (OECD, 2013; OECD 2008, p. 213; PMSEIC, 2010). "To the extent that subsidies are used, they are more effective when they are aimed at bringing about desired changes, rather than used to

³⁵ This refers to desert or semi-arid land.

support uncompetitive livelihoods' (IAASTD, 2009, p. 16). This highlights the significant scope the Australian agricultural industry has for greater promotion of RDTIs. Targeted tax incentives can encourage further agricultural production, using the latest R&D science, technology and farming practices, whilst minimising its environmental footprint, increasing export markets and thereby contributing to global food security.

3.4.2 Australia's investment in agricultural R&D

Introduced in Chapter One, *Venturous Australia* (Cutler, 2008) is the catalyst for which agriculture, food security and innovation catapulted to the fore of Australian politics. Two of its relevant recommendations are: revitalise the R&D tax concession³⁶ and establish a national rural innovation strategy. By rating 'Agricultural and food security' as one of five national priorities for innovation requiring immediate government attention, much research has followed (Cutler, 2008).

One of the first inquiries undertaken on food and innovation was The Senate Report on 'Food production in Australia' released August 2010. The Committee acknowledged that Australia is a key exporter of food and that growing consumption demands in neighbouring countries could lead to expansion of export markets (Senate, 2010, p. 2). Discussion was made of Australia's declining farmers' terms of trade³⁷ (Senate, 2010, p. 5); the importance of strong productivity and technological advancement; the decline in agricultural R&D and the diminishing proportion of the final sale price that raw commodities represent (Senate, 2010, p. 6). From the committee's recommendations, only one recommendation was accepted by the government, and it is not relevant to the thesis.³⁸

The next significant report prepared by the Prime Minister's Science, Engineering and Innovation Council titled 'Australia and Food Security in a Changing World' provided a comprehensive review of the issues. It pointed out that Australia's food security is inextricably linked to the political stability of its region; that if Australia's population reaches the forecast 35-40 million people, if climate change constrains food production, and investment in agricultural R&D continues to decline, there is every likelihood Australia

³⁶ This will be discussed further in Chapter Four.

³⁷ Prices paid for agricultural inputs are increasing faster than the prices received from sale of agricultural outputs.

³⁸ The four Committee recommendations to government were: 1) investigate foreign ownership of Agriculture; 2) request further research be undertaken on the current level of agricultural research; 3) examine patent data and; 4) request re-establishment of the Committee. In May 2011, the Australian government provided its response to the inquiry, agreeing to recommendation one only.

will import more food than it exports (PMSEIC, 2010, p. 1). These intersecting trends will threaten the stability of Australian food production, consumption, trade and national security.

According the (PMSEIC, 2010) report success of Australia's food production has been underpinned by research and development with ARRDC research estimating \$1.00 invested in rural R&D returned \$10.51 over 25 years (PMSEIC, 2010, p. 16). The report's proposed approach to food, mostly reiterates the conclusions of the international literature (GOS, 2011): efficient food production will require reduction in wastage; R&D will underpin productivity growth; the whole food chain must be involved and; international engagement is imperative (PMSEIC, 2010). It is not the purpose of this thesis to address all these possible recommendations to assist global food security. As similarly stated in Chapter Two, now is the time to narrow the content of the thesis to focus on R&D tax.

The report concludes that 'Australia's role will not be as a major provider of food for the world but Australia can, and should, be a major provider of technological capacity to support the global [food security] challenge' (PMSEIC, 2010, p. 29). Into the future international engagement will be pivotal to Australia's rural success, enabling Australia to address gaps in research capacity; provide access to new technologies and information; contribute its expertise and; most importantly attract more private investment from international agribusiness (PMSEIC, 2010, p. 49; OECD 2012).

The critical question is how can Australia stimulate additional private sector investment in agricultural R&D? Recommendation two of the report proposes aggregate agricultural R&D spending will need to increase to at least 5 per cent of gross value of agricultural production. Secondly R&D into specific Australian concerns need to be a priority and shared with the developing world (PMSEIC, 2010, p. 65). 'While the formula for achieving global food security may appear simple enough, the task of actually achieving food security is fraught with challenges' (PMSEIC, 2010, p. 29). The following Australian reports examine the current mechanics of how Australia funds its agricultural R&D and canvases possible alternatives, including use of the R&D tax incentive to generate additional private investment.

3.4.3 Current funding of agricultural R&D investment in Australia

Australian rural R&D is funded by the Commonwealth, States and private sector, with the Commonwealth providing 75 per cent of funds³⁹ (Productivity Commission, 2010). The main recipients of Commonwealth funding are Rural Research and Development Corporations (RRDC), Cooperative Research Centres⁴⁰ (CRC), Commonwealth Scientific and Industrial Research Organisation (CSIRO) and Universities. Each will be explained in turn. RRDCs are a co-investment program that relies on industry levies and matching Commonwealth contributions. RDCs are the largest and most influential rural R&D scheme in Australia, contributing 30-40 per cent of annual rural R&D (Core, 2009, p. 6). CRCs require collaboration between a university, an end user and other researchers. CRCs receive public funding via a competitive merit process, which must be matched by participants for a period of up to 10 years (Productivity Commission, 2010, p. 13). The CSIRO undertake scientific research, with 60 per cent of its funding going towards agriculture or food R&D (Productivity Commission, 2010, p. 17). Universities are responsible for the training of scientists and technologists, along with conducting agricultural research projects. Finally, the Commonwealth also funds rural R&D through industry-specific programs e.g. Fisheries Resources Research Fund or issue-specific initiatives e.g. Clean Energy Future and generally via the RDTI (Productivity Commission, 2010, p. 14)

3.4.4 Rationale for funding agricultural R&D in Australia

To this point, it has been demonstrated that the literature unanimously assert R&D investment in agriculture must rise. However it is fundamental to the progress of this thesis to briefly canvas whether federal government intervention is required and to what feasible extent in Australia.

The starting point for government to intervene is to fulfil the objectives of the *Primary Industries and Energy Research and Development Act* 1989 (Cth) which seeks to increase the economic, environmental and social benefits of agricultural production; achieve sustainability; make effective use of resources and; improve accountability of rural R&D expenditure. Investment in agricultural R&D has tremendous benefits, ranging from

³⁹ In aggregate the States have the largest engagement in rural research measured by facilities, workforce or program size, however the funding by States on rural experimental stations and extension services has been dwindling with the rationalisation of State agencies therefore majority of funding is now from the Commonwealth (Core, 2009, p. 7)

⁴⁰ CRCs are now part of the business.gov.au service.

improved environment; higher productivity and competitiveness; to cheaper and better quality food (Productivity Commission, 2010, p. 39). Empirical studies suggest rates of return from rural R&D are between 15 and 40 per cent (Sheng, et al., 2011, p. 1) and even estimated at up to 50 per cent by Australia's RRDC (Productivity Commission, 2010, p. 40). According to Pardey and Alston (2012), 'The rate of growth of investments in agricultural R&D and the uses to which those research dollars are put will be a pivotal determinant of long-term growth in the supply, availability and price of food over the coming decades.' Although the government currently funds approximately \$1.5 billion towards rural R&D annually, Australia's agricultural productivity growth has slowed from 2.2 per cent pre-1994 to 0.4 per cent a year, post-1994 (Grant, 2012, p. 56). This is concerning and may be traced to economic arguments, which stem from divergence between the private and social benefits of research (Productivity Commission, 2010, p. 38).

When a party undertakes research it is unlikely they will benefit exclusively, allowing third parties to benefit for free creating the concept of 'spillovers'. In some cases the social benefits may outweigh the private benefits because the research produced has public good characteristics that are neither excludable nor rival. Public goods are a global issue, how individual governments manage the issue impacts on the level of R&D undertaken by private investors. It is also a key reason why the international reports suggest greater reliance on public agricultural R&D to address global food insecurity. A 2008 Productivity Commission survey suggested that Australian spillover returns for private R&D has an average gross rate of approximately 50 per cent, internationally spillover rates can be as high as 130 per cent (Productivity Commission 2008 cited in Frontier Economics 2009, p.6). For a small economy like Australia, international spillovers are vital to agricultural success. Australia accounts for only two per cent of global rural R&D (Productivity Commission, 2010, p. 255) therefore if external R&D knowledge or technology is sourced from regions with different agroecological conditions it can at least lead to local adaptive research (Sunding & Zilberman, 2001).

The disparity between private investors' desire to only undertake R&D if they can fully appropriate the research results, to recoup research costs and maximise profits; is in stark contrast with society's needs to achieve socially desirable outcomes for all. It is this market failure in allocative efficiency that propels governments to intervene; and the fact that food

can be viewed as a life or death commodity blurs a seemingly straight-forward economic issue with a moral dimension.⁴¹ This situation creates a cogent basis for governments to implement policies to increase the amount and type of agricultural R&D undertaken (Alston, Pardey & Smith, 1999).

The Productivity Commission (2010, p. 45) suggests in addition to market failure there are other rationales worth discussing. Relevant to this thesis are: risk and uncertainty and indivisibility. R&D is inherently risky, costly and suffers from long lag times of up to 15 to 25 years between idea and productivity gain (Piesse & Thirtle, 2010, p. 3036; Pardey & Alston, 2012, p. 34; Grant, 2012, p. 56). ‘Success’ in a technical sense does not necessarily translate to success in a commercial sense – which unfortunately means no ability for the researcher to recoup costs. Risk and uncertainty constrains capacity for venture capital in Australian agricultural R&D, limiting the number of projects funded. The situation is exacerbated by the fact Australia has a small rural market. R&D that produces ‘information’ as the commodity is indivisible, therefore multinational agribusiness will generate R&D for markets with a larger retail, often this is the American or European market which have different agroecological conditions than Australia. If the private sector is left unchecked there is the potential locally conducted R&D necessary to mitigate Australia’s adverse climate change predictions will not be undertaken, leaving Australian farming in a precarious situation.

3.5 Type of government involvement

In summary there are several reasons for government to intervene in agricultural R&D – but the primary reason is to address spillovers, which can cause market failure – a global concept confronting all nations. The remainder of this chapter will evaluate different strategies the Australian government can implement to increase the amount and effectiveness of agricultural R&D. Research undertaken by Alston et al. (1999) considers four strategies:

- public and private research partnerships
- provision of public funds for agricultural R&D
- intellectual property rights
- tax expenditures: incentives for private R&D.

⁴¹ Moral issues are beyond the scope of this thesis.

Australia uses a combination of all the above. The first two strategies have already been discussed. ‘Public and private research partnerships’ refer to the various government funded programs already in existence, RDCs and CRCs. ‘Provision of public funds for agricultural R&D’ has also been considered and it was deemed that the Australian government already funds majority, thus given finite government budgets and competing national priorities, realistically it is difficult to foresee additional direct funding. Intellectual property (IP) relates to private investors’ ability to appropriate their R&D results; it combats spillovers (Frontier Economics, 2009). Due to the narrow tax nature of this thesis, IP will not be considered further. Relevant to this thesis is tax expenditures in particular ‘incentives for private R&D’.

3.5.1 Tax expenditures

A tax expenditure as defined by the Australian Treasury (2013, p. 2) ‘... results from a provision of the tax law that causes a deviation from the standard tax treatment that would apply to an activity or class of taxpayer – that is, from the benchmark tax treatment.’ This is similar to the ‘revenue forgone’ approach used by other OECD countries. There is much literature on tax expenditure analysis (Surrey, 1970; Duff, 2003; Sadiq, 2010) the purpose of this section is not to evaluate that established literature but to serve as an introduction to the more specific concept of the RDTI. Treasury (2013) accept the purpose of introducing a tax expenditure is to create an incentive for ‘... taxpayers to change their behaviour to utilise (or avoid) the new tax provision.’ The RDTI is about changing taxpayer behaviour – the government is seeking greater investment in R&D. This is part of the government’s broader innovation policy (Cutler, 2008).

As discussed by Duff (2003, p. 273), tax incentives are often criticised and compared with direct grants, because a tax incentive is really a form of indirect subsidy. Some of the criticisms are: tax incentives increase the tax legislation complexity; lack accountability and transparency, establish open-ended budgetary commitments; bypass traditional legislative controls and pass off spending programs as tax reductions. While these concerns are valid the Australian government (2013) does publish the Tax Expenditures Statement annually, which ensures the tax measure is scrutinised, publicly recorded and regularly reviewed. However it is conceded that tax incentives, in particular the refundable tax credit does add complexity to the ITAA97. However as will be explained in Chapter Four, the use of a tax credit over a tax deduction eliminates regressive effects, by decoupling the corporate tax rate

from the incentive. Moreover a tax incentive, in contrast to a grant, provides greater autonomy and discretion to the taxpayer to invest in R&D in the manner that suits them – other than the taxpayer registering for the RDTI, it is mostly self-assessed. This is not the case under a grant system. Therefore it is concluded that a tax expenditure is the appropriate mechanism to encourage greater R&D investment in agriculture. The next section will specifically address tax incentives and agriculture in Australia.

3.5.2 Incentives for private R&D

Before proceeding, it is important to note that all the Australian reports acknowledge there is a paucity of reliable data on R&D spending in agriculture hence some of the statistics quoted may appear rubbery (Productivity Commission, 2010, p. xxiii). This gap in information makes quantifying change difficult however it will not impact on the theory behind the proposal of a reformed RDTI.

This thesis does not intend to displace the use of any existing agricultural programs or funding, the focus of this thesis is finding alternative means to induce *additional* socially valuable research, which would not otherwise had been conducted by the private sector. The emphasis on ‘additional’ research is an area the Productivity Report states has not been sufficiently achieved by the RDC model – leaving a gap in the literature that this thesis intends to fill (2010, p. xxv). The following section will briefly explore the policy aspects of using a reformed RDTI as an incentive to induce additional socially valuable research undertaken by private investment.

Although Australian reports acknowledge the low level of private R&D investment in agriculture and the scope for improvement, only two reports: ‘International drivers of rural R&D’ (**Frontier Report**) and the ‘Productivity Report’ discuss possible incentives, which will be discussed below.

Productivity Commission Report

According to the Productivity Commission, it currently costs the Australian public sector approximately \$1.5 billion a year to fund rural R&D, which is nearly double the expenditure for R&D across the entire economy (2010, p. xxii). Putting this into an international perspective Australia’s public support is over three times the comparable figure in the U.S, 1.4 times that for Canada and almost three times that for New Zealand (Productivity Commission, 2010, p. 162). Majority of Australia’s funding is achieved via

the RDC model which provides industry with between 3 – 11 times the rate of assistance of the repealed R&D tax concession.⁴² To reduce this disparity in R&D assistance, government contributions under the RDC model would need to fall by approximately 90 per cent (Productivity Commission, 2010, p. 151). Given Australia's agricultural productivity is declining along with its investment in R&D, such a drastic cut in funding would be detrimental.

Table 3.1 below highlights the large difference between the quantum of funding currently provided under the RDC model to the rural industry verse the repealed R&D tax concession and the current RDTI (credit).

Table 3.1 Comparison of government contributions via tax incentives and RDC funding

	<i>Government contribution per \$100 of net industry contribution^a</i>	<i>RDC contribution relative to tax incentive</i>
	\$	multiple
Current R&D tax concessions		
Basic (125%)	8.11	11
Premium (175%)	29.03	3
Proposed R&D tax offsets		
Turnover ≥ \$20m (133%)	10.99	8
Turnover < \$20m (150%)	17.65	5
Matching contributions to RDCs^b	91.03	na
^a Net industry contribution after deducting any tax benefit provided through the R&D tax concessions or offsets (since such tax benefits are effectively government contributions to R&D). For example, at a 30 per cent company tax rate, the tax benefit amounts to 7.5 per cent of gross (pre-tax incentive) R&D expenditure under the basic (125 per cent) tax concession (0.30x0.25), and so gross R&D expenditure of \$108.11 is required to achieve a net industry contribution of \$100 (100/(1-0.075)). ^b Based on government and industry contributions to the RDCs over the period 2000-01 to 2008-09. Further details provided in table 7.2. na Not applicable.		
Source: Productivity Commission estimates.		

Assuming a 30 per cent tax rate, under the previous R&D tax concession, the taxpayer received a subsidy of approximately \$8 for every \$100 net they spend on R&D, under the premium R&D tax concession the taxpayer received a subsidy of \$29. Under the new refundable RDTI (>\$20M) the taxpayer receives approximately \$11 for every net \$100 of R&D investment, and under the non-refundable <\$20M RDTI the subsidy rises to approximately \$18. In comparison under the RDC model on average the industry

⁴² Under the R&D tax credit system, this rate will fall to between five and eight times the rate of assistance. Given primary producers are likely to have an annual turnover below \$20 million, the multiple of five times is most accurate. However this ratio still understates the true disparity between the RDC model and the R&D tax credit, because of differing eligible R&D definitions (Productivity Commission, 2010, p. 155).

corporation receives a subsidy of \$91 for every \$100 contribution made (Productivity Commission, 2010, p. 153). Overlay these monetary amounts with key legislative differences in the definition of eligible R&D and it becomes clear that the relative generosity of the RDC is probably understated because RDCs face a less restrictive definition (Productivity Commission, 2010, p. 153).

This demonstrates that sole reliance on the RDTI to generate rural R&D to the level achieved under the RDC system is not feasible, hence the focus of this thesis on achieving additional rural R&D. The Productivity Report (2010, p. 141) suggest overcoming this problem by possibly introducing a rural-specific R&D tax concession⁴³ however they dismiss the idea because it conflicts with the good tax criteria of equity since it would foster unequal treatment between industries.

Finally, the Productivity Report asserts if the private sector is to have a greater role in funding agricultural R&D it must be treated as an integral part of the overall framework. This will require a change in the mindset of policy makers to draft strategies which progressively increase the leadership and funding role of private parties (Productivity Commission, 2010, p. 124). The objective is for this attitudinal shift to spread to the greater public, ‘... finding a sweet spot between these competing considerations is not, in the Commission’s view, an unachievable goal’ (Productivity Commission, 2010, p. 139).

Frontier Report

The Frontier Report (2009, p. 54) suggests using financial mechanisms to affect the cost and benefit side of the innovation equation. The former could include direct R&D support geared toward diversity programmes, while the latter could involve innovation prizes. In common with the findings of the international reports the Frontier Report recognises the relationship between R&D, externalities and environmental issues. It suggested that ‘... externalities can be ... mitigated through R&D, notably through the development and adoption of new farm and resource management practices and technologies’ (Frontier Economics, 2009, p. 63).

Emphasis is also placed on widening policy efforts to address environmental issues, which if absent can lead to problems for R&D, firstly the wrong type of R&D may be delivered

⁴³ The coal R&D concession has been examined, but is not relevant to this thesis as it is based on the Coal Levy Act 1977 and a class ruling between Australian Coal Research Limited and the Australian Taxation Office (Davies, 2010, p. 2).

and secondly insufficient amounts of the right R&D may be delivered (Frontier Economics, 2009, p. 64). ‘The general principle is that addressing these issues of missing markets can stimulate the correct types of R&D ...’ (Frontier Economics, 2009, p. 64). Lessons of the past demonstrate the importance of closely integrating the investments of today and tomorrow with sustainable policy. This thesis asserts that R&D tax reform can assist in bridging this gap.

3.6 Conclusion

This thesis proposes reform to the RDTI to encourage additional private R&D investment in agriculture to address the global concern of food insecurity. The emphasis is on inducing more socially-worthwhile R&D per dollar of assistance. Such an approach would assist in addressing two of the seven action points outlined by the Commission on Sustainable Agriculture and Climate Change (2011): 1) Integrate food security and sustainable agriculture into global and national policies and; 2) Significantly raise the level of global investment in sustainable agriculture and food systems in the next decade.

A reformed RDTI can widen the base of potential investors in line with government priorities to address cross-cutting global issues. Such an all-embracing approach acknowledges that food insecurity transcends state and country borders, industries, economic policies and social demographics, therefore solutions to food security may arise from outside the traditional ‘rural’ box, but because these actors are not often part of a RDC they will miss out on generous funding and society could miss out on vital ideas. It is also recognised that the ‘RDTI must form part of a mix of policy initiatives and work in complementary fashion with other strategies’ (Hymel, 2006, p. 46) therefore the emphasis that the RDTI is not to replace existing rural R&D funding.

The Australian government have previously used tax incentives to pursue national priorities when necessary. Examples of this include the ‘Deduction for capital expenditure incurred in establishing grapevines’ which was introduced in 2001.⁴⁴ The now repealed section 40-550 ITAA97 allowed the capital expenditure of establishing grapevines to be written-off over four years. The government effectively singled out grapevine growers from other primary producers and provided them with accelerated depreciation in order to boost Australian grapevine production. Similarly commencing in 2007, the government

⁴⁴ New Business Tax System (Capital Allowances) Act 2001.

introduced ‘Capital expenditure for the establishment of trees in carbon sink forests’ which provided for a 100 per cent deduction for capital expenses associated in establishing trees in a carbon sink forest.⁴⁵ This was to help Australia reach its greenhouse gas emission target under the Kyoto Protocol.⁴⁶

As these examples demonstrate the tax system has the potential to alter the costs of production in different industries and therefore benefit particular types of investment or taxpayers over others. If the government wish to manipulate investment incentives to strategically achieve a different national allocation of resources, then it can be done. Chapter Four will examine in detail the current RDTI to ascertain the feasibility of the proposed R&D reform.

⁴⁵ Subdivision 40-J Income Tax Assessment Act 1997.

⁴⁶ United Nations Framework Convention on Climate Change (1997).

Chapter 4

THE AUSTRALIAN 'R&D TAX INCENTIVE'

4.1 Overview of the chapter

The purpose of Chapter Four is to critically examine the Australian RDTI⁴⁷ in terms of its alignment with policy objectives. Specifically this will entail legislative analysis of the RDTI, covering the design, wording and explanatory material; coupled with complementary analysis of underlying policy and government reviews to the extent it better informs understanding of the RDTI. The analysis is further constrained by the overarching research objective of assisting global food security.

Chapter Four is divided into six parts. The first part provides an overview of the chapter. Part two outlines the historical context of the evolution of Australia's R&D tax reform commencing in 1986. Part three considers the policy surrounding the introduction of the RDTI. Part four critically examines select provisions of Division 355 (ITAA97) which have relevance to the thesis topic of addressing food insecurity.⁴⁸ This part will also, to a limited extent, discuss and compare fundamental changes between Division 355 and the repealed R&D tax concession contained in sections 73B-Z (ITAA36). Parts five and six conclude the chapter with an evaluation of how effectively the RDTI embodies policy intent. The aim is to identify any gaps and/or misalignment between the RDTI and the government's innovation agenda within the context of assisting global food security. This will be a fitting segue into Chapter Five which will concisely examine various international R&D regimes and their underlying policies. Such policy discussion will provide the basis for Chapter Six which will compare and contrast the strengths and weaknesses of each international R&D regime to extract best practice and inform the drafting of a model Australian RDTI.

This chapter will focus primarily on the tax amendments affecting the *Income Tax Assessment Acts* 1936 and 1997, rather than the whole suite of changes involving amendments to the *Income Tax (Transitional Provisions) Act* 1997, *Income Tax Rates Act* 1986, *Tax Administration Act* 1953 and *Industry Research and Development Act* 1986 (**IRD86**). Ultimately the dual effect of

⁴⁷ Throughout the thesis the term RDTI will be used interchangeably with R&D tax deduction or concession. Under the ITAA36 the term used was R&D deduction or concession because it was an actual deduction. After the amendments, the R&D provision moved to the ITAA97 where the term RDTI was coined, because it had transformed into a tax offset.

⁴⁸ The Australian RDTI legislation is located in Appendix B.

these amendments was the insertion of Division 355 in the ITAA97 and Part III in the IRD86. Part III contains mostly administrative rules which are not directly relevant to this thesis. The scope of analysis of Division 355 is in relation to Australia's capacity to assist with global food security. The research will be broad incorporating R&D concepts beyond modern and traditional agriculture as we currently know it (e.g. nutraceuticals⁴⁹). It is difficult to predict what environmentally sustainable agriculture capable of feeding a growing population will entail in the future. Therefore it is prudent, and in line with pragmatic research, to promote R&D in all areas of food security, traversing all forms of agriculture, science, technology and entity (type and size). Only due to the brevity of this thesis will some areas of research be limited or excluded (e.g. R&D on software).

4.2 History of Australia's R&D tax reform

The R&D tax deduction was first promised by the Labour Prime Minister Mr Robert (Bob) Hawke during the 1984 election campaign. This was a product of Australian Science and Technology Council (**ASTEC**) recommendations in 1983 which advocated for a 150 per cent tax deduction for R&D (Australian Industrial Research and Development Incentives Board, 1985, p. 14). The Labour Party campaigned to 'collaborate with industry to provide appropriate incentives to raise total investment in *selected areas of socially constructive research and development* to the equivalent of other technologically advanced countries such as Canada and Sweden' (*italic added*) (Australian Industrial Research and Development Incentives Board, 1985, p. 18). It is interesting to note at the time 'socially constructive R&D' referred mostly to automating or introducing machinery to undertake manual tasks. The social concerns of the time related to workforce planning, such as job loss caused by sunset industries (Australian Industrial Research and Development Incentives Board, 1985). The concept of social global challenges such as food insecurity and environmental degradation were not then everyday concerns. However what Labour did recognise is that government budgets are finite, hence only 'selected areas' were targeted under the 150 per cent R&D deduction. Today the situation is the same, thus it is imperative governments tailor incentives to achieve their desired goal. The extent to which the 150 per cent R&D deduction fulfilled expectations is discussed later.

⁴⁹ A modern coined term to describe pharmaceutical companies developing a tablet that would contain all the necessary nutrients which could potentially feed the world population.

On 29 May 1985 details of the R&D concession were announced by Senator John Button. It was hailed a ‘... major breakthrough in the Government’s efforts to improve the level of industrial R&D in Australia’ (Button, 1985, p. 1). The aims of the R&D tax deduction were to:

- encourage greater practical and commercial R&D
- incentivise innovation and international competition, not subsidise it
- encourage greater private sector R&D investment (Button, 1985).

According to Grimes (1986) the design of the R&D tax deduction was informed by the then OECD and Australian Bureau of Statistics (**ABS**) definitions of R&D, and closely resembled the pre-existing Canadian tax concession. It was introduced as a temporary measure commencing 1 July 1985 and expiring 30 June 1991.

4.2.1 Reasons for R&D reform in Australia

At the time of the introduction of the R&D deduction, Australia was experiencing a shift ‘... away from protectionism and toward greater integration with the global economy’ (Lattimore, 1997, p. 92). The relevant Hansard transcripts refer to key reports of the time which highlight the extent of the R&D and tax reform challenge: Technology and Innovation Report by the Economic Planning Advisory Council (1986); The Reform of the Australian Tax System (Draft White Paper) (1985) and; Technological Change in Australia (Myers Inquiry) (1980). Another timely report was by the Australian Industrial Research and Development Incentives Board titled Future Government Support for Innovation: The Role and Relevance of Industrial R&D Incentives (1985). The main themes emanating from these independent reports are outlined below.

Low level of private sector investment

In Australia there had been a marked decline over time in private R&D investment (EPAC, 1986, p. 1). In comparison with other OECD countries, Australia’s ‘private sector R&D spending fell from 0.48% of GDP in 1968-69 to 0.22% in 1981-82’ (Button, 1985, p. 1) a trend the Hawke Government wanted to reverse. The Board which was tasked with providing advice to the Government to ‘... determine the most effective, efficient and equitable policies to promote research and development as a component of innovation in Australian industry’ agreed if investment in developing Australia’s technology remained a low priority in the private sector, the wealth and welfare of all Australians would be adversely affected (Australian Industrial Research and Development Incentives Board, 1985, p. viii).

The Board recommended the Government continue to take an active role in the promotion of innovation. In concluding EPAC (1986, p. 22) stated ‘The most important issue to be addressed is how to develop incentives to increase the private sector involvement in research and development’.

Very high public sector R&D expenditure

This trend was attributed to the importance of agriculture to the economy and the nature of its structure (EPAC, 1986, p. 1). In 1981-82, the government spent 87 per cent of the total R&D funds on agriculture. The government justified the bias expenditure on the reasoning that agricultural industry comprises small producers for whom individual research is uneconomic but for which research effort can yield a general social gain (EPAC, 1986, p. 8). It is interesting to observe the concept of social gain was recognised in the 1980s, it will be discussed more in later chapters.

Need for R&D incentives

The Board (1985, p. 7) recognised that over time successive governments had introduced various RDTIs, which resulted in un-coordinated assistance opportunities likely to confuse users, and were inefficient and ineffective from a public administration viewpoint. Although numerous inquiries had raised this, remedial action had been limited if any and ultimately the Board still believed that various measures were necessary to actively promote R&D. The Board (1985, p. xiv) recommended strongly drafted legislation, which was simple and easy to understand, to increase applicant certainty and stability to raise public confidence investing in R&D.

Australian attitude towards R&D

The Board (1985, p. 8) in describing Australia’s context for poor R&D investment believed there were major attitudinal, institutional and social barriers to change that had discouraged R&D in the private sector. Even the OECD at the time commented that ‘the somewhat remote Australian attitude to technology seemed to us to lead to a consistent undervaluation (and to some extent also a misinterpretation) of national technological achievements and possibilities’ (Australian Industrial Research and Development Incentives Board, 1985, p. 8).

Need to support small business

The Board (1985, p. 27) recognised that it is often small business, most needy of support because they have an inadequate income base to meet cash flow requirements of R&D.

Even with venture capital available small firms struggle to raise private finance for R&D. Despite the Board's (1985, p. ix) opinion that the R&D tax deduction was a significant initiative, it recognised the weakness in addressing the needs of innovative start up small firms and those seeking to rapidly advance their development or to undertake high risk projects. The Board (1985, p. xi) recommended that the needs of small firms be taken into account in establishing future complementary support mechanisms.

R&D with commercial and social objectives

EPAC recognised that social objectives were important, 'Council was particularly concerned that the right balance be struck between research with commercial potential and research which satisfies social and national objectives' (1986, p. iii). This need for R&D to meet social and national objectives was reflected in their recommendations for improvements in priority setting and co-ordination of government programs to increase performance and effectiveness of industry (EPAC, 1986, p. 22).

The Board (1985, p. iii) similarly recommended 'where appropriate, the provision of support to "public interest" projects [be] at a premium grant level'. It believed that R&D which industry will not undertake for reasons of risk, but have significant public benefit could be effectively supported by an additional premium grant (Australian Industrial Research and Development Incentives Board, 1985, p. xii). The Board (1985, p. xii) recommended that public interest project arrangements should be replaced by the provision of discretionary support to a level determined by the administering body, with ownership of IP rights being set on a case by case basis. Although this recommendation never breathed life, a similar concept is proposed in this thesis and is articulated in Chapter Six.

It is this balance between R&D for social need and R&D for technological gain that still mystifies governments the world-over. This thesis is about reforming the existing Australian RDTI to better address the nation's needs (in particular global food security). Briefly (ignoring the IP restrictions which have now been removed) it is recommended that the government determine National R&D Priorities which if a taxpayer chooses to invest in, will be rewarded with a higher rate of tax credit. By linking the RDTI to national priorities rather than creating a separate incentive for each industry identified in need, it minimises the economic distortions separate concessions can create.

Discussion in parliament during the debate of the Income Tax Assessment Amendment (Research and Development) Bill 1986 very much reflected the above literature at the time. Senator Grimes wished for Australian industry to acquire a 'technology culture' (Grimes, 1986), this was echoed by Mr Chynoweth who described Australia as suffering '... from a mentality of thinking our manufactured goods and our research must be inferior to overseas items' (Chynoweth, 1986). Mr Downer also described Australia's low R&D investment as '... attitudinal: The private sector really sees investment in research and development as discretionary' (Downer, 1986). Dr Theophanous, quoting from a speech in September 1984 by the Minister for Science (Mr Barry Jones) said:

There is still a strong anti-intellectual tradition running through Australian life and a feeling that we don't really need to rely on using our brains if we have the minerals. This ignores the striking decline in economic growth rates for nations with rich physical resources during the period 1955-1980 – The US, Canada, Australia and New Zealand dropped in pecking order while the nations with the most dramatic rises either lacked mineral wealth entirely or had only a little – Switzerland, Netherlands, Sweden, Japan and Singapore (Theophanous, 1986).

The lack of private sector investment was raised by Mr Downer who referred to the R&D tax deduction as taxpayer money compensating for the failure of the private sector to pursue R&D in the way that Australians could reasonably expect (Downer, 1986). Mr Downer quoted Australia's poor R&D statistic of 0.95 per cent of GDP spent on R&D verse the average 1.65 per cent by OECD countries (Downer, 1986). In particular Mr Downer acknowledged Australia's uniquely high public sector investment in R&D compared with OECD countries (Downer, 1986), he also commented on Australia's 0.7 per cent patent registration and Australia's net importer of technology status. Mr Barry Jones for the Labour government reiterated that business support for R&D in Australia is among the lowest of all industrial countries. The Bill aimed to redress the imbalance between basic and applied research. Australia's proportion of expenditure on basic research far outweighed that of Germany, USA, Japan and Great Britain because of the private sector's low contribution (Jones, 1986).

In defence of the private sector, it is acknowledged now and was recognised back then, that the economic climate for R&D investment in Australia was poor. Interest rates were

extraordinarily high along with wages costs, inflation, and declining terms of trade which made the cost of R&D investment in Australia unattractive. Coupled with the relatively new introduction of fringe benefits tax, capital gains tax and increase in company taxation to 49 per cent, Australia was not in a position to encourage investment in R&D. Even those multinationals that could afford R&D were undertaking it in their home country rather than Australia as it was more cost effective (Downer, 1986).

Another issue debated was the type of entity that could access the R&D tax deduction. Mr Downer noted how extremely low private R&D investment in agriculture was, which he contributed to the industry's small business dominance, which do not spend on R&D. Mr Tuckey also raised the importance of small business and even the unincorporated person which under the 1986 Bill was left out (Tuckey, 1986).

Ultimately it appeared both houses and sides of parliament supported the R&D tax deduction. In concluding the Hansard analysis; Mr Downer (1986) stated '... the real challenge for the Government is to stimulate investment by the private sector in research and development. The 150 per cent tax deduction will do exactly that.' Unfortunately it appears that goal was never successfully achieved. According to the Productivity Commission Report (2007), 'The transformative goals of past policies do not appear to have achieved their original aspirations'. These same issues: too much public R&D investment, not enough private sector investment, too much reliance on Australian natural resources, neglect of small business and unincorporated inventors, still plague Australia despite awareness of the challenges in the 1980s and the genuine intention to address them back then. Compounding this situation, Cutler (2008, p. 101) revealed there is a paucity of data surrounding the RDTI and inherent difficulty in accurately forecasting the effects of changes to a tax instrument. Therefore analysis of Powering Ideas (Carr, 2009) the Australian government's current ten-year framework for innovation is crucial to discerning if the lessons from past have informed a better innovation future.

4.3 Powering Ideas with National Innovation Priorities

'Powering Ideas: An Innovation Agenda for the 21st Century' is the government's attempt to make Australia more productive, more competitive, greener and to address national challenges such as climate change, security and disease (Carr, 2009, p. iii). It is outlined in the forward that Powering Ideas is not just about improving Australia but also 'contribut[ing] to making a better world – a prosperous, fair and decent world, in which everyone has the

chance of a fulfilling life' (Carr, 2009, p. iii). This statement suggests Australia recognises it has moral obligations as a first world international citizen. This is in line with the intention of this thesis, which is to examine how Australia can boost innovation in agricultural R&D, as part of Australia's contribution to achieving global food security.

It is noted that 'Australia's recent innovation performance has been uneven, and we have failed to keep pace with the rest of the world' (Carr, 2009, p. 2). The report is littered with statistics showcasing Australia's decline in innovation. Australia has slipped from once being ranked 5th to 20th in the World Economic Forum's Global Competitiveness Index' (Schwab, 2012, p.26) and is ranked 28th on capacity for innovation (Schwab, 2012, p.14). The reasons put forward by Carr for this decline is twofold, firstly government spending has dropped as a share of GDP and secondly business R&D spending has decreased (Carr, 2009, p. 2). Carr (2009, p. 3) recognises that the government's job is to plug the gaps in the system through which ideas might be lost. Various OECD and non-OECD countries were compared with Australia including SA, Japan and the USA⁵⁰ – all of which spend much more on R&D (Carr, 2009, p. 3). Despite these statistics, in agreement with the Productivity Report (2007), Carr (2009, p. 19) stresses, it can be misleading to rely on international comparisons given Australian's unique features such as small size, structure of economy, distinctive flora and fauna, distance from international markets, high proportion of small and medium enterprises (SMEs) and a highly successful public research sector.

Accepting that Australia's resources are finite, the government has adopted seven National Innovation Priorities of equal importance needing attention (refer to Appendix A). The sentiment behind these national priorities is to focus on problems Australia is uniquely placed to solve (i.e. dryland agriculture), and opportunities Australia is uniquely placed to grasp (i.e. role in Asia-Pacific). Carr (2009, p. 13) suggested Australia is ideally positioned to develop specific environmental solutions for export to the many countries that have similar ecologies, but lack technical capability. This is a critical role Australia can fulfil that would assist global food security in a sustainable manner. As Carr mentioned above, the government's role is to plug gaps. Having identified this 'food security' gap, it is asserted that the government can provide appropriate incentives in the nature of a reformed RDTI, aimed at the private sector to specifically encourage this agricultural R&D investment. Emphasis is on reforming the existing Australian RDTI, rather than inventing a new tax

⁵⁰ These countries will be examined in detail in Chapter Five.

measure. Powering Ideas and its predecessor Venturous Australia (Cutler, 2008) are about rationalising the innovation system. This concept can be traced back to the Hansard debates of the 1980s, which recognised numerous programs to support business innovation makes the situation confusing and inefficient. Australia currently has 155 programs in place (Carr, 2009, p. 29). Therefore by 2020 the government intends to have a national innovation system which clearly articulates national priorities and aspirations to make best use of resources; drive change and provide benchmarks against which to measure success (Carr, 2009, p. 9). The introduction in 2010 of the Annual Innovation System Report is a welcome start which will be discussed in section 4.6.

National Innovation Priorities

The National Innovation Priorities are designed to complement Australia's National Research Priorities⁵¹ – which guide public-sector research. However the amelioration of different national priorities, none of which have firm legal standing; coupled with a general lack of understanding as to how they interact, or which is more significant is highly perplexing. Although the innovation priorities are broad and designed not to be industry specific, there appears to be a disconnect between what Carr (2009) is intending the innovation priorities target – such as better use of finite resources; and how they are to be achieved. Two of the national innovation priorities specifically relevant to this thesis seek to increase the number of businesses investing in R&D over time; and increase the proportion of businesses innovating by 25 per cent (Carr, 2009, p. 26&43). Yet this does not necessarily guide businesses to undertake R&D in the areas Carr (2009) aptly describes as Australia's unique opportunities – there is no incentive.

In line with Powering Ideas, this thesis acknowledges the RDTI must target firms of all sizes and in all sectors (Carr, 2009, p. 45). However this thesis further proposes there should be overarching national R&D priorities to guide R&D investment in the critical sectors identified by the government. Carr accepts that the government must act responsibly to ensure the community's investment achieves explicit goals; must induce additional innovation that would not have been conducted without public support and they must have no adverse effects (Carr, 2009, p. 45). This thesis argues that in relation to the RDTI,

⁵¹ The National Research Priorities are: an environmentally sustainable Australia; promoting and maintaining good health; frontier technologies for building and transforming Australian industries; and safeguarding Australia (CW Parliamentary Debates (Hansard), HR, 5/12/2002, pp. 9751-9752; Australia's National Research Priorities: The National Research Priorities and the Associated Priority Goals (2003). From 1 July 2014, the National Research Priorities changed name to Strategic Research Priorities (DIISRT, 2012).

without one overarching list of innovation priorities outlining the critical R&D investment areas, the government will only fail in meeting community expectations. Even if those public expectations are not voiced or polled, they can be articulated through government reviews incorporating community consultations such as Venturous Australia (also known as the **Cutler review**) (Cutler, 2008).

The National Innovation Priorities list proposed by Dr Terry Cutler is aimed at areas that will leverage Australia's distinctive geography, economy and capabilities (Cutler, 2008 p. vii). One list is classified into public sector priorities: agricultural and food security, climate change mitigation and adaptation, population health, solutions in tropical environments, and applications to utilise broadband infrastructure (Cutler, 2008 p. vii). The other list is aimed at generating complementary private sector innovation in: resource industries, space and astronomy, finance and risk management, and marine industries (Cutler, 2008 p. vii). How these supposedly translate into the seven National Innovation Priorities of Powering Ideas is debateable.

It is necessary to emphasise that the thesis proposal to have a list of national R&D priorities would be specific to the RDTI. Both the Cutler and Carr reports stress the breadth of innovation. It is not just about R&D tax, but a national interconnected system of innovation, from higher education to successful patent registration. This thesis specifically isolates the RDTI component of Australia's broader innovation system to recommend reform which could improve its impact and ideally deliver an optimal RDTI that could assist with achieving global food security. The reform of the RDTI would continue to rationalise the innovation system, incentivise private sector investment, encourage more investment by SMEs, and finally direct R&D investment at specific opportunities which benefit Australia's national interest and are easily defensible to public scrutiny. Before recommending more detailed reform it is necessary to have an understanding of the current Australian RDTI.

4.4 Current legislation: Division 355 *Income Tax Assessment Act 1997* (Cth)

The RDTI is a product of the Tax Laws Amendment (Research and Development) Bill 2010 and the supporting Income Tax Rates Amendment (Research and Development) Bill 2010 receiving Royal Assent on 8 September 2011. According to the Explanatory Memorandum (**EM**) (2010), the key characteristics of the RDTI are: simplicity, greater certainty, more generous benefits and better targeted design. The RDTI commenced 1 July 2011 as the Government's key initiative to encourage R&D (AusIndustry, 2011). The RDTI replaces

the R&D tax concession and is jointly administered by Innovation Australia (assisted by AusIndustry⁵²) and the Australian Taxation Office (ATO) (AusIndustry, 2011a). According to AusIndustry (2011b) Innovation Australia is a board authorised under the IRD86 to administer various Commonwealth innovation programs. Innovation Australia delegates certain functions to AusIndustry such as the processing of registrations, education and compliance activities. The ATO determines whether the R&D expenditure claimed is eligible and undertakes advice and compliance activities. Before analysing select provisions of Division 355 in detail it is timely to provide an overview of the operation of the RDTI.

4.4.1 Overview of the R&D Tax Incentive

Under the 2008 Cutler review the now repealed R&D tax concession was examined and Cutler identified the following areas of concern. Firstly the tax concession mostly benefited companies earning a profit (which often is not the case with a start-up firm), secondly the tax concession varied with the tax rate, thirdly the Australian location of IP was hindering R&D, fourthly the requirements to satisfy the tax concession were too tight and finally the use of diverse innovation support programs to address shortcomings was making the concession ‘underpowered and overcomplicated’ (Cutler, 2008, p. v). Cutler (2008, p. v) proposed that the entire suite of R&D tax concessions be transformed and rationalised. The result was a new name, RDTI, and a new vision, which has been described as ‘... the biggest reform to business innovation support for more than a decade. It cuts red tape and provides a more targeted incentive for companies to invest in R&D’ (Commonwealth Parliament EM, 2010, p. 12). The RDTI is accessible to all industries. It offers two benefits to applicants; a 45 per cent refundable R&D tax offset for eligible entities with an annual turnover of less than \$20 million or; a non-refundable 40 per cent R&D tax offset for all other eligible entities (Commonwealth Parliament EM, 2010). Provided the entity is a corporation for Australian tax purposes, earns assessable non-exempt income, and is conducting the R&D for itself, they are generally eligible to apply (AusIndustry, 2011b). The application process involves the entity registering with AusIndustry and then claiming the tax offset in the company’s annual tax return (AusIndustry, 2011b). The whole process is governed by the principle of self-assessment, including whether the R&D activities undertaken meet the eligibility criteria. Only two types of R&D activity are eligible, core R&D activities and supporting R&D

⁵² From 1 July 2014, AusIndustry merged with various government agencies and is now part of Department of Industry, Single Business Service, but will continue to be referred to as AusIndustry in this thesis <http://www.business.gov.au/about-businessgovau/Pages/One-Website.aspx>.

activities (Commonwealth Parliament EM, 2010). The company's eligible R&D amounts are referred to as 'notional deductions' and they must exceed \$20,000 for an income year (Commonwealth Parliament EM, 2010). The RDTI program offers the option of advance findings to assist applicants in determining their eligibility (AusIndustry, 2011b). If the entity and its R&D activities meet all the eligibility criteria, the tax offsets will be applied directly to its company tax liability to reduce the amount of tax they have to pay. Depending on the entity's aggregated annual turnover and whether their tax liability is zero, this may result in a refund to the company of any unused offset amount or the option to carry forward any excess offsets to future income years (AusIndustry, 2011, p. 4).

According to the EM (2010, p. 8) the financial impact of the new RDTI over the first four years of operation is expected to be budget neutral because while there may be an increase in claims there should be an equal contraction in eligible applicants. Theoretically the long-term compliance costs should be lower than that of the repealed R&D tax concession due to the new provisions being shorter, clearer and simpler (2010, p. 9). Four different benefits have been replaced with one single tax offset resulting in legislation less than one third the length of the repealed provisions (2010, p. 9). Overall the RDTI is expected to induce more R&D because it provides greater support to SMEs by providing cash refunds which will improve company cash flow and increase business certainty by decoupling the RDTI from the corporate tax rate (Treasury & DIISR, 2010, p. 3).

One final remark, during the May 2014-2015 Australian federal budget (Australian Government, 2014) it was announced that the company tax rate would be reduced, consequently the RDTI offsets will be reduced by 1.5 percentage points to 43.5 for the refundable offset, and 38.5 per cent for the non-refundable offset, effective 1 July 2014. This is yet to become law.

4.4.2 Key provisions of the R&D Tax Incentive

Select provisions of Division 355 (ITAA97) which will be analysed as they relate to the purpose of this thesis are listed in Table 4.1 below.

Table 4.1 Select provisions of Division 355 (ITAA97)

Provision	Description
355-5	Object
355-25	Core R&D Activities
355-30	Supporting R&D Activities
355-35	R&D Entities
355-100	Entitlement to tax offset
355-105	Deductions under this provision are notional only
355-210	Conditions for R&D activities
355-400	Expenditure incurred while not at arm's length
355-700	Objecting to assessment of refundable tax offset
355-705	Effect of findings by Innovation Australia

For ease of reading each listed provision will be replicated in a table above its relevant commentary.

Subdivision 355-A Object

Table 4.2 Section 355-5 Object

355-5 Object	<p>(1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy.</p> <p>(2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).</p>
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The object clause, particularly subsection 355-5(1), is central to the government’s strategy to influence the direction of future R&D activity. Significant analysis will be spent on this provision as it sets the guiding tone for the design of the RDTI. Starting with the EM, at paragraph 2.7 (2010, p. 20) Parliament explains:

The rationale of the new R&D tax incentive lies in the potential for R&D activities to generate new information that **benefits the wider Australian economy**, while the risk of scientific and technological uncertainty may discourage them from taking place. A tax incentive that induces such R&D activities to proceed may provide a **public benefit** (in the form of the spread of **additional knowledge**) that ultimately exceeds the cost of the incentive.

The Senate released an Economics Legislation Committee (2010) report which further explored the concepts of ‘additionality’ and ‘spillover’. It emphasised the government’s desire to only subsidise R&D which ‘... leads to benefits that accrue to those outside the company and for which the company is not rewarded; a ‘spillover benefit’ (2010, p. 33). In this situation ‘the *social* benefits of the R&D exceed the *private* benefits’ (2010, p. 34). Regarding additionality, the Minister for Innovation, Industry, Science and Research

explained that the philosophy behind the changed RDTI objects clause was to make a big difference, to change company behaviour and change attitudes (The Senate, 2010, p. 35).

There has been some disagreement by industry entities with the introduction of the concepts ‘additionality’ and ‘spillover’ in the object clause via the EM. The concern was whether it introduced an additional ‘eligibility’ requirement (Deloitte, 2010, p. 3). The Cutler Review, actually pinpointed that one of the areas in need of attention are ‘areas whereby public innovation could spillover into complementary private sector innovative efforts’ (2008, p. vii). Thus it appears the whole idea behind the re-write of the innovation agenda is to encourage spillovers – whether it is in the public or private sector domain – because ultimately they should harmonise. The terms ‘additionality’ and ‘spillover’ have been raised in various studies including the Productivity Commission Report 2007 and Department of Industry, Tourism and Resources Report 2007. The word ‘additional’ was also referred to in the (2007) EM of the Tax Laws Amendment (2007 Measures No.5) Bill at paragraph 11.11:

The object provision for the R&D tax concession will reflect the intention to encourage companies to conduct **additional** R&D activities in Australia. Currently, the object provision for the R&D tax concession only explicitly refers to making companies more internationally competitive (emphasis added).

The Senate report (2010, p. 1) further stated:

The current scheme, however, does not make the best use of the money which taxpayers are foregoing. This bill seeks to reprioritise this support. An effective scheme will focus on generating *additional* R&D which brings broader benefits which *spill over* to other companies, rather than merely benefiting the company undertaking it...It is neither sustainable nor in the national interest that 60 per cent of the total government support for business R&D is consumed by 100 firms out of Australia’s two million enterprises (The Senate, 2010, p. 1).

As discussed in Chapter Three when the government spends taxpayer money it is crucial there is a valid economic or social rationale for the expenditure. In relation to Australian agriculture, these rationales are contained in the *Primary Industries and Energy Research and*

Development Act 1989 (Cth)⁵³ The National Research Priorities (now referred to as the Strategic Research Priorities), and specifically the Rural Research and Development Priorities (refer to Appendix A). The EM states (2010, p. 12) ‘The new R&D tax incentive is ... an opportunity to ensure that public support for business R&D is consistent with the underlying rationale for government intervention and delivers value for money for taxpayers’.

The emphasis on R&D that ‘... might otherwise not be conducted because of an uncertain return ...’ is vital to the challenge of food security. There is global consensus that business-as-usual practice will not suffice to address the myriad of concerns that emanate from this one challenge (OECD, 2013). The doubt cast on the use of GMOs and the reluctance to drive another green revolution leaves very little certainty of success for any entity willing to undertake R&D in food security (World Bank, 2008). In line with the EM ‘... the new R&D tax incentive focuses assistance on activities that are likely to deliver economy-wide benefits that would not be enjoyed in the absence of public support’ (2010, p. 12).

The next sentence of significance in subsection 355-5(1) is ‘... likely to benefit the wider Australian economy’. This echoes the reality of today’s global challenges; they are often inter-connected. This understanding needs to be reflected in solutions, a R&D solution that can address many challenges rather than just one, is more beneficial and sought after by governments than a variety of solutions which when combined can lead to more harm than good. The object clause confirms the government is seeking to maximise public benefits through the RDTI. The EM (2010, p. 21) refers to this public benefit as ‘... the spread of additional knowledge’ which is in line with the Australian Productivity Commission Report (2010) finding to induce additional socially valuable research, which would not otherwise have been conducted. Given the Productivity Commission (2010) found that RDCs were unable to induce additional research, the government’s attempt under Division 355 to achieve this additional knowledge via the private sector is cogently in line with the thesis objective.

The new objects clause is a noble shift from the previous objects clause⁵⁴ which was inserted in 2001.⁵⁵ According to the 2001 EM (p. 3) the objects clause was inserted to reflect the

⁵³ Section 3 – Objects.

⁵⁴ Section 73B(1AAA) ITAA36.

⁵⁵ *Taxation Laws Amendment (Research and Development) Act* 2001.

intentions of the 1986 Parliament which was ‘... to promote the development, and improve the efficiency and international competitiveness, of Australian industry by encouraging research and development activities’. Parliament later determined the courts were too widely interpreting the R&D tax concession, therefore required better guidance ‘... to limit the parameters of the concession to expenditures in respect of the defined activities’. The Productivity Commission Report (2007) specifically discusses the problem that can occur when R&D programs are ‘... not cast in terms of the realisation of outcomes related to valid rationales, like spillovers ...’ If Parliament emphasise business goals, such as international firm competitiveness, then it is difficult for governments to appraise. It is mindful to recall that the previous R&D tax concession objective was intended to be read in conjunction with the section 39D requirement in the IRD86 Act to ensure each approved R&D project was ‘for the benefit of the Australian economy’. This sentence very much echoes subsection 355-5(1) wording of ‘benefit the wider Australian economy’.

A cursory examination of global affairs explains the difference in objects clause from 1986 to 2011. During the 1980s globalisation was in its infancy and Australia was yet to prove itself in the field of R&D on the international stage. Fast forward to 2011 and Australia is a recognised leader in select industries, however today the after-effects of globalisation have brought cross-cutting social and environmental issues to the fore. Consistent with international literature the government recognises these issues require global solutions, and Australia as a world citizen has a role to play.

Subdivision 355-B Meaning of R&D activities and other terms

Integral to the operation of the RDTI is the meaning of R&D activities. According to the EM (2010, p. 7) the targeted definition of eligible R&D activities is to ensure the RDTI ‘... is available in circumstances consistent with the underlying rationale for government intervention and that it delivers value for money for taxpayers’.

Table 4.3 Section 355-25 Core R&D Activities

355-25 Core R&D activities	<p>(1) Core R&D activities are experimental activities:</p> <p>(a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that:</p> <ul style="list-style-type: none"> (i) is based on principles of established science; and (ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and <p>(b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).</p> <p>(2) However, none of the following activities are core R&D activities:</p> <p>(a) market research, market testing or market development, or sales promotion (including consumer surveys);</p> <p>(b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:</p> <ul style="list-style-type: none"> (i) discovering deposits; (ii) determining more precisely the location of deposits; (iii) determining the size or quality of deposits; <p>(c) management studies or efficiency surveys;</p> <p>(d) research in social sciences, arts or humanities;</p> <p>(e) commercial, legal and administrative aspects of patenting, licensing or other activities;</p>
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	<p>(f) activities associated with complying with statutory requirements or standards, including one or more of the following:</p> <ul style="list-style-type: none"> (i) maintaining national standards; (ii) calibrating secondary standards; (iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things; <p>(g) any activity related to the reproduction of a commercial product or process:</p> <ul style="list-style-type: none"> (i) by a physical examination of an existing system; or (ii) from plans, blueprints, detailed specifications or publically available information; <p>(h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):</p> <ul style="list-style-type: none"> (i) the entity (the <i>developer</i>) for which the software is developed, modified or customised; (ii) an entity *connected with the developer; (iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.
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The new definition of core technology is an amalgamation of key sentences from the repealed legislation,⁵⁶ but in clearer and more concise English. As such the definition is of similar principle but with more focus on generating new knowledge (paragraph 355-25(1)(b)), which ties back to section 355-5 (objects clause) and the government's publicised

⁵⁶ Sections 73B(2B) and 73B(1) ITAA36.

national priorities. The Australian definition is also more refined than the Frascati (OECD, 2002) and Oslo Manual (OECD, 2005) definitions (contained in Appendix A). While incorporating some of their key words (i.e. systemic), section 355-25(1) provides greater guidance and detail for Australian taxpayers on what constitutes experimental activities.

For applicants; the actual qualities to demonstrate are mostly the same. The core R&D activity needs to be experimental, with outcome unknown and applies systematic progression. The Public Hearing Report (Treasury & DIISR, 2010, p. 11) specifically addresses concerns regarding the difference between the repealed and new R&D definition stating that no valuable court precedent will be lost because the definition was never tested in courts. It is possible with the introduction of advance findings, the lack of definitional court precedent could remain as applicants seek private certainty. Consequently the likelihood of judicial interpretation will be diminished, strengthening the government's estimate of a neutral budget impact and lower ongoing compliance costs (Commonwealth Parliament EM, 2010, p. 8).

In regards to the removal of words 'high levels of technical risk'⁵⁷ and 'appreciable element of novelty'⁵⁸ the Public Hearing Report (Treasury & DIISR, 2010, p. 11) suggests that although the words have been physically removed from the legislation their intention remains. Apparently 'high level of technical risk' is embodied in paragraph 355-25(1)(a) in that any activity which addresses a knowledge gap that warrants the application of scientific method would fit the repealed criteria. Equally the term 'appreciable element of novelty' is supposedly reflected in paragraph 355-25(1)(b) for the purpose of generating new knowledge.⁵⁹ This legislative design appears to conflict with Parliament's statement "The new definition replaces redundancies, ambiguities, *embedded concepts* and overlapping tests with a clearer statement of what core R&D activities are' (italics added) (Treasury & DIISR, 2010, p. 11). It appears Parliament has achieved its shortened legislation and plain English by intentionally leaving 'ambiguous' words out, and instead relying upon extrinsic material to import these more difficult concepts back into the new legislation. If reading the legislation on its own, the words cannot speak for themselves, then the likelihood of uncertainty arising is great.

⁵⁷ Paragraph 73B(2B)(b) ITAA36.

⁵⁸ Paragraph 73B(2B)(a) ITAA36.

⁵⁹ Additional guidance is to be found in the EM at paragraph 2.18.

The EM (2010, p. 21) also provides guidance at paragraphs 2.11, 2.13, 2.16, 2.18, 2.19 and 2.20 which help significantly flesh out the meaning of core R&D activities. Paragraph 2.11 defines ‘experiment’ although the word is not actually used in the new legislation, it can be assumed reference is to ‘experimental activities’ in subsection 355-25(1). Paragraph 2.13 explains the meaning behind paragraph 355-25(1)(a) by importing the term ‘scientific method’⁶⁰ despite that term not being used in the new legislation, as establishing a ‘threshold for the knowledge gap and the degree of uncertainty that an eligible experiment must seek to address’. Paragraph 2.16 defines ‘new knowledge’ a term that was in the repealed legislation⁶¹ as meaning ‘knowledge not already available in the public arena at the time the activities are conducted, in the relevant technology, on a reasonably accessible worldwide basis’.⁶² In line with the Public Hearing Report, paragraph 2.18 imports the word ‘novelty’ as found in the repealed legislation by inferring that any idea which requires the scientific method to validate must naturally employ a degree of novelty.

Overall the plain language of subsection 355-25(1) contains numerous hidden meanings that make its application quite clumsy with its constant cross-references to extrinsic material and then ultimately back to the repealed legislation. Ironically paragraphs 2.19 and 2.20 of the EM (2010, p. 23) state:

... not all of the steps in the scientific method will constitute experimental activities. Nor will an activity fall within the scope of the experiment merely because the experiment cannot take place without it. ... The scope of eligible core R&D activities might be narrower than what the firm views as its R&D ‘project’.

This suggests that even Parliament anticipated there would be a difference of opinion between the legislative intent of section 355-25 and the practical understanding shared by applicants. Complicating this misunderstanding will be the actions of ATO and AusIndustry officers who apply the legislation and to some extent interpret the legislation.

The Senate Report (2010, p. 42) observes that the definition of ‘R&D activities’ had ‘... received majority of attention in submissions ... and at the public hearings held’. However

⁶⁰ Used in repealed legislation subparagraph 73B(2B)(b)(ii).

⁶¹ Subparagraph 73B(1)(a)(i) and carried into the new legislation (paragraph 355-25(1)(b).

⁶² The term ‘new knowledge’ was not defined in the repealed legislation or accompanying EMs despite being used in subparagraph 73B(1)(a)(i).

their conclusion was that the concept had not really changed from the repealed legislation and it was mostly existing beneficiaries of the old R&D concession that were vocal on the issue.

Subsection 355-25(2) outlines the exclusions to the definition of core R&D activities. Previously the majority of these exclusions were found under subsections 73B(2C) and (2A) of the ITAA36 and the wording has remained mostly identical. Under the re-write of the R&D concession, the fifteen previous exclusions are reduced to eight, thereby arguably enlarging the definition of R&D activities (core R&D activities) to include the following:

- quality control
- the making of cosmetic modifications or stylistic changes to products, processes or production methods
- the making of donations
- pre-production activities such as demonstration of commercial viability, tooling-up and trial runs
- routine collection of information, except as part of the research and development process
- preparation of teaching
- specialised routine medical care.

However on closer inspection it is clear that for these activities to fit within core R&D, they will still need to meet the initial threshold of ‘experimental activities’ under paragraph 355-25(1). For example ‘the making of a donation’ appears an unlikely experimental activity. According to Treasury the new definition ‘... improves **certainty** by removing contradictions, focusing clearly on underlying experimental activities and using plainer language’ (The Senate, 2010, p. 47). Whether the government has achieved certainty is questionable given the reliance on underlying assumptions of what ‘experimental activities’ actually mean. Until there is judicial consideration of the term under the new legislation, it is unknown whether this definition is any clearer than the repealed definition.

Bearing in mind subdivision 355 is part of the wider tax law, companies can deduct some of the remaining excluded expenses elsewhere, including under ‘supporting R&D activities’ (which will be discussed later). Therefore only one exclusion warrants further discussion.

355-25(2) However, none of the following activities are **core R&D activities**:

...

(d) research in social sciences, arts or humanities;

Paragraph 355-25(2)(d) is directly taken from the repealed legislation.⁶³ Of particular interest is the exclusion of ‘research in social sciences ...’ Given the opening remarks of Dr Terry Cutler in *Venturous Australia* ‘... we must be alert to the hidden realities of business innovation and the **changing face of innovation** that is no longer the province of the lone inventor or adept technologist’ (emphasis added) (Cutler, 2008) it appears remiss to exclude research in social sciences. The Productivity Commission (2007, p. 93) also noted that when describing innovation, often excessive weight is placed on technological innovation, which in Australia ‘... has played a relatively attenuated role in contrast to adoption of non-technological innovation’ as found in the services sector. The difficulty in extending the eligibility of the RDTI to social research ‘is not that the activity is not intrinsic to innovation; but that it is so entwined with innovation that it would be hard to implement a policy that did not subsidise activities that would have happened anyway’ (Productivity Commission, 2007, p. 387).

According to the Frascati Manual (OECD, 2002, p. 40) social sciences (referred to as study to prepare the way for decisions by policy makers in government, industry or trading enterprises) are a borderline issue.⁶⁴ Usually such studies employ established methodologies but sometimes they create or modify methodologies, which require an appreciable amount of research which should be included in R&D. The only reason social sciences appear to be excluded is because of the problem evaluating the appropriate share of R&D. However such thinking may be challenged as international literature and actions lead the way in fostering innovation to address social challenges.

The OECD’s Committee for Scientific and Technological Policy has been holding Innovation Workshops around the world to make ‘... the case that the social-dimension is no longer peripheral to science, technology and innovation, but a central factor for driving research funding decisions and shaping outcomes’ (OECD, 2011, p. 3). It appears the concept of social science as discussed in the 2011 *Fostering Innovation to Address Social*

⁶³ Paragraph 73B(2C)(f) ITAA36.

⁶⁴ There is no Australian court precedent on the repealed paragraph 73B(2C)(f) ITAA36 to provide domestic guidance on social science.

Challenges Workshop Proceedings (OECD, p. 7), is changing from that stated in the Frascati Manual (OECD, 2002). Research and innovation are regarded as the driving forces of growth. Yet the divide between economic growth and human well-being is increasing. There is a need to reconcile these two trends to ensure innovation also addresses social challenges (both local and global). Realising the potential for social innovation to bring together growth and social value at the same time is a valuable and achievable long-term goal. To live this principle will require the government to expand the RDTI to 'social entrepreneurs' to help fund research into social sciences that will develop critical knowledge in cross-cutting areas identified as national priorities to better harness science and technology. It appears the key message of the OCED proceedings is '... entrepreneurs, firms and public research actors [need to] recognise that modern economic growth must go hand in hand with societal progress' (OECD, 2011, p. 3). Other governments are not shying away from this new global phenomenon called the 'social entrepreneur' with the Obama Administration establishing the Social Innovation Fund committed to supporting innovative approaches to solving social problems (The Whitehouse, 2009). It is acknowledged that the Social Innovation Fund is a grant program, unlike the US RDTI, but the fact Congress are publicly marrying 'innovation' to the word 'social' rather than just 'science' provides optimism for attitudinal change.

The Australian Innovation Report (DIISR, 2011, p. 10) comments on the significance of Australia's capacity to innovate to address urgent issues such as climate change and food security, it proposes '... innovation can be harnessed as a tool to address the most intractable social and environmental problems'. However the report does not suggest how. The question this thesis seeks to address is how to commandeer innovation investment in the direction of pressing national concerns. In relation to the RDTI and global food security, it is proposed this can be achieved by reforming the current RDTI and linking it to national R&D priorities. The GE Global Innovation Barometer 2011 (DIISR, 2011, p. 10) found that the majority of businesses believed innovation not only contributes to a competitive economy, but can unlock future social prosperity and environmental quality. The Innovation Report (DIISR, 2011, p. 14) states businesses are the major investors in innovation for economic development and have quite limited investment in social and environmental concerns. Yet it seems logical to encourage businesses to invest in the social and environmental realms, bringing with them economic thinking and efficiencies. These

observations support the thesis proposition that focussing on the RDTI which is a business innovation tool is appropriate as a means to potentially address social challenges.

In Australia, policymakers are beginning to recognise the role business can play in social innovation (DIISR, 2011, p. 110). Although still playing catch up with overseas initiatives, the government has established the Social Enterprises Development and Investment Funds – targeted at seed finance to growth-stage social enterprises; the Community Development Finance Institutions Pilot – aimed at providing finance to disadvantaged individuals and; through reform of the not-for-profit sector (DIISR, 2011, p. 115 & 116). These changes can be traced to evolutionary economics,⁶⁵ in which entrepreneurs have played a vital role in innovation (Productivity Commission, 2007, p. 94). It is the diversity of entrepreneurs that spur novel innovating, transcending technology to new business models, dynamic industries, new markets and promotion of societal change (Hine sub. DR126; Scott-Kemmis sub. DR183 from Productivity Commission, 2007). By excluding social research⁶⁶ the government is perpetuating the very observance Dr Terry Cutler (Cutler, 2008, p. ii) made in concluding Australia would have felt the effect of complacency and stalling living standards with its lacklustre innovation policy, had it not been for Australia’s natural resources. The introduction of the RDTI was an opportune time for Australia to not only revitalise old tax strategies but to lead the world in innovative societal progress.

Table 4.4 Section 355-30 Supporting R&D Activities

355-30 Supporting R&D activities	<p>(1) Supporting R&D activities are activities directly related to *core R&D activities.</p> <p>(2) However, if an activity:</p> <p>(a) is an activity referred to in subsection 355-25(2); or</p> <p>(b) produces goods or services; or</p> <p>(c) is directly related to producing goods or services;</p>
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⁶⁵ Further reading can be found on Joseph Schumpeter’s theories, in particular Shionoya, Y 1997, *Schumpeter and the Idea of Social Science: A Metatheoretical Study*, Cambridge University Press, New York.

⁶⁶ Paragraph 355-25(2)(d).

	the activity is a <i>supporting R&D activity</i> only if it is undertaken for the dominant purpose of supporting *core R&D activities.
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The concept of the RDTI supporting activities (subsection 355-30(1)) is similar to the repealed legislation⁶⁷ save for two differences. Firstly the new legislation separates ‘core R&D activities’ from ‘supporting R&D activities’ by using two clauses, whereas the repealed legislation had both types of activities contained in the one subsection. This deliberate drafting helps ensure readers are aware their activities either fit into subsection 355-25 or 355-30, hopefully reducing confusion and abuse of interpretation. It is observed from the Senate Report (2010, p. 53) that ‘Treasury intentionally tightened the supporting R&D activities clause in the RDTI to combat the government cross-subsidising business-as-usual activities. According to the DIISR, ‘... in some cases directly related supporting activities amount to 90 per cent of tax concession claims’ (The Senate, 2010, p. 53).⁶⁸

It is subsection 355-30(2) which attracted much controversy from public submissions (The Senate, 2010, p. 53). This subsection enables activities that have been excluded under subsection 355-25(2) as a core R&D activity and/or does not fit under the general subsection 355-30(1) of supporting R&D activities, to be re-considered an eligible supporting R&D activity under one of three options **and** ‘... only if it is undertaken for the dominant purpose of supporting core R&D activities’. This is the second deviation from the repealed legislation. Under subsection 73B(1) ITAA36, Parliament only provided two options for an activity to be eligible R&D: it either met the criteria for ‘systematic, investigative and experimental activities’ **or** was ‘other activities that are carried on for a purpose directly related ...’ Greater guidance was then provided under subsection 73B(2B) and as per subsection 73B(2C) exclusions only applied in relation to core R&D activities.

Under the re-drafting, the ‘purpose test’ (paragraph 73B(1)(b)) has been replaced with a ‘directly related’ test. According to the Public Hearing Report (Treasury & DIISR, 2010, p. 12) ‘This test is in similar terms to the test in the existing law but is expressed without referring to purpose’. Again this seems contradictory to the government’s claim that the RDTI will remove ambiguity and embedded concepts (Treasury & DIISR, 2010, p. 11).

⁶⁷ Paragraph 73B(1)(b) ITAA36.

⁶⁸ Future research could examine whether the re-drafting has reduced excessive claims.

Unless there is judicial consideration of ‘directly related’ under the RDTI, applicants will need to resort to authorities on the repealed legislation for guidance. The likely case to refer to is *Re Charles Ife Pty Ltd and Industry Research and Development Board* (1995) 39 ALD 635 (*Charles*). In *Charles* the issue came down to what was the ‘dominant purpose’ of the project – was it for R&D purposes or commercial? Although ‘dominant’ is not present in the repealed legislation it appears the judiciary imported the word into their analysis of ‘purpose directly related’.⁶⁹ Based on this understanding, the government is correct to say that the ‘directly related’ test and the ‘purpose’ test are similar because the judiciary will have no other way to decide a case without reference to dominant. Consequently subsection 355-30(2) which does explicitly use the term ‘dominant purpose’ will merely replicate the test to be applied under subsection 355-30(1). According to the Public Hearing Report it is believed that ‘Many firms will only be subject to the ‘directly related’ test’, however if the dominant purpose test applies as per subsection 355-30(2), ‘... an activity that passes the test of being for the dominant purpose of supporting core R&D will, in most cases, because of that conclusion also clearly be directly related to the core R&D, so the ‘directly related’ test will not impose additional compliance costs’ (Treasury & DIISR, 2010, p. 12).

Between the different terms used in section 355-30 and observing the language in the Public Hearing Report ‘The Government accordingly decided to **only** apply a ‘directly related’ test for supporting activities that were neither on the exclusions list nor production activities ...’ (emphasis added) (Treasury & DIISR, 2010, p. 12) Parliament creates the impression that there are two tests, when judicial authority demonstrates otherwise. In agreement with the Public Hearing Report, section 355-30 will not lead to additional compliance costs. However it does create unnecessary confusion and uncertainty, when ultimately the only test that will apply to supporting activities is the ‘dominant purpose’ test. By referring to two tests it gives the fallacy that the ‘directly related’ test will probably be easier to meet than the ‘dominant purpose’ test – but as it currently stands the ‘directly related’ test will most likely be of the dominant purpose kind under existing authority until new judicial precedent is established.

⁶⁹ Other relevant cases are: *Re DBTL and Innovation Australia* (2013) 137 ALD 88; *Re RACV Sales & Marketing Pty Ltd and Innovation Australia* (2012) 129 ALD 32; *Industry Research & Development Board v Coal & Allied Operations Pty Ltd* (2000) 101 FCR 405 and; *Re Applicant and Industry Research and Development Board: Case 8/2000* (2000) 59 ALD 541.

The EM (2010, p. 23) defines dominant purpose as the ‘prevailing or most influential purpose’ in line with judicial authorities.⁷⁰ The EM makes it clear that the dominant purpose test will apply to production activities and those on the exclusions list. Implicit in the dominant purpose test is the realisation that activities can have more than one purpose, thus regard is had to the overall circumstances within which the activity is conducted. ‘A critical consideration will be the extent to which the activities in question also achieve outcomes (particularly production or other commercial goals) over and above assisting the conduct of the core activities, and the importance of those outcomes’ (Commonwealth Parliament EM, 2010, p. 24).

Understandably industry concerns were attentive to this opportunity to possibly remove any dominant purpose test, as Mr Serge Duchini of Deloitte (The Senate, 2010, p. 55) pointed out when ‘... businesses undertake activities, they try to undertake activities in the most efficient way by piggybacking them together and achieving multiple outcomes that will achieve an R&D end and maybe a commercial objective ...’ Industry hope was pinned on adopting a ‘substantial purpose’ test but this was regarded as ‘ambiguous and its use would not be consistent with the policy objectives that are sought to be achieved’ (The Senate, 2010, p. 55). In concluding, the Senate Report (2010, p. 56) suggested reviewing the ‘dominant purpose’ test after two years.⁷¹ The effectiveness of this recommendation is questionable, given there are limited court cases on the various definitions of R&D activities/supporting R&D activities since the R&D concession was introduced, highlighting the unlikelihood of judicial interpretation within the next two years. Coupled with the strong push for advance rulings, it is likely section 355-30 will remain unsettled law.

⁷⁰ *Federal Commissioner of Taxation v Spotless Services Ltd* (1996) 141 ALR 92.

⁷¹ Further research could follow on this matter.

Table 4.5 Subsection 355-35 R&D entities

355-35 R&D entities	<p>(1) Each of the following is an R&D entity:</p> <ul style="list-style-type: none"> (a) a body corporate incorporated under an *Australian law; (b) a body corporate incorporated under a *foreign law that is an Australian resident. <p><i>Note: Each of the above paragraphs extends to a body corporate acting in its capacity as trustee of a public trading trust (see subsection 102T(9) of the Income Tax Assessment Act 1936).</i></p> <p>(2) A body corporate incorporated under a *foreign law that:</p> <ul style="list-style-type: none"> (a) is a resident of a foreign country for the purposes of an agreement in force between that country and Australia that: <ul style="list-style-type: none"> (i) is a double tax agreement (as defined in Part X of the <i>Income Tax Assessment Act 1936</i>); and (ii) includes a definition of <i>permanent establishment</i>; and (b) carries on business in Australia through a permanent establishment (within the meaning of that definition) of the body corporate in Australia; <p>is an <i>R&D entity</i> to the extent that it carries on business through that permanent establishment.</p> <p>(3) However, an *exempt entity cannot be an <i>R&D entity</i>.</p>
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The definition of R&D entity⁷² is much broader under the new legislation. It borrows similar language from the older definition, ‘... body corporate incorporated under an Australian law ...’ but then extends R&D entity significantly to include:

- a body corporate incorporated under a foreign law that is an Australian resident

⁷² Under repealed legislation R&D entity was known as eligible company (subsection 73B(1) ITAA36).

- a foreign corporation that is resident of a country that Australia shares a double tax agreement with and carries on business in Australia through a permanent establishment.

The only type of R&D entity that is not eligible under the new RDTI is exempt entities.⁷³

According to the EM (2010, p. 56) the reasoning behind the enlarged R&D entity definition is to ensure the R&D provisions do not infringe the OECD *Model Tax Convention on Income and on Capital*, which contains a Non-Discrimination Article. Since 2003 Australia tends to adopt Non-Discrimination articles to ensure foreign and Australian corporations in the same circumstances are treated equally with regard to taxation irrespective of nationality.

Although the government explains the widening of the R&D entity definition due to international legal argument, the approach is also consistent with the government's objectives to promote spillovers. As stated earlier the Productivity Commission (2007) found that Australia is notorious for relying on international spillovers to spur innovation domestically. Given the government's general shift in innovation policy from increasing competition for export to generating R&D that will benefit the wider Australian economy, this change in definition seems appropriate. It is likely this definition, coupled with Australia's stable economic, political and legal environment will make R&D in Australia more globally attractive.

⁷³ An exempt entity is an entity whose entire income is exempt from income tax (Commonwealth Parliament EM, 2010, p. 56). Also subsection 355-35(3) excludes exempt entities from being R&D entities.

Subdivision 355-C Entitlement to tax offset

Table 4.6 Section 355-100 Entitlement to tax offset

355-100 Entitlement to tax offset	<p>If notional deductions are at least \$20,000</p> <p>(1) An * R&D entity is entitled to a * tax offset for an income year equal to the percentage, set out in the table, of the total of the amounts (if any) that the entity can deduct for the income year under any or all of the following provisions:</p> <p>(a) section 355- 205 (R&D expenditure);</p> <p>(b) section 355- 305 (decline in value of R&D assets);</p> <p>(c) section 355- 315 (balancing adjustment for R&D assets);</p> <p>(d) section 355-480 (earlier year associate R&D expenditure);</p> <p>(e) section 355-520 (decline in value of R&D partnership assets);</p> <p>(f) section 355- 525 (balancing adjustment for R&D partnership assets);</p> <p>(g) section 355-580 (CRC contributions).</p> <table><tr><th colspan="3">Rate of R&D tax offset</th></tr><tr><th>Item</th><th>In this case:</th><th>The percentage is:</th></tr><tr><td>1</td><td>the * R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)</td><td>45%</td></tr><tr><td>2</td><td>at any time during the income year⁷⁴ an * exempt entity, or combination of exempt entities, would control the * R&D entity in a way</td><td>40%</td></tr></table>	Rate of R&D tax offset			Item	In this case:	The percentage is:	1	the * R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%	2	at any time during the income year ⁷⁴ an * exempt entity, or combination of exempt entities, would control the * R&D entity in a way	40%
Rate of R&D tax offset													
Item	In this case:	The percentage is:											
1	the * R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%											
2	at any time during the income year ⁷⁴ an * exempt entity, or combination of exempt entities, would control the * R&D entity in a way	40%											

⁷⁴ Subsection 355-100(1) was amended by No 124 of 2013, s 3 and Sch 11 item 55, by inserting "at any time during the income year" applicable in relation to an R&D entity's assessments for income years commencing on or after 1 July 2013. This amendment does not affect by implication the interpretation of the *Income Tax Assessment Act 1997* in relation to assessments for earlier income years (ATO, 2014).

	described in section 328- 125 (connected entities) if:
	(a) references in section 328- 125 to 40% were references to 50%; and
	(b) subsection 328- 125(6) were ignored
3	any other case 40%

Note: The tax offset will be a refundable tax offset if the percentage applicable to the entity is 45% (see section 67-30).

If notional deductions are less than \$20,000

(2) However, if the total of those amounts is less than \$20,000, the * R&D entity is instead entitled to a * tax offset for the income year equal to that percentage of the total of the following kinds of expenditure (if any):

Expenditure not subject to \$20,000 threshold	
Item	Kind of expenditure
1	Expenditure: (a) that the * R&D entity can deduct under section 355- 205 (R&D expenditure) for the income year; and (b) that was incurred to a research service provider (within the meaning of the <i>Industry Research and Development Act 1986</i>) that is not an * associate of the R&D entity or of the relevant * R&D partnership (as appropriate); and (c) that was for the provider to provide services, within a research field for which the provider is registered under Division 4 of Part III of that Act, applicable to one or more of the * R&D activities to which the deduction relates
2	Expenditure that the * R&D entity can deduct under section 355-580 (CRC contributions) for the income year

The strength of the RDTI design is in the introduction of the notional tax offset which abolished an array of extensive and complex provisions under the repealed legislation.⁷⁵ The two core components (45 per cent refundable tax offset and 40 per cent non-refundable tax offset) have theoretically lived up to the expectation spruiked by the government that the RDTI would streamline and simplify the previous R&D tax concession (Commonwealth Parliament EM, 2010, p. 51). The concept is easy to understand and well-structured, section 355-100 states upfront that your notional deductions must be at least \$20,000; if so an R&D entity can add all their expenditure amounts for an income year under the seven provisions⁷⁶ listed and multiply that amount against the set percentage attributed to your R&D entity classification. Unlike the repealed legislation all types of deductible/depreciable amounts are listed in the one spot, making it quick to identify. The concept also uses existing general tax definitions, such as ‘aggregated turnover’ and ‘turnover’ which are found under the small business entity rules.⁷⁷ There is currently legislation sitting with Parliament which will introduce subsection 355-103(1) to deny access to the RDTI for entities with aggregate assessable income of \$20 billion or more for an income year (Parliament of Australia, 2014).

The exception to this general rule is found under subsection 355-100(2), which permits R&D entities that have not met the \$20,000 threshold to claim the R&D tax offset if the expenditure is incurred to a Research Service Provider.⁷⁸ Time will tell whether small R&D entities that wish to conduct R&D but are budget constrained will make greater use of alliances with Research Service Providers to access the RDTI. As discussed in Chapter Three, traditionally RRDCs have undertaken most Australian agricultural R&D, significantly skewing public sector investment. However under the RDTI, there appears greater encouragement for private sector R&D investment, but not to such an extent whereby Parliament has targeted large corporates and neglected the merit of small R&D entities. Again this is a design trait that the government set out to address and legislatively appear to have achieved. Consistent with this approach Parliament has increased the control percentage that applies to exempt entities under section 328-125⁷⁹ from 25 per cent (under

⁷⁵ Sections 73B to 73Z ITAA36.

⁷⁶ Sections 355-205 (R&D expenditure); 355-305 (decline in value of R&D assets); 355-315 (balancing adjustment for R&D assets); 355-480 (earlier year associate R&D expenditure); 355-520 (decline in value of R&D partnership assets); 355-525 (balancing adjustment for R&D partnership assets); 355-580 (CRC contributions).

⁷⁷ Division 328 ITAA97.

⁷⁸ A Research Service Provider is defined under section 29A of the IRD86. Research Service Providers are approved entities capable of providing services in one or more specified research fields. Regarding this exception, there was a similar exception under the repealed legislation section 73A ITAA36.

⁷⁹ Concerns where an entity is connected with another entity.

repealed legislation) to 50 per cent. As per the EM (2010, p. 58) it is hoped ‘This will encourage collaboration between exempt entities (such as universities) and small firms while still providing some protection against the R&D tax offset being used to fund non-business R&D (that receives public support through other programs)’.

Division 355 generally takes priority over other offset and deduction provisions therefore if an R&D entity meets the notional R&D deduction criteria and another deduction type, the entity will be entitled to the R&D notional deduction and not the other (Commonwealth Parliament EM, 2010, p. 106). Specific advice on how this operates is contained in section 355-715: Implications for other deductions and tax offsets.

Table 4.7 Section 355-105 Deductions under this Division are notional only

355-105 Deductions under this Division are notional only	<p>An amount (the <i>notional amount</i>) that an *R&D entity can deduct under this Division is disregarded except for the purposes of:</p> <ul style="list-style-type: none"> (a) working out whether the R&D entity is entitled under section 355-100 to a *tax offset; and (b) a provision (of this Act or any other Act) that refers to an entitlement of the R&D entity under section 355-100 to a tax offset; and (c) a provision (of this Act or any other Act) that: <ul style="list-style-type: none"> (i) prevents some or all of the notional amount from being deducted; or (ii) changes the income year for which some or all of the notional amount can be deducted; and <p><i>Note: Examples are Divisions 26 and 27 of this Act, Subdivision H of Division 3 of Part III of the Income Tax Assessment Act 1936 and Part IVA of that Act.</i></p> <ul style="list-style-type: none"> (d) a provision (of this Act or any other Act) that includes an amount in assessable income wholly or partly because of the notional amount; and
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	<p><i>Note: An example is Subdivision 20-A, which may include in assessable income a recoupment of a loss or outgoing if the entity can deduct an amount for the loss or outgoing.</i></p> <p>(e) a provision (of this Act or any other Act) that excludes expenditure from:</p> <p>(i) the *cost base or *reduced cost base of a *CGT asset; or</p> <p>(ii) an element of that cost base or reduced cost base.</p> <p><i>Note: An example is section 110-45, which may exclude deductible expenditure from elements of the cost base of an asset.</i></p>
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Section 355-105, attempts to convey that these R&D deductions are notional specific to Division 355, however for certain other tax provisions they are treated as actual deductions. Although the section reads very clumsy and complex, it is required to ensure the R&D entity cannot actually deduct the relevant amount in working out its taxable income,⁸⁰ because that would result in a double benefit (a deduction and a tax offset) (Commonwealth Parliament EM, 2010, p. 61). Refer to Appendix A – Notional Deductions for a non-exhaustive list of actual deductions. Of concern is comment in the EM (2010, p. 62) which states:

Where one of those provisions requires or permits the Commissioner of Taxation ... to do a thing (for example, hold an opinion, form a judgment, or make a determination), the Commissioner can do that thing as if the R&D notional deduction is an actual deduction.

For administrative, practical and compliance purposes it would appear from the taxpayer and Commissioner perspective such a procedure will be difficult and awkward to apply. In the example of an audit, if it is proved that the taxpayer had not actually met the \$20,000 threshold, the difficulty in amending tax assessments which affect notional and actual deductions will be frustrating to ensure accuracy. Adding to this complexity is the ability for the taxpayer or Commissioner to classify some of the deductions under section 8-1 ITAA36 (Commonwealth Parliament EM, 2010, p. 63). Such a borderline scenario may not have occurred under the repealed legislation,

⁸⁰ Section 4-15 ITAA97.

but under the new RDTI which targets smaller entities there is greater likelihood of an entity being on the cusp of the threshold.

Subdivision 355-D Notional deductions for R&D expenditure

This subdivision dovetails section 355-100.⁸¹ It restricts notional deductions to an R&D entity which incurs R&D activity expenditure in the income year for which the R&D activity is registered under the IRD86⁸² and most importantly meets the conditions listed in section 355-210. Given the focus on domestic R&D investment by Australian entities, only brief discussion follows.

Table 4.8 Section 355-210 Conditions for R&D activities

355-210 Conditions for R&D activities	<p>(1) An *R&D activity covered by one or more of the following paragraphs is an activity to which this section applies:</p> <p>(a) the R&D activity is conducted for the *R&D entity solely within Australia or an external Territory;</p> <p>(b) if the R&D entity is a body corporate carrying on business through a permanent establishment (as described in subsection 355-35(2))—the R&D activity is conducted:</p> <p style="padding-left: 40px;">(i) for the body corporate; but</p> <p style="padding-left: 40px;">(ii) not for the purposes of that permanent establishment;</p> <p>and the conditions in section 355-215 (activities conducted for a body corporate by its permanent establishment) are met for the R&D activity;</p> <p>(c) the R&D activity is conducted for one or more foreign residents who are each:</p> <p style="padding-left: 40px;">(i) incorporated under a *foreign law; and</p>
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⁸¹ Entitlement to tax offset.

⁸² Section 27A. A similar provision existed under the repealed section 73B(10) – No deduction for unregistered company.

	<p>(ii) a resident of a foreign country for the purposes of an agreement of a kind described in subsection 355-35(2);</p> <p>and the conditions in section 355-220 (activities conducted for a foreign entity) are met for the R&D activity;</p> <p>(d) the R&D activity is:</p> <p>(i) conducted for the R&D entity solely outside Australia and the external Territories; and</p> <p>(ii) covered by a finding in force under paragraph 28C(1)(a) of the <i>Industry Research and Development Act 1986</i>;</p> <p>(e) the R&D activity consists of several parts, with:</p> <p>(i) some parts being conducted for the R&D entity solely within Australia or an external Territory; and</p> <p>(ii) the other parts being conducted for the R&D entity outside Australia and the external Territories while covered by a finding in force under paragraph 28C(1)(a) of the <i>Industry Research and Development Act 1986</i>.</p> <p><i>Note: An activity can be covered by a finding under paragraph 28C(1)(a) of the Industry Research and Development Act 1986 if the activity cannot be conducted in Australia or the external Territories.</i></p> <p>(2) However, an *R&D activity is not an activity to which this section applies if the activity is conducted, to a significant extent, for one or more other entities not covered by any paragraph of subsection (1).</p> <p><i>Note: An entity would not be covered by, for example, paragraph (1)(c) if the conditions in section 355-220 were not met for the R&D activity in relation to that entity.</i></p>
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The conditions are spread over sections 355-210, 355-215 and 355-20. The key point is that the R&D activity must be conducted solely within Australia or an external Territory.⁸³ The exception is if the R&D activity is covered by a finding in force under the IRD86.⁸⁴ This is a significant departure from the repealed legislation, as emphasis is now placed on the location of the R&D activity in Australia, rather than where the resulting IP rights reside (Treasury, 2009, p. 4). The Cutler report (Cutler, 2008, p. iv) recognised that the repealed IP arrangements were hampering innovation – that IP had to be treated as part of economic policy. Another key point, if the R&D entity is a body corporate carrying on business through a permanent establishment, the R&D activity must be for the purpose of the body corporate.⁸⁵ The R&D activity can also be conducted for foreign residents provided certain requirements are met.⁸⁶ Finally the R&D activity must not be conducted to a significant extent for one or more other entities not covered under the conditions. This concept follows on from existing law known as the ‘on own behalf’ rule (Commonwealth Parliament EM, 2010, p. 65). The aim of the rule is to limit the RDTI to the R&D entity who is the major benefactor.⁸⁷ Ultimately this is a question of fact, and although there are criteria⁸⁸ to assist with the weighing up, this arguable situation is common in other areas of tax law.⁸⁹ The remainder of subdivision 355-D and subdivision 355-E are not relevant to addressing global food security, therefore will not be discussed.

Subdivision 355-F Integrity rules

All legislation requires integrity measures to ensure the operation of the legislation is in line with Parliament intention. Under the RDTI there are four integrity rules covering sections 355-400, 355-405, 355-410 and 355-415. Worthy of discussion is section 355-400.

⁸³ Paragraph 355-210(1)(a) ITAA97.

⁸⁴ Paragraph 28C(1)(a).

⁸⁵ Paragraph 355-210(1)(b) ITAA97.

⁸⁶ Paragraph 355-210(1)(c) ITAA97.

⁸⁷ A similar provision is under the repealed subsection 73B(9) – No deduction for expenditure on activities for another person.

⁸⁸ The three criteria are: who effectively owns the know-how; who has appropriate control over the R&D conduct and; who bears the financial burden.

⁸⁹ For example Part IVA ITAA36 – requires weighing up eight factors to determine dominant purpose.

Table 4.9 Section 355-400 Expenditure incurred while not at arm's length

<p>355-400 Expenditure incurred while not at arm's length</p>	<p>If:</p> <p>(a) an *R&D entity incurs expenditure to another entity on all or part of an *R&D activity; and</p> <p>(b) either:</p> <p style="padding-left: 40px;">(i) when the R&D entity incurs the expenditure, the R&D entity and the other entity do not deal with each other at *arm's length; or</p> <p style="padding-left: 40px;">(ii) the other entity is the R&D entity's *associate; and</p> <p>(c) the expenditure exceeds the *market value of the relevant R&D activity or part (as appropriate);</p> <p>for the purposes of this Division, the R&D entity is treated as if the amount of expenditure it incurred on the relevant R&D activity or part (as appropriate) were equal to that market value.</p> <p><i>Note: For the purposes of a deduction under section 355-305 or 355-520 for an asset's decline in value, the arms' length rules in Division 40 apply as part of the notional application of that Division under that section.⁹⁰</i></p>
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If an R&D entity incurs expenditure to another party and they do not deal at arm's length or are associates and the expenditure exceeds the market value of the relevant activity, then the market value of the activity is substituted. This type of provision is common to tax legislation. However for practical purposes it has been and is likely to remain a clunky integrity measure because it requires a valuation. Valuations are subjective, costly and timely for both the taxpayer and the Commissioner or other relevant authority to confirm. Unfortunately it is usually not until an issue arises that this integrity measure is put to the test, which demonstrates its weakness as a deterrent or preventative measure.

⁹⁰ Section 355-400 was amended by No 101 of 2013, s 3 and Sch 2 items 26 and 27, by substituting "Note" for "Note 1" and repealing Note 2 regarding international transfer pricing arrangements (ATO, 2014).

Subdivision 355-W Other matters

Table 4.10 Section 355-705 Effect of findings by Innovation Australia

<p>355-705 Effect of findings by Innovation Australia</p>	<p>(1) <i>Findings about registration or core technology</i> If:</p> <p>(a) a certificate given to the Commissioner under the <i>Industry Research and Development Act 1986</i> sets out:</p> <p>(i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or</p> <p>(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or</p> <p>(iii) a finding under section 28E of that Act about an R&D entity and one or more *R&D activities conducted or to be conducted during one or more income years; and</p> <p>(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);</p> <p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year or years (as appropriate).</p> <p><i>Note: Section 28E of the Industry Research and Development Act 1986 deals with findings that technology is core technology for particular R&D activities. Expenditure incurred in acquiring such technology is not deductible under this Division (see subsection 355-225(2)).</i></p> <p>(2) <i>Advance findings about activities yet to be completed</i></p> <p>If:</p> <p>(a) an activity is being conducted, or is yet to be conducted, in an income year; and</p> <p>(b) an *R&D entity applies in the income year for a finding under section 28A of the <i>Industry</i></p>
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	<p><i>Research and Development Act 1986</i> about the activity; and</p> <p>(c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p> <p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year and the next 2 income years.</p> <p>(3) <i>Advance findings about completed activities</i></p> <p>However, if:</p> <p>(a) an activity is completed during an income year; and</p> <p>(b) an *R&D entity applies in the income year for a finding under section 28A of the <i>Industry Research and Development Act 1986</i> about the activity; and</p> <p>(c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p> <p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year.</p>
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The importance of this section is to provide the R&D entity with certainty that if they have a finding in force by Innovation Australia regarding registration, core technology or an advanced finding on completed or yet to be completed activities it is binding on the Commissioner for the purposes of assessments for the relevant income year. The need for taxpayer certainty when designing R&D tax incentives will be discussed in Chapters Five and Six.

4.4.3 Summary of the Australian R&D Tax Incentive

The above analysis demonstrates that the new RD'TI has been well-considered. Parliament has taken into account the various government studies over recent years to attempt a shift in current R&D trends and policy. As noted in the Senate report (2010, p. 72) ‘... there is unquestionably a move towards supporting R&D which is carried on by SMEs’. Given the leading international literature of the World Bank and IAASTD that business-as-usual

agricultural practices and multinational actors are not necessarily the solution to global food insecurity, it is commendable the Australian government is encouraging investment in R&D by smaller entities.

In tandem there appears to be a shift towards encouraging private investment in R&D, which as discussed in Chapter Three is currently skewed towards public investment. The abolition of the requirement for IP to remain in Australia is another commercial incentive for the private sector to invest in R&D. More effective use of private funds can mitigate the stress on diminishing government budgets, while steering private R&D investment towards additional R&D that benefit the wider Australian economy.

On the negative side, the integrity measures are lacking. The introduction of advance findings⁹¹ will greatly increase applicant certainty; however given this was an opportune time to strengthen the R&D legislation, possibly more could have been done. Finally to appreciate how far the government has come in improving the R&D tax concession, the next section will discuss the recently introduced Australian Innovation System Reports.

4.5 Preliminary evaluation of the R&D Tax Incentive

Resulting from the recommendation of Powering Ideas, since 2010, there have been annual reports released on the Australian Innovation System. Pressures of time and space in this thesis have prevented a full reflection on each of the innovation reports. However attempts to capture the critical issues of these reports follow.

Firstly, there is still a lack of data on Australia's innovation performance, which particularly affects international comparisons. This is just another⁹² large scale innovation report since 2007 which cites the same problem; paucity of Australian data. In this instance the reasoning is attributed to 'the lead times required for funding and other initiatives to influence innovation performance and the time required to gather and compile relevant corporate data' (DIISR, 2011, p. 1). This repeated lack of data is the reason why examination of R&D tax systems in this thesis is limited to qualitative analysis. From the conclusive data that is available in respect of the relevant business priorities,⁹³ the proportion of innovation-active businesses has continued to hover around 40 per cent since 2005; currently it is at its highest

⁹¹ The IR&D findings are governed by non-tax legislation, which is not be covered in this tax thesis.

⁹² For example: Productivity Commission Report 2007, Venturous Australia 2008, Powering Ideas 2009 and Australian Innovation System Report 2013.

⁹³ From the seven National Innovation Priorities identified in Powering Ideas.

of 46.6 per cent for 2011 (DI, 2013). This demonstrates the innovation framework has not achieved the target of reaching a 25 per cent increase in proportion of businesses engaging in innovation, but at least it is rising (DIISR, 2011, p. 5). Also promising is the number of businesses registered for the RDTI which has increased every year since 1995 from 3,743 to 10,286 in 2011 (DI, 2013). Finally the BERD as percentage of GDP has mostly risen from 0.82 in 1995 to 1.28 in 2010 (DI, 2013). This doesn't necessarily capture the true effect of the new RDTI legislation, but overall it is encouraging. However such statistics on their own are not determinative of whether the RDTI is achieving its stated goals within the broader innovation system.

Secondly, the report states Australia currently produces only 3 per cent of world knowledge, and that Australia is more likely to modify innovations from abroad than generate its own (DI, 2013, p. 14). This is particularly the approach for large Australian firms – they tend to be conduits for bringing international innovations to Australian domestic markets (DIISR, 2011, p. 1). Overall it is large firms, rather than SMEs which are more likely to innovate. This is concerning given the high proportion of SMEs in the Australian economy, but it is a government target area for improvement and the report acknowledges deeper research needs to be done (DIISR, 2011, p. 60).

Thirdly, Australia is below the OECD average for environmental innovation, which covers water use and greenhouse gas emissions. In 2013 (DI, p. 11), Australia was ranked at the bottom of the OECD for environmental performance. Given Australia faces several critical sustainability threats including 'food security' the government is encouraging enabling platform technologies⁹⁴ to address these challenges (DIISR, 2011, p. 2&24). However there is still no overarching list to direct businesses to invest not only in the particular platform technology but in an identified national area of concern. The 2013 report (DI) found Australian industry in general has not kept pace with OECD countries in transitioning to a more environmentally sustainable economy.

Overall the Innovation reports do not contribute additional information to the innovation agenda they merely consolidate the various innovation activities occurring in Australia to provide a concise yearly update. Commencing 2012, the Department of Industry adopted a theme for each innovation report. In 2012 the theme was Australian productivity and in

⁹⁴ Specifically biotechnology, nanotechnology and smart infrastructure.

2013 Australia's innovation role in Asia. The key findings from both reports (DI, 2013 & DIISR, 2012) were lack of strategic innovative management within Australian companies compared with overseas. The research showed despite Australians' long working hours and high productivity – Australia had not made much progress. It suggested Australians should learn to work smarter and embrace opportunities to engage more effectively with export markets and this may lift innovation.

4.6 Conclusion

This chapter has dissected the Australian RDTI from when it was introduced in 1986 to now. From its initial purpose to increase Australia's competitiveness to government reports which discuss reconciling social gain with national objectives, it appears the government are talking and writing a lot about the changing face of innovation. Collectively the Australian government departments seem to be aware of what innovation means in this dynamic world. But unfortunately the various governments have not been able to take the transformative policy objectives successfully into industry to change the face of innovation at the frontline of business. Although no reports or indicators show Australia's innovation system is moving backwards, there are only glimmers of promise of Australian innovation moving forward. Much of the policy changes that has occurred recently are of suggestions that were raised in the 1980s, such as greater R&D support for SMEs. It is positive progress that these matters are now legislated for, but again there is limited evidence of great success or possibly it is too early to tell.

One recurring theme in Australia's innovation history is the lacklustre attitude of business towards innovation and the critical role it plays in the economy. Whether this is due to a lack of understanding of economics or too much reliance on the resource sector or the desire to avoid creative thinking – it seems no government initiative has improved that attitude. The Innovation reports (DI, 2013) suggest poor business culture and management are responsible and that is from behaviour displayed by the large firms, which leaves little hope for SMEs, possibly explaining their low innovation. The question is what will it take to change Australian attitude? How much tweaking or revamping of innovation and tax incentives is required?

Acknowledging governments since the 1980s have realised this debilitating innovation hindrance, perhaps Australian business require a firmer hand to direct their behaviour. Rather than suggesting broad areas of innovation priority, perhaps in line with the findings

of the various government reports, a strict list of critical topics and export markets should be outlined to industry. Government may need to promote this list heavily to industry and management in many creative ways to drive the message of urgency. Recommendations by the Department of Industry (2013, p. 11) for business to use Australia's geographic comparative advantage to exploit growing export markets in Asia has failed to capture management attention with evidence that Australian business are not interested in '... investing in language and cultural understanding and business experience in Asia ...' but other countries are and they are then reaping the innovation rewards. Focusing on the role of the RDTI in the innovation system, perhaps it needs to be lifted to such a generous level, no company management will ignore it. It will be suggested in Chapter Six, that a combination of critical innovation topics (which includes food security) and a highly favourable RDTI could be the solution to improving R&D investment in agriculture. Potentially this RDTI model could then be applied to address any social challenge.

The question is what shape shall the model RDTI take? Having examined the two major legislative attempts in Australia under the ITAA36 and ITAA97 and concluding that they have increased R&D investment, but not to the extent or in the manner government had hoped. It seems timely to look for suggestions further afield. Chapter Five will contain a cross-national comparative case study examining the RDTIs of Japan, the US and SA in the context of agriculture and food security. It is the intention that from these international case studies, there may be examples of best practice which could inform the creation of a model Australian RDTI.

R&D TAX INCENTIVES: INTERNATIONAL MODELS

5.1 Overview of the chapter

This chapter is the first part of a cross-national comparative study that spans Chapters Five and Six. Chapter Five explores the R&D tax regimes of Japan, the United States and South Africa.⁹⁵ Attention is on the extent to which each of these regimes aligns with recommendations to assist global food security as suggested by international reports as reviewed in Chapter Two of this thesis. The analysis herein is undertaken in the context of the agricultural industry of the respective jurisdiction. Chapter Six will build upon the findings of this chapter to undertake comparative evaluation of these international R&D regimes together with Australia's RDTI to identify the best elements of each. Drawing on these findings, the aim is to draft a model RDTI for Australia which could increase R&D investment in agriculture and thereby progress global food security.

Chapter Five is divided into five parts. Part One explains why the research method of cross-national case-orientated tax analysis is used and provides an over-arching rationale for the selection of countries. Parts Two, Three and Four examine the Japanese, US and SA R&D tax regimes respectively. These parts include a rationale for that country's selection followed by a contextual overview of its agriculture and tax system, and an examination of its R&D tax regime. Part Five concludes the chapter with a thematic analysis of each R&D tax regime, which cogently leads into Chapter Six for continuation of this cross-national comparative study.

5.2 Research framework and method

This thesis uses cross-national case-orientated research⁹⁶ to examine various R&D tax regimes. It will draw upon the logic of comparisons to explain cross-national similarities and differences (de Vaus, 2008) and then inform best practice of R&D tax design in Australia

⁹⁵ Throughout this chapter the following abbreviations may be used in referring to the United States: USA, US, America. In the case of South Africa: SA or RSA.

⁹⁶ It is acknowledged that Hantrais (2009, pp. 51-52) opines on the terminology of international comparative research within the social science and humanities literature, she argues the term 'national' can raise the concern of whether 'nation' is an identifiable and appropriate unit of observation. Therefore her preference is to use the phrase 'international comparative research'. However in this thesis, with its narrowly defined parameters it is more precise to label the research exactly what it is: cross-national case-orientated. It is asserted that the countries analysed in this thesis; Australia, Japan, South Africa and the United States are not questionable nations.

to assist global food security. Deconstructing this approach highlights three tiers of research framework: 1) social 2) law and 3) comparative tax. Each has contributed to the design of the research, its methodology, methods and finally, the knowledge claims made. Pragmatism and inductive reasoning are also instrumental in the research design.

Social research

According to Sarantakos (2005, p. 4) social research aims to generate new knowledge by allowing researchers to enter contexts of interest that are unknown to them and search for answers to their questions. The core of this thesis is the global social challenge of food insecurity, why it exists, how it can be addressed and what role can Australia and taxation play in the solution. The topic fits well within social research, as such the research framework of this thesis has been couched in social research language with use of established terms: qualitative, mixed-method, reform-orientated, inductive, multi-disciplinary, comparative and pragmatic (McKerchar, 2010). However the lens through which the social issue of food insecurity is viewed is law.

Law research

Law research is steeped in tradition, with emphasis on doctrinal (black-letter law) analysis – which attempts to fit cases and legislation into a rational framework; rather than non-doctrinal research which is ‘about law’ (McKerchar, 2010, p. 8). If this thesis had followed a black-letter law framework then its content would have been limited to a technical analysis of the RDTI as contained within the income tax legislation. However this thesis is about law and a social issue. It is the social research aspect of this thesis that pushes it into the non-doctrinal realm, which can be bifurcated into reform-orientated or theoretical. This thesis is reform-orientated designed to accomplish change in the law, i.e. design a model RDTI (McKerchar, 2010, p. 9). Despite recognition of non-doctrinal research, the law fraternity appear sceptical of its purpose which may explain its limited discourse on research theory (Salter & Mason, 2007). It is suggested that guidance of this research type should be borrowed from other disciplines (e.g. social research) and the data used need not be restricted to legal sources (Pearce, Campbell & Harding, 1987 cited in McKerchar 2010).

Tax research

The third research aspect is tax. According to Lamb (cited in Marian, 2010, p. 421) ‘... comparative tax law is not a method of research in its own right, but rather an application of comparative law methodologies to the study of tax laws’. Marian (2010, pp. 423, 437) asserts substantive comparative tax knowledge can be generated even without a

methodological discourse as evidenced by existing comparative tax works of Livingston (1998) and Thuronyi (2003). Currently it appears all methodological approaches are valid (Marian, 2010). Finally McKerchar (2010, p. 7) observes understanding tax is much more than just the study of revenue law itself, which means ‘... the norms and expectations of tax research are somewhat fluid.’

Pragmatism

Consistent with its middle ground position within the research framework discourse the paradigm of pragmatism guides this thesis. It is non-positivist and more aligned with interpretivism and qualitative and/or mixed methodologies (McKerchar, 2010, p. 90). Pragmatists focus on addressing the research problem using whatever method is best suited to answering the research aim, and this framework influences the methodology (Creswell, 2003). The research problem is global food insecurity and how the Australian tax system can assist. Qualitative methodology is utilised and with inductive reasoning, this thesis builds a theory of how the Australian RDTI can encourage investment in agricultural R&D and thereby contribute to improving global food security. To build this theory, this thesis uses a mixed-method approach, involving historical, doctrinal and comparative case studies. Historical analysis is employed to critically dissect global food insecurity and to review current R&D tax laws and underlying policy rationale in Australia, Japan, SA and the US. Doctrinal analysis is used to evaluate international literature proposed to address food insecurity. Comparative analysis is adopted to analyse the R&D tax laws of selected countries in search of best practice. This is referred to as multi-disciplinary because the research covers more than one discipline and more than one methodology (McKerchar, 2010, p. 67).

Comparative research

The remainder of this section will examine the comparative case study discourse under the disciplines of social research and tax research. Przeworski and Teune (1966/67) suggest nearly all social research is comparative in that descriptions and explanations are derived from comparisons of some kind. This thesis critically examines the RDTI in four countries, Australia, Japan, SA and the US. There are three approaches to undertaking cross-national comparative research: universalist, culturalist and the midway position (de Vaus, 2008). This thesis adopts the midway position, which is reflective of the broader mixed-method approach. Within the discourse of comparative research exists ‘comparative law’ research; but there is minimal scholarly discussion on its methodology (Hantrais, 2009, p. 35).

Generally it is considered that comparative law is comprised of four schools of thought: functional, economic, cultural and critical (Marian, 2010, p. 427). This thesis borrows from the functional and cultural approaches. The functional approach is about acknowledging that every society faces the same problems, however they may solve them with different means. Therefore to be efficient, comparative legal functionalism advocates for a uniform solution (Marian, 2010, pp. 427-428). Slightly digressing it is important to stress the goal of this thesis is to draft a model RDTI for Australia. It is not with any paternalistic desire to converge the R&D tax systems of Japan, SA, Australia and the US. It is with the academic purpose to distil best practice from these various regimes and attempt to consolidate in a model Australian tax incentive.⁹⁷

In this thesis the functionalist approach is tempered by the cultural approach. The cultural approach embraces the differences between laws because they are embedded in a nation's culture. What is viewed as a problem in one country may not be, in another country (Marian, 2010, p. 427). This point is most relevant when analysing global food insecurity. In Japan and SA, global food insecurity is a pressing concern for their nations (Department: Agriculture, RSA, 2002). Whereas in the US and Australia, it is viewed as a global concern, but not necessarily a national concern (USA.gov, 2012). These early findings were factored into the jurisdiction selection. According to Livingston (2005, p. 124) '... culture makes comparative studies difficult; but also makes them unavoidable.'

Weaving these concepts together, Infanti (2002, pp. 1140-42) advocates that comparative research can be a tool for legislative reform. He suggests 'spontaneous coordination' of tax systems will occur organically if a country is seeking reform; as it will most likely look to legislative trends abroad, and that will require comparative research to understand them. Comparative knowledge can enable prospective reformist countries to borrow traits from an existing foreign model, but then modify to neutralise contextual differences and take into account local differences (Marian, 2010, p. 439). Literature from Kahn-Freund (Kahn-Freund, 1966) on the topic of tax transplants in socio-legal research warns that there is a risk transplants may be rejected if incompatible with the social and cultural contexts of the target audience (Marian, 2010, p. 440). These lessons are imperative to the successful design of

⁹⁷ Cognisant that legal/tax transplants (taking the tax rule of one country and replicating in the recipient country) are common and natural in a globalised world, if convergence did subsequently occur it would only be a subsidiary effect.

the model Australian RDTI. The Australian RDTI is the starting point from which the reform takes place. The learning from foreign models is viewed through an Australian legal and cultural lens to determine which aspects could successfully be incorporated into the model Australian RDTI.

Recapping, the comparative contribution of this thesis builds upon the literature reviewed in Chapter Two from which it was concluded that increased R&D investment in agriculture would be the most effective strategy to improve global food security. This recommendation stands regardless of the diversity of countries, constitutions and cultures because food insecurity is a global social challenge. Accepting tax policy can be an effective tool for encouraging R&D investment, the learning and experiences of other countries may provide invaluable input in the design of an Australian model RDTI likely to stimulate greater investment in agricultural R&D in Australia which could improve global food security.

Four countries are studied in this small-n sample which is in line with the qualitative inductive research framework of this thesis (Pierce, 2008, p. 10). The aim of this case-orientated analysis is to undertake a comprehensive investigation, generating rich, thick descriptions of each country's R&D tax regime, agriculture and food security (Pierce, 2008, p. 11). A key purpose of this type of comparative research is to understand elements of a country within the context of the whole case. Any current legislation or trend can only be understood within its historical, cultural and social context (de Vaus, 2008). It is anticipated this comparative research will build a rounded understanding of each country's use of RDTIs in encouraging agricultural R&D investment to improve global food security.

Relevant factors guiding international case studies

In selecting the countries suitable for comparative research with Australia's RDTI, the following factors were considered:

1. existence of an established tax regime comprising a R&D tax incentive
2. geographic significance of the country
3. the role of the country's domestic agriculture and
4. geopolitical stance on global food security and likely role into the future.

Turning to the first of these factors, each country selected requires a R&D tax regime⁹⁸ which would usually be part of an established tax system; this does not infer the country has to be a developed or advanced developing nation, but it is likely to be. The type of RDTI is irrelevant, as the purpose of the comparative research is to contrast the various regimes in search of best practice, which could be incorporated into the Australian tax context. This is also in accordance with the functionalist approach which advocates that ‘comparable’ jurisdictions of similar evolutionary development should be selected, to facilitate the study of unwieldy information (Marian, 2010, p. 428).

In terms of the second factor, some countries have greater strategic significance due to their geographic location, compared with others. This factor played a guiding role in selecting countries in regions not necessarily geographically close to Australia, but in regions most likely to be affected by global food insecurity or play an instrumental role in addressing global food insecurity.

The third factor, the role of the country’s domestic agriculture industry, does not refer solely to size or economic significance. As explained in previous chapters, agriculture is multifunctional; it fulfils a variety of roles in each country. The countries selected have diverse agricultural systems which permit a broad comparison of the effectiveness of R&D incentives as they apply to differing circumstances such as large monoculture type farming or small permaculture farming.

In terms of the fourth factor, given the contraction in access to food supplies, the ability for a country to grow or access food is becoming a type of geopolitical leverage (Brown, 2011). Although this concept is not new, the extreme level of food scarcity in this world is unprecedented and the consequences seem more volatile and disruptive; such as the 2011 uprisings in the Middle East. Each country selected in this study is from a different geopolitical stance to enable exploration of the wider social issues that may impact on the role of government intervening with R&D tax measures to address declining R&D investment in agriculture.

⁹⁸ Although one could question why; given New Zealand abolished their RDTI effective from the 2009-2010 income year. However in this thesis the aim of the comparative case study is to improve the existing Australian RDTI, not to advocate removal, this is also in line with the applied research paradigm of pragmatism.

Overlaying these factors are general administrative and practical matters which need to be considered to ensure the cross-national case-orientated comparative research is of credible value. Firstly, English as the national language is preferred, although not imperative, to avoid subtlety getting lost in translation. Relying on direct written translations can often prove unsatisfactory as the literal interpretation can omit linguistic nuances. Hence bilingual research assistance was required in Japan.⁹⁹ Next is the availability and access to official and reliable data. This data also needs to be standardised to enable consistency in definitions and time periods to ensure accurate comparisons can be drawn. This does not necessarily require the countries selected to be from the OECD, despite its large repository of data, provided readers are informed of any potential discrepancy in comparisons. Finally the scope of the comparative case study must be narrow for greater control of exogenous variables. For example successful R&D is often associated with patents (Warda, 2006, p. 4; Dernis, 2007, p. 5) however, as detailed in the thesis scope patents are not a comparative variable in this research, because it would detract from the narrow taxation focus. This also avoids the potential for conceptualising characteristics of a country at a broad superficial level by looking at only one indicator to try to explain the enormity and complexity of the topic (de Vaus, 2008, p. 10).

Peculiar to comparative tax research are additional challenges which Garbarino (2009, p. 686) classifies as: 1) rapid legislative change 2) complexity of tax systems and 3) heterogeneity of local tax concepts. Each will be explained in turn and how this thesis using the functional approach addresses the challenge. Firstly, rapid legislative change refers to the constantly evolving domestic tax amendments produced in each country. To overcome this all comparative data was collected in 2012 and analysed in 2013, therefore any tax amendments post 2013 are not included.

Secondly, understanding the complexity of a foreign domestic tax system is extremely challenging given the detail of tax legislation and its interaction with regulations, case law, and administrative guidelines. Overlaying this structural complexity is the behaviour of opportunistic taxpayers seeking to exploit domestic tax system weaknesses. This in turn leads to the particular country needing to pass special amendments or additional administrative guidelines to prevent such behaviour. Consequently it is necessary to distinguish how the specific tax law was originally intended to operate and how the tax law

⁹⁹ Thanks are given to Naoko Katano and Dr John Lambino of Kyoto University, Japan.

has evolved to cope with domestic exploitation. Depending on the compliance level of taxpayers and/or the enforcement of tax authority, such extra amendments may not be required for successful operation of that law in another country (Garbarino, 2009).

Thirdly, heterogeneity of tax concepts concerns the unique terminology that tax systems generate, such as: very detailed rules, specific doctrines and micro-concepts which almost become assumed knowledge to those within the domestic tax system, but may not be explicitly written about in the tax literature (Garbarino, 2009). For example, the use of the term ‘tax benefit’ in the Australian context often infers negative tax behaviour associated with the General Anti-Avoidance Regime (**GAAR**), whereas in the US, the term ‘tax benefit’ is a neutral term which seems to have maintained its ordinary dictionary meaning.

Superimposed on all the above issues is the fact that research studies confront criticism which, if not considered, can lead to error. Despite the many benefits of using a small sample of four countries¹⁰⁰ one of the known criticisms of case-orientated comparative research is possible selection bias of the countries (Pierce, 2008, p. 11). In selecting the countries it was necessary to isolate those which share similar factors potentially relevant to explaining their approach to addressing global food insecurity (de Vaus, 2008, p. 11). This has been described above. Another known criticism regarding small sample size is the inability to make statistical generalisations (de Vaus, 2008, p. 14). However that is not the purpose of this qualitative comparative study, rather it is the ability to take detailed learning from each comparable country for use in designing a model Australian RDTI. One final remark, each case study was conducted in 2012 therefore the analysis is mostly reflective of that period of time.

Evaluating effectiveness of RDTIs

In concluding this section on research theory it is timely to explain the connection between the research design and the goal to be achieved from including international case studies. The intention of Chapter Five is to critically analyse the R&D tax regimes of Japan, the US and SA for potential effectiveness – ability to stimulate R&D investment in agriculture which could improve global food security. This is not a quantitative thesis in pursuit of statistically proving a link between a country’s RDTI and investment in agricultural R&D. The central question to be addressed is whether the RDTIs are effective in *enabling* the desired investment? In evaluating effectiveness, emphasis is on the pragmatic design of each

¹⁰⁰ Such as thick description, a lower level of abstraction, greater intensity and analysis of differences and similarities which the reader is more likely to follow and accept.

country's RDTI and underlying policy, whether it is in line with the IAASTD conclusions and the likelihood the RDTI may sufficiently enable investment in agricultural R&D. Guiding this doctrinal analysis is the driving question of whether the R&D tax laws embody policy objectives. Are there gaps or obvious flaws? Is the tax policy well considered? Is the legislation (clear and simple) in accordance with parliamentary intent and should it deliver on the objectives? The focus of this thesis is not about reaching a definitive answer on whether the US, Japanese, South African or Australian R&D investment in agriculture has increased, but whether the RDTI design sufficiently enables that possibility.

Finally, Chapter Six will seek to consolidate the findings of Chapter Five. It will identify the major shortcomings of the Australian RDTI and compare it with the strengths of each country's R&D tax regime. This knowledge will provide the basis for reforming the Australian RDTI to better stimulate agricultural R&D investment and thereby assist global food security. Chapter Six will also consider the role of the model RDTI in the context of Australia's wider innovation system, with the intent of achieving greater cohesive alignment amongst relevant national objectives.

5.3 Case study of Japan

The analysis of Japan covers several aspects. The rationale sets out the reason for Japan's inclusion in the research which is followed by contextual background of Japan's agriculture and tax system. Building upon this knowledge is a detailed analysis of Japan's RDTIs, its underlying government policies and finally an assessment as to the effectiveness of the RDTIs in enabling the policy objectives.

5.3.1 Rationale for selecting Japan

Japan has been selected for cross-national comparative research with Australia because of the following similarities and differences that exist. Firstly, Japan has various incentive based tax deductions and credits for research and experimentation (**R&E**)¹⁰¹ within its established tax system. Secondly, Japan is considered an advanced industrial neighbour of Australia because it is geographically part of the Asia-Pacific which, according to the IAASTD, has the greatest number of environmentally displaced persons in the world (IAASTD, 2009, p. 5). Furthermore, according to the FAO (cited in OECD, 2013a, p. 12), 70 per cent of the world's undernourished live in middle-income economies within

¹⁰¹ Research and Experimentation (R&E) is used interchangeably with Research and Development (R&D).

Asia. Thus Japan and Australia are likely to be amongst the geographically strategic countries of this region to assist with global food security. Thirdly, Japan's agriculture differs greatly from Australia's, showcasing permaculture as an alternative to large-scale industrial monoculture. Finally, Japan's geopolitical position on global food security significantly differs from Australia's. Japan has a food self-sufficiency quota and is a strong advocate of multifunctional agriculture, two matters which have influenced Japan's agricultural protectionist measures and limited foreign access to their domestic market (The Japan Times, 2013).

Before proceeding it is opportune to address possible concerns of critics about comparing East with West tax policy. Cullen (1996, p. 3) has compared such literature and without diminishing the case study of Japan, it is acknowledged that the Asian tax experience cannot necessarily be used as a model for the West, but it can still provide useful comparative input.

5.3.2 Agriculture in Japan

Japan's agriculture industry has been shaped by its natural terrain, political objectives and culture of its inhabitants. Japan is a wet mountainous island archipelago, home to the tenth most populous nation, of which only 13 per cent of land is suitable for agriculture and five per cent for urban use (Statistics Bureau Japan, 2011). Politically, Japan's agriculture has been influenced by US objectives, which post-war (1946-47) entrenched small-scale farming and its associated inefficiencies (Jordan, 2010, p. 13). Successive governments have attempted 'rationalisation' (in 1961) and later 'corporatisation' (in 2000) of the agriculture industry (Jordan, 2010, p. 14; 19) with modest results. Culturally, despite Japan being the third largest economy in the world the Japanese are only one or two generations removed from rural life, consequently small farms dominate and more than 60 per cent of their main food commodity, rice, is still produced from non-commercial farms (OECD, 2011, p. 14). Increasing farm size to promote monoculture is not solely a matter of consolidation; powerful cultural ties exist between the people and the land hindering change (OECD, 2011, p. 11). Despite Japan's topography, their nation's ingenuity of utilising permaculture on small blocks of farmland, combined with advanced agricultural R&D has generated some of the highest crop yields in the world (Agriculture and Agri-Food Canada, 2011, p. 1). Yet Japan is still the largest net importer of agricultural

products and has the lowest food self-sufficiency ratio among industrial countries (MAFF, 2011). Unsurprisingly Japan is faced with a food security challenge.

Japan and food security

Koyama (2008, p. 183) has traced the Japanese government's concern for food security back to 1980 and suggests this may have been the start of Japan's stance on agricultural protectionism. Given Japan's history¹⁰² of food shortages, both as a product of war or natural disaster, it was a logical precaution of the government to introduce the *Food, Agriculture and Rural Areas Basic Act*¹⁰³ (**Basic Law**) in 1999. The purpose of the Basic Law is to improve life in Japan and develop the national economy in relation to food, agriculture and rural policies.¹⁰⁴ The Basic Law (translated) obliges the Japanese government:

Even in the case when the domestic food supply and demand get stringent or likely to be so for a considerable period of time due to poor harvest or interrupted imports, the minimum food supply shall be secured so that no significant adverse effect is generated to the stable life of the citizens and smooth operation of [the] national economy (Article 1, item 4)

Regarding the people's connection to rural land, Article 3 promotes the attainment of multifunctional agriculture through '... respect for the cultural tradition in addition to agriculture's conventional role as a primary food supplier.' Furthermore, Article 15 states the Japanese government must establish a basic plan for food, agriculture and rural areas, which must set the target rate for food self-sufficiency¹⁰⁵ and be revised approximately every five years taking into consideration relevant changes and policy impacts.¹⁰⁶

It is within this legislative context the Japanese government has enshrined the nation's expectation for food security. This expectation comprises: high quality produce and reasonable prices, to be sourced as much as possible from domestic agricultural

¹⁰² Japan experienced many cases of famine during the 19th century due to climatic conditions, including volcanic eruptions. In 1918 Japan experienced nation-wide rice riots as a result of World War I. After World War II Japan suffered food shortages. In 1973 during the Middle East oil crisis Japan suffered a food crisis and again in 1993 there was a rice shortage (Koyama, 2008, p. 184).

¹⁰³ Law no. 106 for 1999.

¹⁰⁴ Article 1.

¹⁰⁵ Article 15, item 2, sub-item (ii). Food self-sufficiency is measured on three scales: calorie, value and weight of food production. The most commonly quoted in statistics is food self-sufficiency on a calorie basis. 'Calorie supply refers to the total amount of calories from food that is supplied to the public, and calorie intake refers to the total amount of calories actually consumed by the public' (MAFF, 2011, p. 54).

¹⁰⁶ Article 15, item 7.

production, the production of food will embrace agriculture's multifunctional role, and the cultural tradition of farming shall try to be preserved. To bring these principles to life, the Ministry of Agriculture, Forestry and Fisheries (**MAFF**) drafts the Basic Plan for Agriculture, Forestry and Fisheries Research: Priority and Action Plan, along with annual policy reports.

The current Basic Plan dated 2010 focusses on the role of green innovation to solve global issues, including food resources to help Japan achieve a 50 per cent self-sufficiency rate (70 per cent on basis of production value) by 2020 (MAFF, 2010). Relevant to this thesis, Japan's objectives for the next ten years are for government, industry and academia to work cohesively to target R&D in the areas of upgrading technology of agriculture in developing regions; and create a sixth industry from Japanese agriculture through value-adding and enhance international agricultural research.

The Financial Year (**FY**) 2010 Annual Report on Food, Agriculture and Rural Areas in Japan (MAFF, 2011) reflects on the food supply disruptions Japan has faced in the recent past¹⁰⁷ to suggest additional policy measures. These include keeping part-time and small farms operating into the future, and on a political front; provide food security assurance to the nation when undertaking international trade negotiations by advocating the nation's standpoint (The Japan Times, 2013). This national standpoint is phrased 'consciousness about food supply' which was a poll conducted by the Japanese Cabinet Office¹⁰⁸ that found approximately 75 per cent of people view the present 40 per cent food self-sufficiency ratio as low. Some 90 per cent believe that the food self-sufficiency ratio should be increased (MAFF, 2011, p. 13).

In conclusion, the confluence of land scarcity, high population, physiographical phenomena and strong cultural ties to rural land are intractable difficulties the Japanese government confront in their quest to achieve food security. The comparison of Japan and Australia's agriculture and food security situation can be viewed as polar opposite. Examining the approaches each government has taken towards assisting food security provides for plentiful study. Both governments recognise food security is a global challenge that will require global co-operation, yet from this analysis it can be gleaned that a one-size-fits-all policy solution will not succeed. However, this thesis argues that in the

¹⁰⁷ Such as the Great East Japan Earthquake, foot-and-mouth disease and avian influenza outbreak, unseasonable weather and the eruption of Mt. Kirishima (Shinmoe-dake).

¹⁰⁸ Special Poll on Food Supply released in October 2010.

case of developed nations, at least, there is the framework of taxation that could be used to overcome country specific differences, and can be a comparator for study. Below is an examination of Japan's tax system with emphasis on their R&D tax regime and how its design could assist food security.

5.3.3 Overview of Japan's Tax System

The Japanese tax system shares many similarities with that of Australia. Central to this is a successful self-assessment system introduced in 1947 and administered by a well-resourced National Tax Agency (NTA) capable of co-operatively enforcing tax laws to achieve a collection ratio of 98.1 per cent (National Tax Agency, 2011). Some key features of the NTA can be equally matched with those of the ATO, such as:

- Taxpayers' Charter
- use of e-tax¹⁰⁹
- data sharing with other agencies
- published Code of Conduct
- taxpayer rulings
- public non-binding circulars to assist staff to interpret tax laws or particular issues
- taxpayer rights to review and appeal NTA decisions
- mutual agreement procedures, advanced pricing arrangements and exchange of information with foreign tax authorities and
- transparent administration through NTA publications on their activities, policies, yearly statistics and reports on the tax system.

In line with Australia's taxing powers, the Japanese tax rules, enforcement capabilities and implementation authority derive their power from the Constitution.¹¹⁰ Japan's taxes can be classified as Income Tax, Property Tax and Consumption Tax. Similar to Australia there are both national and state taxes and from 2002 Japan introduced consolidations. Each Japanese tax is enacted under its own statute. Income tax in Japan applies to all income sources of Japanese residents and for non-residents their Japanese source income only.¹¹¹ Corporations are taxed under both the Corporations Tax and Income Tax laws

¹⁰⁹ An online national tax return filing and payment system akin to Australia's e-tax.

¹¹⁰ Articles 30, 84 and 73 paragraph 6. Article 30 states 'The people shall be liable to taxation as provided by law' (Tax Bureau, 2010, p. 23).

¹¹¹ Income Tax Law, Law No 33, 31 March 1965, Articles 5(1)(i), 7(1)(i) and 7(1)(ii).

however they may receive a credit for any overlap,¹¹² the effective tax rate is 40.69 per cent¹¹³ (CCH, 2011/12).

There are four means by which taxpayers can be assessed: self-assessment, tax withholding, official assessment and stamp payment system (CCH, 2011/12). According to the Japanese Tax Handbook (2010, p. 82), the process for corporations involves filing a corporation tax return, along with stipulated financial documents within two months from end of tax year and pay (if any) the self-assessed tax. Local inhabitants' tax and enterprise tax are levied by local authorities after the corporate tax income is determined. Another feature of corporate taxation is the 'blue tax return system'.¹¹⁴ Approved corporations that file a 'blue return' have additional privileges which, relevant to this thesis, include access to special taxation measures including the R&D tax credit (Tax Bureau, 2010, p. 110).

Japan's tax laws appear more flexible and responsive than Australia's tax legislation. Under the Japanese system, every three years Japan's Tax Commission, which comprises academics, industry bodies, accountants, tax experts and politicians, report on the nation's tax system (CCH, 2011/12, p. 39). This report, in conjunction with the ruling party's Research Commission on the Tax System; and suggestions from the Government's Council on Economic and Fiscal Policy, are discussed annually at a tax system conference where tax reform policy decisions are made (CCH, 2011/12, p. 39). Given the regularity of tax reform in Japan it is not necessary to have major reform reports such as those found in Australia, for example, the Henry Review. Notwithstanding, there have been fundamental tax reports which influenced the current Japanese RDTI. It is necessary to state that most Japanese tax reports are not translated into English. Therefore reliance is placed on provisional government translations, verbal translations by local research assistants and confirmation from the Japan Master Tax Guide (CCH, 2011/12).

One of the largest reviews of the Japanese tax system was released in 1968 when the Tax Commission reported on the ability of Japan's tax system to match future progress of the

¹¹² Corporation Tax Law Articles 68 and 144.

¹¹³ Corporation Tax Law, Law No 34, 31 March 1965, Articles 5 and 9. This is the 2011 effective tax rate. There was proposed tax legislation in 2011 to lower the tax rate to 36.05 per cent however at time of writing this change had not been enacted.

¹¹⁴ The blue tax return system (colour of the tax form) is about encouraging entities to meet accounting requirements (CCH, 2011/12, p. 214).

economy and society. Most relevant to this thesis – it was held that special taxation measures should be streamlined. According to the Tax Commission (Tax Bureau, 2010, p. 11) the use of tax incentives is seen as a significant part of economic policy to achieve certain purposes. However, it was their negative impact on good tax principles such as neutrality and equity which spurred the Tax Commission to recommend streamlining of special tax measures in future. This position remains steadfast today with the *Special Taxation Measures Law*¹¹⁵ directed toward achieving economic goals via temporary tax treatment (Tax Bureau, 2010, p. 80). It is now reviewed yearly to assess which special measures should be abolished. For example, after the Great East Japan Earthquake in 2011, along with the dragging effect of the global financial crisis, the use of special tax measures became crucial to Japan addressing urgent social and economic events. Introduced in this Act are temporary R&D tax measures.

Entering the new millennium, the Tax Commission identified general tax reform principles to address Japan's worsening economy. Relevant to this thesis, was the decision to maintain the corporate tax rate and encourage use of corporate tax incentives (CCH, 2011/12, p. 11). In 2003 the government sought to establish a desirable tax system which introduced temporary tax reductions for R&D and investment in plant and equipment to foster innovation and growth industry (Tax Bureau, 2010, p. 18). The Tax Commission's 2005 Tax Reform Report re-iterated that future reforms be based on the effectiveness of tax incentives for R&D and capital investment (CCH, 2011/12, p. 18), thus extending the 2003 special provisions for R&D. In 2007 the Tax Commission again discussed the importance of tax policy on innovation, the role of the R&D tax system and how it influences business growth (CCH, 2011/12, p. 21). Consequently the Tax Commission proposed to abolish depreciation limits¹¹⁶ to encourage capital investment and innovation.

The most recent Tax Commission report provisionally translated by the Ministry of Finance (2011) spurred a variety of new special taxation measures aimed at stimulating economic growth in strategic areas of the economy. The majority of the special taxation measures '... are intended to mitigate tax burden on specified types of taxpayers so as to direct economic activities toward achieving industrial and other specific policy objectives' (Tax Bureau, 2010, p. 82). It is relevant to note that tax burden has been a key issue in

¹¹⁵ In the literature it is quoted without reference to a year.

¹¹⁶ Which were at 95 per cent of acquisition costs of assets (CCH, 2011/12, p. 22).

Japan's tax reform since 1960 when the Tax Commission recommended that it '... be limited to approximately 20 per cent of national income' (Tax Bureau, 2010, p. 10). This goal must wrestle with good tax principles of 'fair, transparent and acceptable' taxation, the pillars of Japan's tax system. The Tax Commission (Tax Bureau, 2010, p. 82) is acutely aware '... special taxation measures are exceptions to the principle of equity in tax burden' however they assert if the '... actual application and effect are transparent, understandable and acceptable to taxpayers' then the measures are justifiable. Keeping this litmus test in mind, the next section will critically analyse the R&D special taxation measures in Japan.

5.3.4 R&D tax incentives in Japan

Japan could be considered a pioneer of the R&D tax credit, having introduced their incremental and volume based version in 1967 (METI, 2010, p. 4.8). As illustrated in Figure 5.1, the volume component is the permanent feature of the RDTI, while the incremental part is often temporary. There are currently two RDTIs available that could be utilised to assist global food security. The main or permanent provision is contained in Article 42-4 of the *Special Taxation Measures Law*. This provision permits corporations filing a blue tax return to access a credit of between 8 to 10 per cent for R&D based on their annual R&D expenditure.¹¹⁷ A more generous credit of 12 per cent applies to SMEs¹¹⁸ or industry-academia-government collaboration.¹¹⁹ The usual upper limit for the credit is 20 per cent of the corporate tax due before the credit is applied. However from 1 April 2009 to 31 March 2012 this limit was increased to 30 per cent.¹²⁰

In addition to this base RDTI, the government introduced temporary measures to further encourage R&D investment. Current at the time of writing, between 1 April 2008 and 31 March 2012 the government introduced two choices: 1) an additional incremental base incentive or 2) an additional high level base incentive.¹²¹ Option one permits for an extra five per cent credit on the taxpayer's incremental R&D expenditure if that amount exceeds the taxpayer's base level R&D expenditure (past three year average) (METI, 2010, p. 4.8). Option two requires the taxpayer's current R&D expenditure to exceed 10 per cent of

¹¹⁷ Article 42-4(2).

¹¹⁸ Small and medium sized companies with maximum capital of ¥100 million.

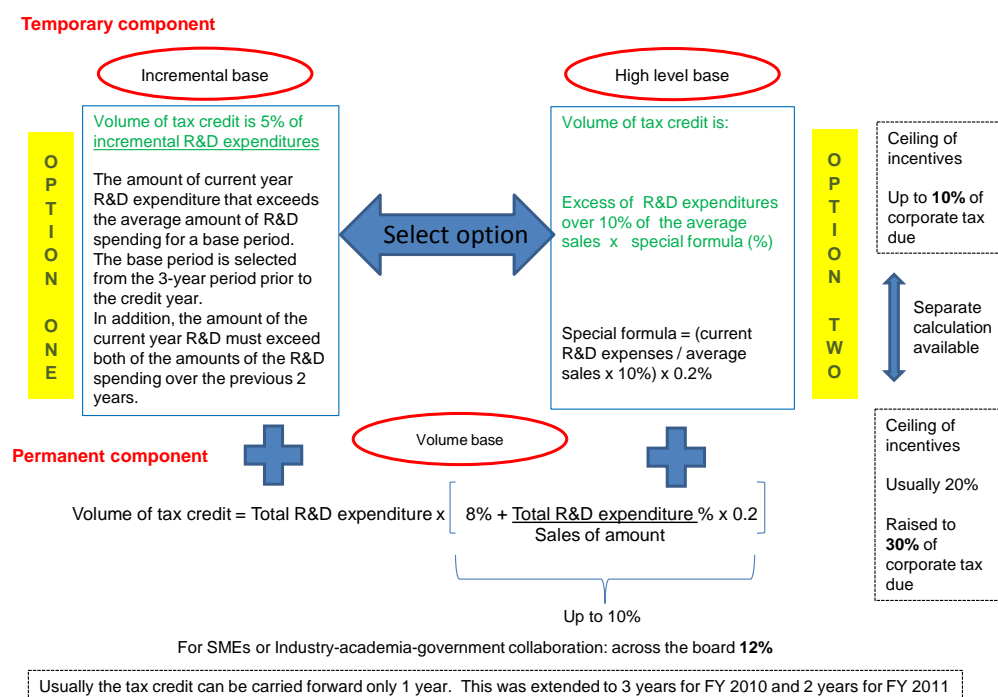
¹¹⁹ This type of joint research and development is referred to as special R&D expenditure for which an additional R&D tax credit attributed to the special R&D expenditure is 2 to 4 per cent, which is how the 12 per cent is reached (KPMG, 2008, p.16).

¹²⁰ Article 42-2-2.

¹²¹ Article 42-4(9).

their average sales (METI, 2010, p. 4.8). The excess is then multiplied by a special formula.¹²² For both these additional RDTIs, there is a ceiling of 10 per cent of any corporate tax due (Deloitte, 2011, p. 19). Together the base cap of 30 per cent and the additional cap of 10 per cent increase the R&D tax credit from its initial ceiling of 20 per cent (pre-temporary stimulus measures¹²³) to 40 per cent of the corporate income tax liability. Finally, the government have extended the opportunity for taxpayers to carry forward R&D tax credits from one year, to three years for fiscal year April 2009 to March 2010 and for fiscal year April 2010 to March 2011, the carry forward period is two years (Deloitte, 2011, p. 20).

Figure 5.1 Outline of RDTI operation in Japan (METI, 2010)



It appears the most difficult part of the RDTI is its application, for there are minimal ancillary criteria for taxpayers to meet or regulations that govern the incentive. In summary, R&D tax credits are available to Japanese entities of any industry, provided the activity is technological or scientific in nature. To qualify for the R&D tax credit the

¹²² Special formula = (current R&D expenditure / average sales x 10%) x 0.2%.

¹²³ This temporary incentive was announced during the April 2009 stimulus package and legislatively introduced 19 June 2009 (Smith, 2009).

expenditure must be incurred in the manufacturing of products or the improvement, designing, formulating or invention of techniques. These expenditures include: in-house labour costs, raw materials, overhead, depreciation on fixed assets and contract costs (Deloitte, 2011). Regarding IP, the Japanese legislation is silent. It can be inferred that the IP ownership should be in Japan, because only tax deductible R&D expenditure borne by the Japanese entity is eligible. However that does not mean the R&D activity needs to be conducted in Japan, so long as the Japanese entity pays for the R&D. There is no approval or application process before accessing the R&D tax credit, except the need for a company to file a blue tax return. Finally, the R&D tax credit can only be claimed in the year of the expenditure and there is no leeway to claim on amended tax returns (Deloitte, 2011, p. 20).

Besides Article 42, the government also has in place a credit for acquisition of facilities for strengthening the base of enterprises. SMEs which file blue tax returns may claim additional first-year depreciation equal to 30 per cent of the acquisition cost, or claim a tax credit of seven per cent of the cost of new specified depreciable assets.¹²⁴ Depreciable assets include machinery and equipment acquired to improve operations in the farming, production and processing industry (CCH, 2011/12, p. 277).

Another tax incentive, (this one aimed at addressing Japan's diminishing Asian headquarters and R&D centres), is the suite of tax benefits for designated multinational R&D enterprises (CCH, 2011/12, p. 282). This entails a multinational establishing a company in Japan primarily engaged as a headquarters enterprise or a R&D enterprise. The expectation is that these incentives will attract advanced research and high-calibre talent to Japan. The tax package comprises three key benefits (Kameda, 2013). Firstly, a reduced effective corporate tax rate; in the Tokyo special zone that will equate to a 28.9 per cent instead of 38 per cent tax rate. This tax rate will drop further from April 2015 to 26.9 per cent. Secondly, the government will provide subsidies capped at ¥5,000,000 to help cover the costs of recruitment and residency fees. Thirdly, there will be special government assistance to ease the transition of foreign companies moving to Japan.

Policy behind the R&D tax reforms

Japan's government policy reports are refreshingly honest in the portrayal of their nation's challenges. The Japanese government openly concede its country is not resource-rich,

¹²⁴ Article 42-7.

therefore it is ‘know-how and human resources’ that will support Japan’s future development and thus enhancement of scientific and technological capability is crucial (ECSST, 2010). The RDTIs described at 5.2.4 are the result of two significant periods of Japanese R&D tax reform. In 1994 tax reform was initiated to cope with the structural changes in the economy and society (Tax Bureau, 2010, p. 16).¹²⁵ It resulted in the enactment of the *Science and Technology Basic Law*¹²⁶ which intended to position Japan as a country built on creativity in science and technology (**S&T**) (The Prime Minister of Japan, 2008, p. 1). According to the objectives contained in Articles 1 and 2, achieving a higher standard of S&T should contribute to Japan’s economy, society and welfare. It should also contribute to the sustainable development of human society, adding to the global intellectual asset common for all mankind.

Article 17 elaborates on how Japan will attempt to achieve these goals:

In consideration of the importance of the role played by the private sector in S&T activities in Japan, the nation should implement necessary policy measures to promote private sector R&D by encouraging initiatives in the private sector.

Article 7 mandates the government to take all necessary measures to implement policies that promote S&T, starting with drafting a Basic Plan in Science and Technology which is to be revised when needed.¹²⁷ To date four Basic Plans have been drafted. During the Third Basic Plan¹²⁸ it was acknowledged that the R&D tax reforms to date had not made sufficient inroads. This was despite the Basic Plan stressing the need for Japan to utilise tax measures that contribute to the promotion of R&D activities, reduce the risks of commercialisation, boost the efforts of the private sector and enhance support to small business R&D (Government of Japan, 2006, p. 44).

In 2007 the Tax Commission released a report ‘Basic Idea for Fundamental Reform of [the] Tax System’ which aimed to better address the same challenges by seeking a stable revenue source for social security, broaden the tax base and enhance economic

¹²⁵ Japan is struggling with an ageing population, declining birth-rate and stalling economic growth.

¹²⁶ Law No. 130 of 1995.

¹²⁷ Article 9 and Article 9(4). Each plan is for a term of five years.

¹²⁸ FY 2006 to FY 2010.

growth (Tax Bureau, 2010, p. 18). Meanwhile the Liberal Democratic Party (**LDP**) released a report ‘To Strengthen Japan’s R&D’ which became legislation in 2008 titled ‘*Law Regarding R&D Capacity Strengthening and Efficient Promotion of R&D through R&D System Reform*’.¹²⁹ This law made it easier to implement R&D reform, affirmed the critical importance of improving Japan’s R&D system (Shinohara, 2008, p. 2) and further reiterated the need for effective evaluation of R&D programs (The Prime Minister of Japan, 2008, p. 1). The intent of this reform was made clear in the objective of the law¹³⁰ which briefly states:

The law must contribute to the improvement of Japanese life and citizens to strengthen the international competitiveness of Japan by setting up activities that would increase the ability of R&D. The law is to clarify the responsibilities of organisations and universities in their capacity of R&D. It is to set general principles on effectively promoting R&D and strengthen the ability to undertake R&D by reforming the R&D system in order to adapt to social and economic conditions that go along with the advancement of a low birth rate, aging society and changes in the conditions of international competition.¹³¹

In drafting the Fourth Basic Plan,¹³² Japan looked beyond the previous Basic Plans, to include consideration of the ‘Public Opinion Survey on Technology’.¹³³ This survey demonstrated citizens had high expectations that S&T would enhance Japan’s international competitiveness (86.7 per cent) and would be key to solving problems in society such as global food insecurity and climate change (75.1 per cent) (ECSST, 2010, p. 5). One of the identified shortcomings was the independent promotion of S&T policies from other economic policies, which Japan observed was out of sync with international approaches (Council for S&T Policy, 2010, p. 1). Consequently the Fourth Basic Plan seeks to organically coordinate S&T policy with other economic policies to achieve a holistic approach to R&D reform (Council for S&T Policy, 2010, p. 1).

¹²⁹ Law No.63 of June 2008.

¹³⁰ Chapter 1: General Rules.

¹³¹ Local research assistant’s translation.

¹³² FY 2011 to FY 2015.

¹³³ A poll conducted by the Cabinet Office in Japan in January 2010 (ECSST, 2010, p. 5).

Two significant points can be drawn from the Fourth Basic Plan. Japan is determined to overcome its lack of natural resources, stagnant economy, declining birth-rate and aging population by taking the initiative in solving serious and material global issues via its ‘unique knowledge assets, creativity and international cooperation’ (Council for S&T Policy, 2010, p. 4). Japan recognises hard science alone will not provide solutions hence they will harness their human and social sciences (Council for S&T Policy, 2010, p. 4). Most importantly, Japan will do so in line with public expectations and social demands by designing strategies and policies that will generate results for the nation and effects to the wider society (Council for S&T Policy, 2010, p. 5). These public statements are not necessarily contrary to the international norm of innovation,¹³⁴ but go above and beyond quantitative measurements to incorporate humanity.

The key strength of the Japanese R&D policy is its determination to reform its innovation system to promote *task-achieving* type R&D. Setting a clear vision on precisely what R&D activities the government with its finite budget will fund, then actively advancing that vision amongst the key actors, harnesses the power of clarity to drive the nation’s R&D. Finally, R&D activity is evaluated during its execution phase. However feedback identified that the level of industry R&D sophistication often exceeds the framework for evaluators, thus the government is refining the ‘National Guidelines for Evaluating Government Funded R&D’ (Council for S&T Policy, 2010, p. 41).

In parallel with its R&D policy, the government openly acknowledges that to advance the 4 per cent (or greater) of GDP target of R&D investment, it must reasonably review regulations and institutions: remove any hindrances and implement preferential tax treatments for R&D investment by the private sector (Council for S&T Policy, 2010, p. 42).

Recapping, the relevant Japanese R&D tax measures contained in the *Special Taxation Measures Law* as at FY 2012 are:

- a permanent volume based R&D tax credit
 - a temporary incremental based R&D tax credit or additional high level tax credit
- and

¹³⁴ Frascati Manual (OECD, 2002).

- a temporary ability to carry forward R&D tax credits for three years.

5.3.5 Critical analysis

The central question is whether or not the R&D tax reforms have been effective in *enabling* the desired investment in Japan? The focus is not about reaching a definitive answer of whether Japanese R&D investment in agriculture has increased, but whether the RDTI design sufficiently enables that possibility.

The concept behind the agriculture and S&T documents influencing the direction of R&D reform and Tax Commission decision making is commendable. Despite its convoluted approach of having a Basic Law and then 5 yearly Basic Plans in different industries (agriculture and S&T) under different Ministers, remarkably the intent of the policy is not lost by the time it is written into legislation. The use of public surveys to further lobby legislative and policy change in line with society expectations is a fair and democratic way to shape government action. It shows the Japanese legislation and policies are responsive and timely. It is refreshing to have the Japanese government see as its duty the need to inform the public in lay terms how taxpayer money is spent on R&D. The government has eloquently articulated in the public material the link between Japan's social woes and its government's desire to create solutions via the *Special Taxation Measures Law*.

Upon evaluation, three weaknesses are apparent. Firstly, the RDTI measures are too complex and wordy. The length of each subsection is approximately 30 pages in Japanese, but when translated into English it is at least double. Secondly, there is great overlap in tax amendments which leads to confusion and inconsistency for taxpayers. Different parts expire at different times but at the last minute they are extended temporarily again. This ad hoc, haphazard legislative process conflicts with a taxpayer's need for certainty to determine investment decisions and forecast cash flow. Thirdly, there is no flexibility to wait for certainty, as the RDTI must be claimed in the relevant year (Deloitte, 2011, p. 20). This may make the administrative burden easier for the NTA, but it is highly onerous on the taxpayer.

Referring back¹³⁵ to Japan's Tax Commission litmus test, it appears the policy intent behind the RDTIs are transparent, fair, understandable and acceptable to taxpayers, given

¹³⁵ See section 5.3.3.

the public material available articulating the government's R&D policies. However in practice the tax incentives do not live up to the policy for several reasons. Firstly, transparency is not synonymous with certainty. The RDTIs are not reliable. Even if taxpayers are aware of the intentions of their government in wanting to encourage R&D investment, without consistent and timely legislation, taxpayers cannot outlay R&D expenditure hoping they may receive the R&D tax credit. Secondly, the legislation is difficult to understand and apply, given its complexity, regular temporary features and wordy length. These weaknesses cast doubt over whether the RDTIs could be considered fair and acceptable to taxpayers. It also questions the level of certainty the RDTI offers taxpayers if they were embarking on a long-term R&D project.

5.4 Case study of the United States

The analysis of the US covers several aspects. Firstly, the rationale sets out the reason for including the US in the thesis. This is followed by contextual background of the US agriculture and tax system. Building upon this, is detailed analysis of the US R&D tax incentive (**RDTI**), its underlying government policies; followed by an assessment as to the effectiveness of the RDTI in enabling policy objectives.

5.4.1 Rationale for selecting the United States

The US has been selected for cross-national comparative research with Australia because of its progressive lead in tax policy, brought about by its larger and more diverse society, economy and challenges. The US often confronts global issues well before they have reached Australia, providing the Australian government with lessons to learn and mistakes to avoid. In line with the four factors,¹³⁶ the US has a research and experimental¹³⁷ (**R&E**) tax deduction and a temporary research and experimental tax credit within its established tax system. Secondly, the US is a powerful democratic economy that shares a land crossing with Latin America. According to the IAASTD (2009, p. 6) this region suffers from the highest rates of inequality in the world with 47 per cent of the region poor or undernourished. On the face of it, such statistics suggest the potential for greater food security migration. Therefore Australia and the US share a similar challenge of being geographically strategic countries of their regions to uphold peace and prosperity among food insecure nations. Thirdly, Australia and the US both practice predominantly large-

¹³⁶ See section 5.2.

¹³⁷ R&E will be used interchangeably with R&D.

scale industrial monoculture, and if the proposed global solution is to transition away from this entrenched farming model, it will be of mutual interest for both countries to learn how to achieve this without significantly disrupting global food supply. Finally, the US government's geopolitical position on global food security is more pronounced than that of Australia. The US, as founders of food aid, has been fundamental in acknowledging food insecurity and taking enduring steps towards addressing this global challenge within the confines of our current food system.

5.4.2 Agriculture in the United States

First and foremost the US is the world's largest exporter of agro-food products (OECD, 2013, p. 287). Agricultural exports are forecast to reach US\$139.5 billion in fiscal year 2013, resulting in a US\$28.5 billion agricultural trade surplus (Hanrahan, 2013).¹³⁸ Despite such impressive statistics the role of the agricultural industry is diminishing within the US economy, contributing 1.2 per cent of GDP in 2011 (OECD, 2013, p. 287). Yet the global influence US agriculture exerts almost mandates that the US be considered for comparative analysis when discussing global food security. Generally the US is the world's largest exporter of wheat, corn, soybeans, cotton and pork (Hanrahan, et al., 2011) to its major export markets of China, Canada, Mexico, EU-27 and Japan (Hanrahan, 2013, p. 2). Export markets are critical to the US, as its agricultural supply is outpacing domestic demand requiring export trade to sustain prices and revenue. Approximately 26 to 30 per cent of annual farm income is from exports (Hanrahan, 2013). Excess US agricultural supply partly contributes to international food aid, which since 1995 has provided on average 57 per cent of annual total food.¹³⁹ Although the 1999 Food Aid Convention has expired, the US is one of the first signatories under the Food Aid Assistance Convention commencing 1 January 2013 therefore it is likely the US will continue its lead role in food aid.¹⁴⁰

The question is how has the US achieved this global domination in agriculture? Understanding this requires a brief examination of the Farm Bill, a multi-year legislative bundle that governs a variety of loosely related agriculture and food programs: Conservation, Commodities, Trade, Nutrition, Credit, Rural Development, Research,

¹³⁸ Currently the record high of agricultural exports is US\$137.4 billion in fiscal year 2011.

¹³⁹ Under the Food Aid Committee of the International Grains Council and 1999 Food Aid Convention.

¹⁴⁰ Other countries include: EU, Japan, Denmark, Canada and Switzerland.

Extension and Related Matters, Forestry, Energy, Horticulture, Livestock, Crop Insurance and Disaster Management and Miscellaneous matters (Johnson & Monke, 2013). Given the uncertainty of the 2013 Farm Bill,¹⁴¹ discussion on the composition of US farm policy is based on *The Food, Conservation and, Energy Act* of 2008 (**2008 Farm Act**), which was mostly extended for one year (til year end 2013) under the *American Taxpayer Relief Act* of 2012. Contained within this Act are numerous legislative titles covering direct payments, counter-cyclical payments, average crop revenue election, non-recourse marketing loans, export programs, R&D, tariff-rate-quotas, minimum government prices, general tariffs and general export subsidies to various parts of the agricultural industry (OECD, 2013, p. 290). Although at times this suite of measures has resulted in some WTO breaches, cumulatively it has created an effective, well-financed and promoted agricultural export model (Hanrahan, 2013).

There are four key indicators the OECD (2013) used to evaluate agricultural support and policies: Producer Support Estimate (**PSE**),¹⁴² Consumer Support Estimate (**CSE**),¹⁴³ General Services Support Estimate (**GSSE**)¹⁴⁴ and Total Support Estimate (**TSE**),¹⁴⁵ each will be discussed in turn. US PSE has declined from 22 per cent in 1986-1988 to 7.1 per cent in 2012, resulting in the fourth-lowest PSE amongst OECD countries. This indicates US farmers are becoming more competitive with less direct government support (OECD, 2013, p. 288).¹⁴⁶ Meanwhile the CSE has increased from 7.8 per cent in 2005 to 13.8 per cent in 2012, suggesting US agricultural policies benefit US residents by ensuring domestic prices are below world market prices (OECD, 2013). Not only is the US one of two countries with a positive CSE, it is trailblazing, with the Ukraine's CSE sitting at 2.7 per cent (OECD, 2013). The US has also managed to achieve a competitive efficient agricultural industry by spending the same amount of money relative to country size, as demonstrated by a TSE of 1 per cent of GDP – in line with the international benchmark (OECD, 2013, p. 288). It is the composition of US agricultural support that has changed, with more expenditure on GSSE which has increased from 23 per cent in 1986-88 to 51

¹⁴¹ At date of writing, the Senate and House of Representatives had passed separate Farm Bills, but there had been no reconciliation.

¹⁴² Support to producers as a share of gross farm receipts.

¹⁴³ Percentage of consumption expenditure on agricultural commodities minus any taxpayer transfers to consumers. If the CSE is negative it suggests consumers are implicitly taxed, whereas if the CSE is positive it shows consumers are benefitting.

¹⁴⁴ These are general services such as government public financing of R&D, agricultural education, inspection, marketing and promotion.

¹⁴⁵ TSE measures the overall support to the agricultural sector, by combining the PSE, GSSE and CSE.

¹⁴⁶ To provide context in 2012, Australia's PSE was 2.7 per cent, South Africa 3.2 per cent and Japan 55.9 per cent.

per cent in 2010-12. Marketing and promotion was one of the main causes, along with domestic food assistance (OECD, 2013).¹⁴⁷ This strategic focus on promoting US commercial agriculture has helped the US maintain its export edge. This is in contrast with the way Australia spends its GSSE, using 60 per cent for R&D (OECD, 2013, p. 51).¹⁴⁸ Therefore the US EPA (2013) can rightly claim ‘The US farmer is the most productive in the history of the world ... and food is more affordable in the [US] than in any other developed country in the world.’

In concluding this overview on US agriculture, a few key points can be gleaned. The US farm bill budget is used primarily for two purposes: 1) to proactively engage with overseas buyers via aggressive export strategies; and 2) to adequately provide for their less fortunate US residents via food assistance programs to keep domestic food prices affordable. Complementing this is generous US food aid provisions permitting excess agricultural production to supply international food aid programs. One negative observation is the use of government funding to prop up fledgling industries such as sugar, behaviour which is most distorting to world markets, but strategically significant to the US given the sugar market’s record high index (OECD, 2013, p. 22).¹⁴⁹ Notwithstanding this, the US agricultural suite is highly effective in achieving policy objectives. It is interesting to note, the level of expenditure on agricultural R&D is not affected much by the Farm Bill, despite its all-encompassing nature.¹⁵⁰ This is because the US tax code contains the RDTI. This leads into the next section, which will discuss the US tax system.

5.4.3 Overview of the United States’ Tax System

The history of the US federal income tax has been documented by Bittker & Lokken (1999) and Repetti (2004), including the impact of the Revolutionary War and the Civil War, the introduction of the Sixteenth Amendment and the numerous re-enactments and codifications of the *Internal Revenue Code* (**IRC**). This summary picks up from the *Internal Revenue Code* of 1986 (**IRC86**), the impact of the 2008 global financial crisis that caused Congress to introduce fiscal stimulus measures such as *The Economic Stimulus Act* of 2008

¹⁴⁷ Food assistance refers to the US Supplemental Nutrition Assistance Program (formerly named Food Stamps).

¹⁴⁸ South Africa also spends most GSSE on R&D, whereas Japan allocates most to infrastructure.

¹⁴⁹ In 2011, the world sugar index had increased 160 per cent since 2005. In 2012 it had only dropped 17 per cent from the previous year.

¹⁵⁰ The Farm Bill covers 13 various agriculture and food programs: Conservation, Commodities, Trade, Nutrition, Credit, Rural Development, Research, Extension and Related Matters, Forestry, Energy, Horticulture, Livestock, Crop Insurance and Disaster Management and Miscellaneous matters.

and *The American Recovery and Reinvestment Act* of 2009, which provided tax incentives, rebates and credits to individual and business taxpayers (Sage & CQPress, 2012, p. 763).

Before progressing further it is necessary to provide a brief outline of the constitutional issues surrounding US tax law. Under the Sixteenth Amendment, Congress has very wide powers to assess income tax. In addition, established precedent permit Congress to use tax statutes to accomplish objectives not related to raising revenue (Repetti, 2004, p. 138). The authority of *Sunshine Anthracite Coal Co. v. Adkins*¹⁵¹ allows Congress to use taxes to discourage certain activities without any consideration of whether the tax will raise revenue (Repetti, 2004, p. 138). In *Regan v. Taxation With Representation of Washington*¹⁵² it was held that Congress may favour some groups with tax preferences without favouring all groups, provided the deciding factor is not based on a suspect classification such as race (Repetti, 2004, p. 138). Furthermore, while the IRC is a national federal law, ‘... it taxes transactions whose legal effects are usually prescribed by state rather than federal law’ (Bittker & Lokken, 1999, pp. 4-2). The IRC does not provide many definitions¹⁵³ it relies on state laws to prescribe the rights and liabilities of their resident taxpayer which then informs the definition and powers of the federal tax court or collector. Given that each state in America can have different state laws and definitions to that of the other 49 states, many threshold questions at the state level need to be addressed first ‘... before the federal tax consequences of a transaction can be determined’ (Bittker & Lokken, 1999, pp. 4-2). These peculiar features of the US tax law will not affect the relevance of their R&D tax regime; however it may hinder the transferability of some aspects within Australia’s constitutional tax framework.

Following on is a discussion on the current composition and administration of the US tax system. The US government imposes taxes on income, wealth transfer, social security and excise (Repetti, 2004, p. 140). Like Australia the US government taxes its citizens, residents and entities on their worldwide income (Repetti, 2004, p. 141). Unlike Australia there is no GST or any other type of federal sales or value-added tax (Repetti, 2004, p. 140).

¹⁵¹ 310 US 381 (1947).

¹⁵² 461 US 540.

¹⁵³ The IRC does have a few definitions which supersede State law. These provisions substitute the local state meaning for a uniform federal definition. For example: sections 704(e), 6013(d)(2) and 318. In contrast there are also some IRC provisions that explicitly provide for the state definition to prevail or determine. For example: sections 368(a)(1)(A), 164(d)(2)(A) and 162(c)(2). In the middle of this IRC language spectrum is the use of familiar legal terms, such as ‘contract’ which allow for the IRC to be concise while importing whichever applicable state law definition that would apply to that taxpayer (Bittker & Lokken, 1999, pp. 4-10).

However each state is permitted to tax income, property, wealth, sales and/or excise. The Internal Revenue Service (**IRS**), established in 1862, is responsible for the administration of tax laws and the assessment, collection and enforcement of taxes (Sage & CQPress, 2012, p. 762). Similar to the ATO, the IRS also handles some superannuation aspects, and tax status of exempt organisations. The IRS also prepares rules and regulations as additional guidance to the IRC and taxpayers have access to an independent appeal system. The US tax system is self-assessing and e-filing is common, with 73 per cent of taxpayers in 2013 forecast to file electronically (ETAAC, 2013, p. 3).

Significant to this thesis is the tax treatment of businesses, as the motivation behind offering RDTIs is to encourage private business to invest in R&D. Therefore this section will briefly outline US corporate entities. The common forms of business enterprise in the US are C corporations, S corporations, partnerships and sole proprietorships (CCH, 2012, p. 139). Generally the IRC applies equally to all entities however taxpayer classification does affect some provisions. C corporations are taxed twice, once at entity level and then at shareholder level.¹⁵⁴ Generally S corporations, partnerships, limited liability companies and sole proprietorships are taxed once, at the owner or member level on their share of the entity's earnings.¹⁵⁵ However for all other purposes S corporations are treated as regular C corporations (CCH, 2012, p. 140 & 159). The 2012-2013 federal tax rates for corporations are based on a progressive scale, starting at 15 per cent for taxable income below US\$50,000 to 35 per cent for taxable income above US\$18,333,333 (Tax Foundation, 2013). Each corporation must file an income tax return regardless of income or tax liability (CCH, 2012, p. 141).¹⁵⁶ A corporation pays tax on its 'taxable income' which is its gross income minus deductions allowed under IRC86 Sections 1 through 1400U-3 (CCH, 2012, p. 146).¹⁵⁷ It is within deductions at section 174 of the IRC86 that the permanent R&D tax deduction is contained. A corporation's tax liability is comprised of corporate income tax¹⁵⁸, the alternate tax¹⁵⁹ and the gross transportation income tax.¹⁶⁰ In addition to these regular taxes, a corporation may also be subject to the

¹⁵⁴ Sections 11 and 301(c).

¹⁵⁵ Section 1363.

¹⁵⁶ Section 6012(a)(2); Regulation 1.6012-2.

¹⁵⁷ Regulation 1.11-1.

¹⁵⁸ Section 11.

¹⁵⁹ Section 1201.

¹⁶⁰ Section 887.

Alternative Minimum Tax (AMT),¹⁶¹ accumulated earnings tax¹⁶² or personal holding company tax (CCH, 2012, p. 143).¹⁶³ Finally, ‘the total expected tax liability is reduced by the sum of the credits against tax’ (CCH, 2012, p. 143). Section 38 IRC86 outlines the various general business credits available which require individual computation before being summed. The research tax credit (section 41 IRC86) falls within the business credit regime of section 38. Following on from this background on US corporate taxation, the next section will analyse the US RDTIs.

5.4.4 R&D tax incentives in the United States

Similar to Australia, the US federal government supports R&D in two key manners: direct support and indirect support. Of relevance to this thesis is indirect support, which is diffuse in nature. In the US, indirect support funds higher education in engineering and natural sciences, legal protection of IP rights, special allowances under antitrust law for joint ventures, and tax incentives for business R&D investment (Guenther, 2011, p. 2). It has been usual for the US to have two RDTIs in the IRC86. All legislative references in this section are to the IRC86, unless stated otherwise. Section 174 was introduced in 1954, as an uncapped permanent R&D tax deduction for qualified research spending, whereas section 41, is a temporary non-refundable incremental R&D tax credit for qualified research spending above a base amount, that was introduced in 1981. At writing, section 41 had been extended to 31 December 2013, under the *American Taxpayer Relief Act of 2012*.¹⁶⁴

Section 174 – Research and Experimental Expenditures

This provision is remarkably brief, two pages in length, and yet it offers taxpayers maximum flexibility through four choices. In summary, the R&D can be conducted anywhere in the world and there is no prescribed financial cap on the deduction. Choice one allows taxpayers to deduct R&D expenditure in the current year it is incurred or paid.¹⁶⁵ Choice two allows the expense to be deferred and deducted rateably over a minimum of 60 months from the time the taxpayer first realises benefits from the expenditure.¹⁶⁶ Choice three is not explicit in section 174 it is embedded via subsection

¹⁶¹ Section 55.

¹⁶² Sections 531-537.

¹⁶³ Section 541.

¹⁶⁴ Section 301.

¹⁶⁵ Subsection 174(a).

¹⁶⁶ Subsection 174(b).

59(e) which allows taxpayers to deduct the expenditure rateably over ten years starting from the tax year the expenditure was made.¹⁶⁷ Choice four, also not explicit, is the default position if the taxpayer fails to treat their R&D expenditure in one of the above manners, the expense must be capitalised.¹⁶⁸ Overlaying these choices is subsection 174(e) which demands that whichever method of tax treatment is chosen; only reasonable research expenditure is eligible. This and other relevant requirements are discussed below.

Firstly, the expenditure must be incurred in connection with the taxpayer's trade or business.¹⁶⁹ However, that trade or business need not be conducted at the time of incurring the R&D expense, provided the taxpayer can show a realistic prospect of commencing a trade or business in connection with the R&D expense if the R&D is subsequently successful.¹⁷⁰ The courts have held that the taxpayer must demonstrate an objective intent and capability of entering the related trade or business (Tax Management Inc, 2011, p. 26607).¹⁷¹ Therefore the application of the US R&D deduction is broader and more equitable than that in Australia. To prevent abuse of this wide interpretation, the courts look to various factors to determine whether the taxpayer has actually been involved or engaged in the R&D, it has been held that 'a taxpayer may not simply serve as an investment vehicle to fund the research' (Tax Management Inc, 2011, p. 26607).

Secondly, the taxpayer must incur research or experimental expenditure. Section 174 does not define R&E expenditure, instead it relies on regulations.¹⁷² Apart from these regulations, there is no extensive judicial guidance because a taxpayer can re-characterise its R&E expenditures to ordinary and necessary business expenditures under section 162 if there is audit concern.¹⁷³ In general, R&E expenditure comprises costs of an experimental or laboratory sense incurred in the conduct of activities.¹⁷⁴ Specifically, this means 'activities' that are intended to discover information that would eliminate uncertainty concerning the development or improvement of a product.¹⁷⁵ The focus is on the nature of the R&E activities, not the nature of the product being developed or the

¹⁶⁷ Subparagraph 59(e)(2)(b).

¹⁶⁸ Regulation 1.174-1.

¹⁶⁹ Paragraph 174(a)(1).

¹⁷⁰ B.L. Spellman, 88-1 USTC and W.L. Zink, 91-1 USTC.

¹⁷¹ S.D. Kantor, 93-2 USTC.

¹⁷² Regulations of 1957 and 1994.

¹⁷³ There may be some impact because without the section 174 deduction, a taxpayer cannot have a section 41 credit.

¹⁷⁴ T.D. 6255, 22 Fed. Reg. 7901 (10/3/57).

¹⁷⁵ Reg. 1.174-2(a)(1).

level of technological improvement the product represents.¹⁷⁶ Uncertainty exists if the taxpayer is unaware of either the capability or method for developing or improving the product; or the appropriate design of the product. Therefore uncertainty can exist even if the taxpayer is aware the product development project will be successful (Tax Management Inc, 2011, p. 26608). Similar to Australia, certain expenditures are excluded from R&E.¹⁷⁷

Subsection 174(e) imposes a subjective limitation on the generous RDTI. This provision sets a quantum limit based on what would ordinarily be paid for like activities by like enterprises under like circumstances.¹⁷⁸ Amounts that are not considered reasonable may be treated as disguised gifts, dividends, loans or similar payments.¹⁷⁹ Finally, this test of 'reasonableness' does not extend to questioning whether or not research activities are of a reasonable nature or type (Tax Management Inc, 2011). Having discussed the overarching elements of section 174 next is an explanation of the various tax treatments.

- Paragraph 174(a)(1) Expense method

If taxpayers follow the general approach of expensing the R&D in the current year they can choose to restrict the application to a specific project and elect to apply the deferred expense method to other projects.¹⁸⁰ There are election procedures to comply with. If taxpayers fail to deduct their R&D expenditure there is scope for amendment within the statute limits (Tax Management Inc, 2011, p. 26602).

- Paragraph 174(b)(1) Amortisation of certain R&E expenditures

Under this method taxpayers elect to rateably amortise R&E expenditure over 60 months. By choosing this option, taxpayers must be mindful of subparagraph 174(b)(1)(C) which disallows the treatment if section 167 (allowance for depreciation) or section 611 (allowance for depletion) applies. This requires taxpayer foresight otherwise certain R&E expenses may be lost (Tax Management Inc, 2011, p. 26603). Although the taxpayer must choose an amortisation period at the time of election there is flexibility for different amortisation periods for each R&D project.¹⁸¹ The amortisation period commences from the month the

¹⁷⁶ Reg. 1.174-2(a)(1).

¹⁷⁷ Under Reg. 1.174-2, ordinary testing, inspection, quality control, management, advertising, consumer studies, efficiency surveys, promotions, acquisition of patents, land and depreciable property, literary and historical projects, and oil, mineral and gas costs.

¹⁷⁸ Reg. 1.174-2(a)(6).

¹⁷⁹ Paragraph 162(a)(1).

¹⁸⁰ Reg. 1.174-3.

¹⁸¹ Reg. 1.174-4(a)(3).

taxpayer's R&D results are put to an income-producing use.¹⁸² This can lead to a lengthy delay between the outlaid R&D expense and the eventual income-producing result permitting the deduction. Thus a taxpayer may wish to use the ten-year amortisation option discussed below. Finally, if the R&D project is abandoned without realising any benefits, the taxpayer can claim the entire loss under section 165 at the time the project is abandoned.

- Subsection 59(e) Ten year amortisation

Under paragraph 174(f)(2) there is the option for taxpayers to use a ten year amortisation provision contained in subsection 59(e). The taxpayer must elect this option, which allows R&D costs to be rateably deducted starting from the tax year costs are paid or incurred.¹⁸³ This contrasts with paragraph 174(b)(1) treatment discussed above, as it is likely the ten year amortisation deductions will commence sooner, than waiting for the first realisation of R&D benefits (Tax Management Inc, 2011, p. 26606).

Overall section 174 encourages businesses to invest in R&D by taxing the returns to such investment at a marginal effective rate of zero (Guenther, 2011, p. 2). The simple operation and relatively unlimited quantum entices businesses to consider the tax benefit of investing in R&D.

Section 41 – Credit for increasing research activities

This temporary provision is unduly complex (12 A4 pages in length) given its secondary role within the US R&D tax regime. The summary that follows is limited to the basic mechanics of the provision.¹⁸⁴ Section 41 is a non-refundable research credit designed to encourage additional R&D expenditure above what the taxpayer would otherwise spend. It comprises adding together three¹⁸⁵ separately calculated credit components out of a choice of four to give a total section 41 R&D credit. The credit components are: 1) Regular Research Credit (**RRC**)¹⁸⁶ 2) Basic Research Credit (**BRC**)¹⁸⁷ 3) Energy Research Credit (**ERC**)¹⁸⁸ 4) Alternative Simplified Credit (**ASC**)¹⁸⁹ and if applicable 5) Alternative

¹⁸² Reg. 1.174-4(a)(3).

¹⁸³ Section 59(e)(6).

¹⁸⁴ Detailed reading on section 41 IRC86 can be found in Tax Management Portfolios – Research and Development Expenditures, The Bureau of National Affairs, Inc.

¹⁸⁵ The three choices are limited to a combination of the regular credit or alternative simplified credit plus basic research credit plus energy research credit.

¹⁸⁶ Section 41(a)(1).

¹⁸⁷ Section 41(a)(2).

¹⁸⁸ Section 41(a)(3).

¹⁸⁹ Section 41(c)(5).

Incremental Research Credit (**AIRC**).¹⁹⁰ Each of these has their own restrictions, definitions, IRS evidence requirements and eligible claim periods. In addition the research credit of section 41 falls under the umbrella of the general business credit section 38 (calculation of total business credits to reduce tax liability). This section is then linked to section 39 (general business credits can be carried forward 20 years and carried back one year), which allows unused research credits at the end of the carry forward period to be treated as a deduction under section 196 (Tax Management Inc, 2011). Finally if the taxpayer claims the research credit, it must subtract this quantum from their section 174 deduction¹⁹¹ or capitalisation; alternatively they can elect to claim a reduced research credit in lieu of reducing deductions or capitalisation otherwise allowed.¹⁹² Thus section 41 cannot be read alone, as the eligibility and operational requirements are specifically impacted by an understanding of these other provisions.

- Regular Research Credit

The RRC provides a 20 per cent non-refundable tax credit for ‘qualified research expenditures’ above the taxpayer’s base amount for that year.¹⁹³ The first key element is satisfying the definition of ‘qualified research expenses’ which entails four criteria, intersecting with section 174 and T.D. 9104 (IRS regulation). There are also specific expenditures which are excluded¹⁹⁴ and percentage limits on how much of specific types of expenditure can be claimed.¹⁹⁵ The second element requires calculating the taxpayer’s base amount, which will differ for established firms and start-ups. This calculation requires multiplying the taxpayer’s fixed-base percentage by the average annual gross receipts from the previous four years.¹⁹⁶ Furthermore, there are caps on the percentage of base amount¹⁹⁷ and the base amount must equal 50 per cent or more of the taxpayer’s current qualified research expense.¹⁹⁸ Given the temporary nature of the RRC, it is only

¹⁹⁰ Section 41(c)(4).

¹⁹¹ Section 280C(c).

¹⁹² Section 280C(c)(3).

¹⁹³ Section 41(a)(1).

¹⁹⁴ Section 41(d)(4).

¹⁹⁵ Section 41(b)(3).

¹⁹⁶ The lower a firm’s base amount, the better its chances are of claiming the RRC (Guenther, 2011, p. 5).

¹⁹⁷ 16 per cent for established firms and 3 per cent for start-ups: section 41(c)(3).

¹⁹⁸ Section 41(c)(2).

available for amounts paid or incurred before 1 July 1995, after 30 June 1996, and before 1 January 2014.¹⁹⁹

- Alternative Simplified Credit

In 2006 Congress²⁰⁰ inserted an alternative to the complex computation of the RRC titled the ASC.²⁰¹ If the taxpayer makes this election, then a set percentage (currently 14 per cent) of qualified research expenditures that exceed 50 per cent of the average qualified research expenditures in the past three years is the quantum claimed.²⁰² If the taxpayer does not have three years of history, then the amount claimed is 6 per cent of the current year's qualified research expenses.²⁰³ This election is only available for tax years starting 1 January 2007.

- Alternative Incremental Research Credit

Between tax years 1996 and 2008 businesses had the option of another method to compute the research tax credit under section 41.²⁰⁴ Once a taxpayer elected the AIRC it had to be followed until revoked through the IRS. The AIRC required the taxpayer to sum the total of three separate calculations which were based on three tiers of reduced credit rates and fixed-base percentage. To briefly convey the complexity of the provision, subparagraph 41(4)(A)(i) requires the taxpayer to calculate three per cent of its current qualified research expenses that exceed 1 per cent of the average annual gross receipts in the past four years, but not more than 1.5 per cent of that average.

- Basic Research Credit

The BRC is equal to 20 per cent of total payments of 'qualified basic research' above a 'base period amount' and paid to specific organisations.²⁰⁵ This component of the research tax credit is designed to encourage collaborative research between business and educational institutions. Unfortunately the definition of 'qualified basic research' differs from 'qualified research expenses' and the 'base period amount' calculation also differs

¹⁹⁹ Section 41(h)(1).

²⁰⁰ *Health Care and Tax Relief Act* of 2006 (P.L. 109-432).

²⁰¹ Section 41(c)(5).

²⁰² Section 41(C)(5)(A).

²⁰³ Section 41(C)(5)(B).

²⁰⁴ Section 41(h)(2).

²⁰⁵ Section 41(e).

from the ‘base amount’ determined under the RRC, therefore taxpayers must keep comprehensive source records. Finally, the BRC is only available to C corporations.²⁰⁶

- Energy Research Credit

Although not on point with food security, this tax credit design is influential in demonstrating how Congress can steer R&D investment. From 9 August 2005 taxpayers can claim a tax credit equal to 20 per cent of payments made to energy research consortiums as part of the taxpayer’s trade or business.²⁰⁷ Unlike the other research tax credit components this is not incremental, it is a flat 20 per cent credit thus it is more generous, with some limitations.²⁰⁸

Finally, overlaying these separate R&D credit calculations are several anti-avoidance measures.²⁰⁹ Starting with the aggregation rule, this provision attempts to prevent shifting of expenditures between related entities by treating the taxpayers as a single entity for R&D tax credit purposes.²¹⁰ Secondly, the pass-through rule limits the amount of R&D tax credit that can be attributed to their owners.²¹¹ Thirdly, if there appears an erroneous research tax credit claim, the IRS can suspend the statute of limitations to assess and collect on the deficiency.²¹²

Policy behind the United States’ R&D tax incentives

Unlike Japan and Australia, the US R&D tax regime has not recently been reformed. In 1954, section 174 was introduced²¹³ to ‘... stimulate the search for new products and the new inventions upon which the future economic and military strength of the Nation depends’ (Buchheit, 2002, p. 223). At the time US entities could still deduct the costs of R&D in some manner, however Congress saw a need to streamline and confirm the deduction to treat entities equally. Since its enactment, the courts and the US Department of Treasury (**US Treasury**) have liberally interpreted section 174. The case of *Driggs v. United States*²¹⁴, determined there is no monetary cap on what is considered reasonable

²⁰⁶ Section 41(e)(7)(E).

²⁰⁷ Section 41(a)(3).

²⁰⁸ Section 41(f)(6).

²⁰⁹ Section 41(f).

²¹⁰ Section 41(f)(1).

²¹¹ Section 41(f)(2).

²¹² Section 6501(j).

²¹³ H.R. Rep. No. 1337, 83rd Congress, 2nd Session. S. Rep. No. 1622, 83rd Congress, 2nd Session.

²¹⁴ 706 FSupp 20.

R&D expense which resulted in the only major amendment in 1989 confirming the court's position.²¹⁵ The interpretation of 'trade and business' in *Snow v. Commissioner*²¹⁶ also expanded the reach of section 174 to entities that were not yet in business. Finally, the US Treasury broadly defines R&E expenditure to include '...all such costs incident to the development or improvement of a product. The term includes the costs of obtaining a patent, such as attorneys' fees expended in making and perfecting a patent application.'²¹⁷ Burdened by only six exclusions,²¹⁸ section 174 has attracted few academic studies. Perhaps because the deduction merely codified what was already tax practice and with such liberal interpretation it warrants minimal taxpayer scrutiny.

In comparison, section 41 has received much attention because of its temporary status and reliance on Congress' discretionary spending. Section 41 was introduced in 1981²¹⁹ as a temporary 25 per cent tax credit to combat a decline in private sector spending on R&D. The provision has been continuously extended, often retrospectively, except from 30 June 1995 to 1 July 1996.²²⁰ Several Acts have significantly modified section 41, each time with the intention of improving the credit by offering more choice or limiting its fiscal cost by restricting loopholes. Starting with the *Tax Reform Act* of 1986,²²¹ the tax credit was lowered to 20 per cent; moved within the general business credit provisions²²² (thereby embedding additional criteria); the definition of 'qualified research expenses' was narrowed; and the BRC introduced. In 1988²²³ and 1989,²²⁴ the tax benefit of the credit was eroded by requiring taxpayers to subtract their section 41 claim from their section 174 deduction and modified the 'base amount' formula. The next revision came in 1996²²⁵ when Congress introduced the AIRC, then in 2005²²⁶ when Congress added the ERC, and then again in 2006²²⁷ when the ASC was added. Finally, in 2008²²⁸ Congress repealed the

²¹⁵ Section 174(e).

²¹⁶ 416 U.S. 500 (1974).

²¹⁷ Reg. 1.174-2.

²¹⁸ Under Reg. 1.174-2, ordinary testing, inspection, quality control, management, advertising, consumer studies, efficiency surveys, promotions, acquisition of patents, land and depreciable property, literary and historical projects, and oil, mineral and gas costs.

²¹⁹ *Economic Recovery Tax Act* of 1981 (P.L. 97-34).

²²⁰ For no specific Congressional reason (Guenther, 2011).

²²¹ P.L. 99-514.

²²² Section 38.

²²³ Under the *Technical and Miscellaneous Revenue Act* of 1988 (P.L. 100-647).

²²⁴ Under the *Omnibus Budget Reconciliation Act* of 1989 (P.L. 101-239).

²²⁵ Under the *Small Business Job Protection Act* of 1996 (P.L. 104-188).

²²⁶ Under the *Energy Policy Act* of 2005 (P.L. 109-58).

²²⁷ Under the *Tax Relief and Health Care Act* of 2006 (P.L. 109-432).

²²⁸ Under the *Emergency Economic Stabilisation Act* of 2008 (P.L. 110-343).

AIRC. From this brief summary a damaging legislative pattern emerges. However it must be read in context of the US legislative process, which unfortunately fosters ad-hoc revisions based on the action or inaction of Congress and the President (Guenther, 2011).

5.4.5 Critical analysis

Having provided a legislative history of the US R&D tax regime, this part will critically analyse whether the design of these tax incentives are effective in enabling the potential for increased investment in agricultural R&D. Sections 174 and 41 are designed to be complementary, but it appears section 41 detracts from the effectiveness of section 174 as an R&D tax incentive. Section 174 is well drafted with concise language in plain English, offering broad flexibility, permanence, certainty, has minimal limitations and holds taxpayer favour. Given its 1954 enactment, such simple open-style drafting has mostly withstood the dynamic weather common to R&D and tax. The decision to not define ‘research or experimental expenditure’ within section 174, but to instead rely on Treasury to draft regulations outlining its parameters, has its strengths and weaknesses. Firstly, social research is not entirely excluded, only research associated with literature, history or similar projects.²²⁹ The rise in social challenges, such as food insecurity since 1954, has yet to be solved thus any R&D that may lead the world closer to a solution deservedly requires the full encouragement of the tax system. Another observation of such broad drafting is the inclusion of certain terms which are often subject to other statutes and judicial interpretation (Buchheit, 2002). An example of this is the word ‘patents’ which in the US actually covers three types: plant, design and utility. Over time the general definition of patents has been liberally construed, which has indirectly expanded the scope of section 174. Whether these effects on section 174 were visionary or merely a lack of foresight by Congress is unknown, but even with these tax ‘perks’ the level of R&D investment is still not increasing significantly.

Section 41 is an example of poor legislative drafting. Most blame can be attributed to its temporary nature and its reliance on US discretionary budgets to fund its continued existence, but that does not excuse the lack of common sense by Congress in creating such an unwieldy RDTI with almost incomprehensible calculations. Each time the provision is extended the provision must also be amended, often retrospectively. However on the occasion that Congress does not reinstate section 41, the provision lapses leading to a

²²⁹ Reg. 1-174-2(a)(3)(vii).

complicated fractional calculation to take into account the year the research tax credit expired (Tax Management Inc, 2011, p. 15582). Section 41 has inherent design flaws such as lack of permanence; it is non-refundable and suffers from vague key terms. Even though the provision has been substantially modified five times and extended approximately 16 times, there has been no improvement. These actions have only fuelled greater taxpayer uncertainty and undermined the incentive's effectiveness (Guenther, 2011). Unlike section 174, there appears to have been no vision for section 41, hence its ad-hoc drafting. The result is a wordy and difficult to understand and apply provision. Without permanence, taxpayers cannot reliably anticipate receiving the tax credit, therefore given the long length of R&D projects entities may not even consider the R&D tax credit as part of their budget. This diminishes the purpose of the research credit which is to encourage business investment in R&D by reducing the after-tax cost of the R&D. The complicated incremental design of section 41 places the credit's effectiveness on the sensitivity of the demand for qualified research compared to decreases in its cost (Guenther, 2011). The fact section 41 is non-refundable is most disappointing to start-ups, because they require cash flow for their continued existence. Even though under the umbrella of section 38 taxpayers can carry forward credits 20 years and back one year, it is only beneficial if the entity is still operating. The definition of 'qualified research expenses' has numerous embedded concepts. Ultimately section 41 is too complicated, small entities with a lack of accounting/tax resources would be highly burdened with its compliance and although the tax credit should complement the R&D deduction, it seems likely to only benefit those brave enough to try to successfully claim it. Finally, the fact that the credit amount must be subtracted from the section 174 deduction diminishes any incentive to undertake additional R&D.

5.5 Case study of South Africa

The analysis of South Africa covers several aspects. The rationale outlines the reason for SA's inclusion in the thesis which is followed by contextual background of SA's agriculture and tax system. Building upon this knowledge is detailed analysis of SA's R&D tax regime, underlying government policies and finally an assessment as to the effectiveness of the RDTI in enabling policy objectives.

5.5.1 Rationale for selecting South Africa

SA has been selected for comparative analysis because it represents an emerging country which, unlike Japan or the US, has not yet taken a specific stance on food security.²³⁰ Instead SA has weaved a tapestry of seemingly conflicting aspects of tax, agriculture and food security policies, each of which will be elaborated. Firstly, SA has an established tax system and as a member of the Commonwealth, its legislation and law-making processes are similar to those of Australia. Particular focus will be on the recent reform of SA's RDTI with effect from 1 April 2012.²³¹ Secondly, Sub-Saharan Africa is forecast to be the most food-insecure region in the world over the next ten years, therefore SA's role in agricultural production is invaluable, not only for trade but also in providing regional food aid (Meade & Rosen, 2013). Thirdly, SA is a country of food security contradiction. Despite its net food exporter status, SA suffers from food insecurity, thus access to sufficient food is enshrined in their Bill of Rights.²³² Fourthly, SA is part of the BRICS group, joining Brazil, Russia, India and China, which are emerging countries that together hold significant global influence (BRICS Media Limited, 2013). Finally, SA has tremendous agriculture potential supported by foreign investment from biotechnology firms using GMOs to restore SA's once successful commercial farms and skill-up poor unprofitable subsistence farmers (Gillam, 2013).

5.5.2 Agriculture in South Africa

The evolvement of the agriculture industry in SA is an intriguing story and, at this point in history, is at a juncture. To preface this analysis it is necessary to provide a snapshot of SA's agricultural geography. SA has a land mass of 122 million hectares, of which 12 per cent is arable, but of this amount, 78 per cent is more suitable for livestock farming (Brand South Africa, 2012). SA has a population of 51.7 million (DAFF RSA, 2013), of which agriculture employs 5 per cent and contributes 2.4 per cent of GDP (OECD, 2013). SA's key exports are: maize, sugar, fruit, flowers and wine mostly absorbed by the European and African markets (Brand South Africa, 2012). SA's agricultural industry is highly competitive with its PSE at 3 per cent for 2010-2012, and TSE at 0.2 per cent of GDP

²³⁰ Although SA is considered a non-OECD developing country there is sufficient information available to enable equally robust comparative analysis.

²³¹ *Income Tax Act No.58 of 1962.*

²³² *Constitution of the Republic of South Africa No.108 of 1996.*

(OECD, 2013). SA is the largest and strongest African economy with a GDP of R272.2 billion, well exceeding Nigeria (Kijapi, 2013).²³³

Under the apartheid regime²³⁴ the National Party segregated farming interests, creating well-funded commercial farming operations for whites and small under-funded subsistence farms for non-whites. During this period, SA's commercial farms mostly flourished exporting 80.6 per cent of agriculture (Liebenberg & Pardey, 2012, p. 15). Post-apartheid, SA is still a net exporter of agro-food products, but now exports only 8 per cent (OECD, 2013, p. 249). In 1994 the democratic government implemented the Land Redistribution for Agricultural Development program which aims to redistribute approximately 30 per cent of SA's commercial agricultural land to non-whites (DAFF, 2001).²³⁵ By May 2012, the government had redistributed 7.95 million hectares out of the original target of 24.6 million hectares (Nkwinti, 2012), but by 2010, the government classified 90 per cent of that redistributed land as no longer productive (ARI, 2013). Meanwhile expenditure on agricultural R&D has continued to fall, however at a lesser rate than that of developed countries (Liebenberg & Pardey, 2012). Regardless, SA's agricultural yields lag behind global averages and the government has had to make difficult policy decisions, such as introducing GMOs, reassessing food security initiatives and encouraging intensive mining to help improve domestic food security (Gillam, 2013). These issues will each be explored below.

South Africa and Food Security

The challenge facing SA is to balance the interest of white commercial farmers to maintain the status quo of being a net-exporter, while attempting to redistribute the land, skills and knowledge within agriculture to non-whites. If SA could achieve this, it could lead to a more equitable society, reduce unemployment (broadly hovering at 36.8 per cent²³⁶ (StatsSA, 2013)) and therefore improve domestic food security, by addressing the key cause: lack of purchasing power (WHO, 2011). Unlike Australia, Japan and the US, the ability for SA to increase, or even maintain economic growth, is intrinsically tied to addressing basic humanitarian problems, such as illiteracy, crime, HIV/AIDS and

²³³ Nigeria's GDP in 2013 was R141.3 billion.

²³⁴ 1948 to 1994.

²³⁵ The original deadline to complete this task was 1999, but has since been postponed to 2014 and now 2025 (ARI, 2013).

²³⁶ Agricultural employment lost 2,000 jobs in Quarter Three of 2013 (StatsSA, 2013).

social/tribal divisions (OECD, 2006). Under apartheid SA still suffered from food insecurity, but it was not considered a social ill by the National Party.

In 1994 the democratic government immediately identified food security as a priority policy objective. The government enshrined in subsection 27(b) of the *Constitution of the Republic of South Africa 1961*, 'Everyone has the right to have access to sufficient food and water.' This is re-enforced by subsection 27(2): 'The state must take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of [this] ... right.' Under the Reconstruction and Development Programme a multitude of initiatives were implemented, but in 2000 the government decided it was time to streamline and design one national food security strategy which is titled 'Integrated Food Security Strategy' (Department: Agriculture, RSA, 2002). One of the steps the government has taken, most relevant to this thesis, is the introduction of GMOs in 1997. By 2012 SA was the eighth largest GMO producer in the world for maize,²³⁷ soybean and cotton (Stieber, 2013). By increasing yields on arable land, it should enable greater feed to be produced to support intensively farmed livestock on less arable land. Given SA's lagging agricultural yields²³⁸ and growing population, GMOs seemed a quick solution to bring SA agriculture up to speed. This could have been the case, had SA farmers and authorities been better equipped to handle GMO stewardship, food safety testing, regulatory agricultural compliance and GMO monitoring; and had there not been pressure on government to immediately improve food security and the economy (Bothma, et al., 2010).²³⁹ Instead, SA agriculture is dealing with increased pest resistance, high reliance on pesticides, defensive biodiversity and loss of once-productive farmland (Stieber, 2013). Generally South Africans are poorly educated, thus the concept of GMOs is not fully appreciated by the broader population. This alarms advocates against GMOs as the SA people have become unconsciously willing participants for biotechnology firms to sell GMOs to a mass market with weakly enforced regulations and safeguards (Bothma, et al., 2010).

This porous environment has spurred the US biotechnology industry with its political lobby groups²⁴⁰ to de-couple food aid²⁴¹ from American farms. It appears their diplomatic

²³⁷ White and yellow.

²³⁸ Average grain yields in Africa are generally about one-fifth of developed countries (Gillam, 2013).

²³⁹ In 2010 it was observed that of the 129 GMOs only one crop was being monitored (Bothma, et al., 2010).

²⁴⁰ The Bill and Melinda Gates Foundation heavily invest in the Improved Maize for African Soils Project (Bothma, et al., 2010).

²⁴¹ Through the composition of the 2014 Farm Bill.

reason is to promote regional food aid within Africa that could position SA as a hub for African food aid, in turn furthering the interests of biotechnology firms.²⁴² In 2012 the US government announced the New Alliance for Food Security and Nutrition, which aims to lift 50 million Africans out of poverty by 2022 (USA.gov, 2012). In 2013 the World Food Prize Foundation awarded three scientists for their GMO research (World Food Prize Foundation, 2013). As raised in Chapter Two, this form of soft diplomacy is becoming common for the US in promoting its geopolitics. Unfortunately the cost for SA pursuing this path may come at the loss of entry into European export markets and the alienation of other African markets (Bothma, et al., 2010), which currently prefer non-GM agriculture (ASSAF, 2010). Presently there are only four African countries that have permitted commercialised GMOs (Schmickle, 2013).²⁴³ If Europe and Africa begin to accept GMOs then it could lead to the global co-operation the US is vying for, if not, it could leave SA re-assessing its objectives and alliances.

Another step the government has taken is reallocation of farmland to expand the mining industry. As stated, SA suffers from food insecurity due primarily to lack of purchasing power therefore any industry that promises employment is likely to garner government support. Minerals have been found in farming provinces²⁴⁴ and the government is keen to profit from mining permits and licences. Currently mining operations have a Gross Value Added (**GVA**) of 21.9 per cent, whereas agriculture is only 3.8 per cent (BFAP, 2012). In the short-term this is a boost to the economy, but in the long-term mining damage to land can be devastating. Recent statistics show potentially 77 per cent of one particular farming region could be reallocated to mining (BFAP, 2012). Even if not all the proposed land is required, the environmental damage surrounding the mine and the economic feasibility of operating smaller farms in between the mine sites warrants concern. However if GMOs prove sustainable in intensifying yields on small parcels of farmland, then perhaps mining and farming activities could co-exist. So the circular nature of the debate continues, and geopolitically these various strands make for an interesting backdrop to examining the SA tax system and its role in assisting global food security.

²⁴² For example in 2013 DuPont finalised its purchase of the African seed company Pannar. Part of the successful negotiation involved DuPont committing funds to establish a technology hub in South Africa and to assist small farmers on GMO use (The Canadian Press, 2013).

²⁴³ Sudan, Egypt, Burkina Faso and South Africa.

²⁴⁴ Mpumalanga region.

5.5.3 Overview of South Africa's tax system

Starting with the basic framework of the SA tax system, the tax year starts 1 March and ends on the last day of February. SA follows a residence-based income tax system, and has a Value-Added Tax (**VAT**) of 14 per cent.²⁴⁵ The main source of government income in 2013 was from personal income tax (R250,400 million), then corporate income tax (R151,627 million) (SARS, 2013). Similar to Australia's e-tax, SA has eFiling. Given SA's political history, the South African Revenue Service (**SARS**) is a young institution, established in 1997, as an administrative organ of state, but is not part of the SA public service (SARS, 2013). Similar to the ATO, the role of SARS is to collect revenue and enforce tax, customs and excise laws. Notwithstanding SARS infancy, SA's legislative tax history dates back to 1904 with initially limited application, but after several amendments and re-enactments²⁴⁶ the present *Income Tax Act* of 1962²⁴⁷ (**ITA62**) (which covers income, microbusiness turnover, capital gains, withholding and donations tax) was formed. It is timely to mention the *Income Tax Act* of 1914 borrowed greatly from the *Land and Income Tax Assessment Act* of 1895 (NSW) (Butterworths, 2012). This Australian style of legislative drafting will be observed again, when the South African RDTI is examined.

Having provided a brief overview of the SA tax system, the focus will turn to corporate taxation. The corporate tax system distinguishes between micro businesses, small businesses and companies. Companies are taxed at a flat rate of 28 per cent, other businesses are progressively taxed. To encourage innovation and agriculture the ITA62 has special tax concessions covering: patents, inventions and the like, R&D expenditure, agricultural plant and machinery expenditures, general farming, environmental expenditure and production of bio-fuels and other renewable energy (SARS, 2013). In line with the previous country case studies the next section will examine the R&D tax incentive.

5.5.4 R&D tax incentives in South Africa

Presently the ITA62 contains sections 11B and 11D which cover RDTIs. Briefly, section 11B is a legacy provision which provides R&D deductions for the cost of relevant R&D²⁴⁸

²⁴⁵ *Value-Added Tax Act* 89 of 1991.

²⁴⁶ The most significant being consolidation of the *Mining Taxation Act* of 1910 with the *Income Tax Act* of 1914.

²⁴⁷ No 58 of 1962.

²⁴⁸ Subsection 11B(2).

and a four-year write-off for R&D expenditure of a capital nature.²⁴⁹ Section 11B applies to expenditure between 1 January 2004 and 2 November 2006, therefore it has limited application.²⁵⁰ From 2 November 2006 section 11D commenced which allowed for a 150 per cent deduction for R&D expenditure undertaken in SA and a three-year write-off for associated capital expenditure. Section 11D was then revamped with a new RDTI effective 1 April 2012²⁵¹ (likely to cease 1 April 2022) which is the focus of this analysis.

Section 11D – Deductions in respect of scientific or technological research and development

In summary section 11D provides for a general 100 per cent deduction for R&D expenses (including capital) undertaken in SA. However, if the taxpayer is awarded approval to undertake the R&D expenditure, an additional 50 per cent deduction is made available. The crux of this provision turns on the definition of ‘research and development’ which shares language with the previous Australian R&D subsection 73B(1),²⁵² requiring R&D to be systemic, investigative or experimental. Subsection 11D(1) is also similar to section 174²⁵³ from the US, which embeds other legislation into the tax provision by using defined terms such as ‘patent’. However section 11D confronts this embedding problem by identifying the relevant legislation which also needs to be considered.²⁵⁴ Despite addressing this ambiguity, within subsection 11D(1) other ambiguities are created through use of open terms: ‘uncertain’, ‘non-obvious’ and ‘significantly’, which could import their dictionary definition, court precedent or SARS guidance. This is a weakness common to most legislation and can be addressed with timely interpretation.²⁵⁵ The taxpayer is entitled to a 100 per cent deduction if the following criteria are met: 1) the taxpayer’s actual expenditure meets the definition of ‘R&D’²⁵⁶ 2) the activity is directly undertaken in SA and 3) it is directly incurred in the production of income; and in the carrying on of any trade.²⁵⁷ ‘Carrying on of any trade’ includes R&D conducted before trading commences. Such start-up expenditure is deductible under section 11A, if it would have been deductible under section 11D had the business been operating.

²⁴⁹ Subsection 11B(3).

²⁵⁰ Paragraph 11B(7)(a).

²⁵¹ Enacted by Act No.24 of 2011 assented 28 December 2011.

²⁵² ITAA36.

²⁵³ IRC86.

²⁵⁴ Subparagraph 11D(1)(a)(ii).

²⁵⁵ SARS guidance is provided in Interpretation Note: No.50 (28 August 2009). Although section 11D has changed, the guidance is still relevant to some extent, therefore it has not be withdrawn.

²⁵⁶ Subsection 11D(1).

²⁵⁷ Subsection 11D(2).

It is the enhancement provided in new subsection 11D(3) which better targets government funding of private-sector R&D.²⁵⁸ Instead of providing all taxpayers with a 150 per cent deduction, the additional deduction is only available to companies who have their R&D activity approved by the Minister of Science and Technology²⁵⁹ (**Minister**) and the expenditure is incurred after that date.²⁶⁰ Subsections 11D(4) to (6) extend the additional deduction to collaborative situations where another entity may fund the R&D. Subsections 11D(7) and (8) provide general exclusions to deductible R&D (such as where the taxpayer has received a government grant, then that amount cannot be deductible).²⁶¹ Subsection 11D(8) lists nine exclusions, similar to those expressed in the current Australian legislation, such as social science research,²⁶² which are only eligible for a general deduction.²⁶³

The innovative drafting of the new legislation is in subsection 11D(9) and its consequential provisions.

11D(9) The Minister of Science and Technology **must** approve any research and development being carried on or funded for the purposes of subsections (3) and (4) having regard to (bolding added)-

- (a) the innovative nature of the research and development;
- (b) the extent to which carrying on that research and development requires specialised skills; and
- (c) such other criteria as the Minister of Science and Technology in consultation with the Minister of Finance may prescribe by regulation.

This ‘easy to read’ section cleverly manages to steer private-sector R&D funding in the direction the government seeks, without dictating market resources or robbing taxpayers of their business discretion. At this early stage there are no prescribed regulations, therefore taxpayers merely need to satisfy paragraphs 11D(9)(a) and (b). The use of ‘must’ strictly limits the inquiry of the approval to the words of the legislature – creating an equal starting point for both taxpayer and public servant. Given the generous nature of the additional incentive, subsection 11D(10) permits the Minister to withdraw the incentive if the taxpayer

²⁵⁸ This concept is similar to the US RDTI which provides additional tax concessions to taxpayers who satisfy section 41 of the IRC86. However the benefit is eroded by having to subtract section 41 from section 174.

²⁵⁹ Paragraph 11D(3)(a).

²⁶⁰ Paragraph 11D(3)(c).

²⁶¹ Subsection 11D(7).

²⁶² Subsection 355-25 ITAA1997.

²⁶³ Section 11.

materially misleads or does not meet ongoing requirements. To prevent project delays, the 50 per cent uplift is available upon submission date of the application, not upon committee approval date (National Treasury, 2012). However the taxpayer may not know if the R&D project will be approved – which may impact on quantum of expenditure.

Although references are to Ministers, their primary role is to appoint a committee comprising certain staff, who will make the technical approval. The staff comprise: three from the Department of Science and Technology, one from the National Treasury and three from SARS.²⁶⁴ Subsection 11D(12) provides the committee with wide authority to evaluate each application via expert assistance²⁶⁵ and/or further taxpayer information²⁶⁶ to reach recommendation, but also empower the committee to investigate and monitor each approved R&D activity ‘to determine whether the objectives of this section are being achieved and to advise ... on any future proposed amendment or adjustment to this section’.²⁶⁷ Every taxpayer with approved R&D activity must report annually to the committee in the form and manner requested by the Minister.²⁶⁸ Also every taxpayer who applies for the additional incentive is provided with a written report informing of the decision to deny, withdraw or grant the approval. Finally another strength of the new legislation is the requirement that the Minister ‘... must annually submit a report to Parliament advising...of the direct benefits of the [R&D] in terms of economic growth, employment and other broader government objectives and the aggregate expenditure in respect of such activities ...’²⁶⁹

Policy behind South Africa’s R&D tax incentives

The original purpose of the old section 11D²⁷⁰ was to increase private sector R&D, establish SA as an innovation hub and to promote R&D industrial development for job opportunities (National Treasury, 2012). The RDTI was to complement other government programs on science and technology and to encourage all entities to conduct R&D locally (SARS, 2009). According to the EM (National Treasury, 2012) introducing the new section 11D change was required for three reasons: 1) the parameters of eligible

²⁶⁴ Subsection 11D(11).

²⁶⁵ Subparagraph 11D(12)(b)(v).

²⁶⁶ Subparagraph 11D(12)(b)(vi).

²⁶⁷ Subparagraph 11D(12)(b)(iv)(aa) and (bb).

²⁶⁸ Subsection 11D(13).

²⁶⁹ Subsection 11D(17).

²⁷⁰ Pre-1 April 2012.

R&D needed clarification 2) R&D claims were attracting unintended audit scrutiny and 3) there were deductibility issues with outsider parties funding R&D. The new section 11D proposed to address these concerns while observing the original objective of the RDTI. The revamped RDTI allowed for an automatic 100 per cent deduction for R&D expenses (including capital), an uplift of 50 per cent for committee approved R&D activity and for expenses ineligible under section 11D these could be claimed under the basic deduction.²⁷¹

The purpose of the committee approval was to place the RDTI uplift on the same footing as government grants, therefore SARS would respect the deduction accordingly and that should reduce unwarranted audit scrutiny. National Treasury (2012) also anticipate the collaborative environment of the committee may lead to greater and more effective interaction between SARS and the Department of Science and Technology (**DST**), which in turn should allow SARS to use the expertise of DST to better interpret the definition of R&D. The R&D definition has supposedly been ‘revised to better reflect government’s intention to incentivise activities that constitute technical and scientific R&D in a commercial sense (as opposed to routine upgrades or applications)’ (National Treasury, 2012). It is questionable whether this has been achieved, as stated earlier the definition needs to be read in-conjunction with extrinsic material²⁷² to make entire sense.

5.5.5 Critical analysis

The South African RDTI is an excellent example of common sense legislative drafting. Section 11D is simple to read and easy to understand. By keeping the technical and administrative provisions in one section and in one legislative Act, it allows for a holistic appreciation of how the RDTI operates. Besides limited references to other provisions, section 11D can successfully stand alone, which decreases the compliance burden of taxpayers who potentially cannot afford to pay for tax advice. Even the SARS Interpretation Note²⁷³ on section 11D is easy to read despite its necessary detail. Overall, the RDTI appears to genuinely cater for the benefit of any taxpayer.

The strategic decision to combine the expense and capital R&D deductions is highly effective in streamlining and simplifying the RDTI. For small taxpayers without permanent book-keepers this greatly reduces the need to separate various costs or install

²⁷¹ Section 11.

²⁷² In particular Interpretation Note: No.50 (28 August 2009).

²⁷³ No. 50 (28 August 2009).

advanced accounting software. Provided all evidence of expenditure has been incurred directly in relation to R&D within SA, the taxpayer will have at a minimum met their compliance obligations. The ten-year sunset clause is also appropriate, the period of time is long enough to provide certainty and stability for most R&D investments, and is long enough for the committee to provide Parliament with sufficient evidence of the success or failure of the RDTI.

The 50 per cent uplift is an innovative incentive to influence and monitor the direction of R&D investment in SA. At this stage there are only two criteria, thus the deliberation process should not appear daunting to taxpayers. National Treasury have also designed the RDTI with maximum flexibility to introduce additional regulations over time – these could be used to rein in tax expenditure in tight fiscal years or to pointedly dictate the type of future R&D investment SA needs. The composition of the committee has also been well considered allowing for full-time staff from DST, SARS and National Treasury to equally evaluate each application. Quite often it is inefficiency caused by the silo nature of government departments that can lead to taxpayers wondering why the process takes so long and also who to approach if they have questions. Currently the legislation does not provide for a specific time period for the approval process, however, that can be streamlined in due course.²⁷⁴ The most important aspect is that taxpayers will be provided with written reasons for the committee's decision. This demonstrates the high level of transparency and accountability the government wish to provide taxpayers – the reasons for decision may even assist the taxpayer in its application the following year. The flexible design of the 50 per cent uplift allows for taxpayers to apply regardless of the stage of the R&D activity. Even more reassuring for taxpayers is the knowledge that the expenditure will be supported from the date of submission of the application, therefore if there are teething or administrative issues regarding timely decision making, the taxpayer will not financially suffer.

In closing, it appears the newly drafted RDTI has legislatively achieved the government's intention to encourage R&D in South Africa. Whether the RDTI will result in increased R&D investment is yet to be seen. But for now taxpayers can enjoy a 100 per cent automatic deduction for R&D expenditure undertaken in SA, or if some of the taxpayer's activities are excluded as per subsection 11D(8) or don't quite meet the R&D definition

²⁷⁴ It is acknowledged there may be a general customer service standard that SARS adheres, such as 28 days.

of subsection 11D(1), they can attempt to claim the expenditure under the general deduction of section 11. The RDTI even extends to start-up entities via section 11A therefore maximum opportunity is presented to taxpayers of every size to take advantage of the government's initiative to increase private-sector R&D. The only design aspects that could be considered negative are the restriction on the location of R&D to SA, and that the 50 per cent uplift is only available to companies. However, given SA's high unemployment it is sensible to indirectly create local jobs through the R&D activity, and it enables the government to achieve optimum economic benefit. As for the need to be a company to access the uplift, this requirement is stated upfront, therefore taxpayers could re-structure accordingly before applying.

5.6 Evaluation of R&D tax incentives from Australia, Japan, USA and SA

This section merges the learning of the RDTIs from Australia (Chapter Four), Japan, the US and SA. Attention is on extracting the strongest elements of each to recommend reforms to the Australian RDTI in light of best practice in assisting global food security. Chapter Four devoted analysis to the Australian RDTI which concluded that neither the R&D tax deduction under the ITAA36 nor the current R&D tax credit under the ITAA97 had achieved their original policy aspirations. However it was decided that the current RDTI structure is robust and therefore will be the starting point for reform. Chapter Five provided an opportunity to examine the RDTIs of Japan, the US and SA. To maintain the focus of this thesis, each cross-national comparative case study was restricted to the overarching research areas of agriculture, food security and taxation.

The driving question for this evaluation is whether the RDTI in each country sufficiently enables the potential for increased investment in agricultural R&D and thereby may assist global food security. Upon legislative scrutiny, each RDTI possessed strengths and weaknesses. The strengths can be viewed as elements of best legislative design which Australia may seek to incorporate. The weaknesses can be considered cautionary tales for Australia to avoid. From this suite of best practice it is envisioned that a model Australian RDTI can be drafted which is most in line with achieving the research objective of assisting global food security.

Comparative analysis can be unwieldy with more than two variables therefore this evaluation will be thematic. This section will critically discuss each RDTI according to the following criteria:

1. certainty
2. administrative efficiency (includes simplicity, cost of compliance and complexity) and
3. potential to improve global food security as based on the international recommendations found in Chapter Two.

Each of these criteria will be explained in detail at sections 5.6.1, 5.6.2 and 5.6.3. For now, a brief overview is provided outlining the reasons for selecting the three evaluation criterions. Firstly, certainty was selected because R&D investment in agriculture requires a long-term commitment. Pardey & Alston (2012, p. 34) suggest it can take up to 25 years before benefits arise. Therefore it is crucial for government to alleviate taxpayer concern by providing certainty in the form of longevity, permanence and limited amendments to the RDTI. Secondly, administrative efficiency was selected to assess the administrative design of each RDTI, broadly this includes its simplicity or complexity, ease to comply and administer, compliance cost both to the administration and the taxpayer, language style, length of provision and generally whether the RDTI is efficient as a means to achieve policy objectives (Tan & Tower, 1992).

The two criteria of ‘certainty’ and ‘administrative efficiency’ are traditional tax criteria (Sneed, 1965, p.572). However the third criterion, ‘potential to improve global food security’ is a concept raised in Chapter Two.²⁷⁵ Recapping, the international reports²⁷⁶ suggest addressing global food security by raising agricultural production whilst ensuring sustainable development. Their recommendations include policy designs that potentially promote:

- natural resource management, incorporating NRM professionals to stimulate creative opportunities to share knowledge and input
- farmers as critical managers of ecosystems
- greater labour intensive farming (both small-scale and commercial)
- more involvement of the State to actively correct market failures by securing desirable social outcomes and

²⁷⁵ Refer to section 2.5.3.

²⁷⁶ Refer to section 2.5.

- ways to increase the purchasing power of citizens.

Therefore the third criterion is an amalgamation of various international recommendations which need to be considered when evaluating each RDTI. Without these features it is likely the design of the RDTI will fall short of embodying policy objectives aimed at improving global food security in a sustainable manner.

One final remark, before evaluating each RDTI in accordance with the above evaluation criteria. The traditional tax criterion of equity has not been included (Sneed, 1965, p. 567). Equity or fairness is not considered relevant because the analysis of the RDTI design is on increasing taxpayer investment in agricultural R&D. For government to entice taxpayer investment toward a specific incentive, it requires favouring certain taxpayers over others, at the sacrifice of equity. As will be explained in Chapter Six, under the model RDTI, all taxpayers eligible for the RDTI will also be eligible for the concessional rates provided they invest their R&D expenditure toward fulfilling an approved national interest.

5.6.1 Certainty

Certainty in tax design is ensuring taxpayers and tax authorities are certain of the nature of the tax (Yehonatan, 2009). How much is the tax, when it is due, how to calculate, how to make payment, and who is eligible – just some of the common sense questions that would cross the mind of any honest taxpayer (Burton & Dirkis, 1995). Certainty enables a taxpayer to confidently plan their R&D investment which may span many years. Without certainty a taxpayer may be reluctant to avail themselves of the RDTI, no matter how generous or favourable (Mason, 2010). Considering the incentive is a means to achieve a result (e.g. increase innovation) it is imperative that government at least have taxpayers willing to uptake the incentive. Only then can government concern themselves with steering the taxpayer's R&D investment in the desired direction.

On the criteria of certainty, the Japanese RDTI disappoints with the temporary component and to a lesser extent the permanent component. Detrimental to both components is the limited guidance provided to Japanese taxpayers on the RDTI. This lack of detail can create confusion, reduce uptake of the measure or increase compliance costs in seeking professional advice.²⁷⁷ One of the uncertainties that exist is the legislative silence on the location of the IP ownership. Reading the entire RDTI it can be inferred

²⁷⁷ In contrast, lack of detail can also be viewed a strength under the heading of administrative efficiency, discussed below.

that IP ownership should be in Japan, but this begs the question, should taxpayers be left to infer such significant matters? Is this a shortcoming of their legislative design? As will be discussed in Chapter Six, legislative silence is considered a weakness which the Australian model RDTI shall seek to avoid.

Although the Japanese government may consider its R&D tax measures timely and responsive to adverse economic conditions, there are too many R&D tax amendments and many overlap. Further, each amendment has a different expiry date and often expiry is extended. This ad hoc approach to legislative drafting is not unique to Japan the US tax credit fails this criterion as well based on its temporary nature and reliance on discretionary congressional budget. However unlike Japan, most of the amendments to the US tax credit are to tighten the fiscal cost of the measure to please congressional negotiations and the debt limit. Even worse under the US legislative system, sometimes the tax credit fails to receive attention and misses Congressional and Presidential approval altogether. Sometimes it is retrospectively reinstated, other times not.

Continuing analysis on the US RDTI, the permanent component²⁷⁸ is rather brief, with no definition on R&E expenditure, but addresses this uncertainty or gap via regulations. Thus although the provision lacks what may appear as extensive legislative detail, the core provisions are sufficient to establish a level of certainty for taxpayers. For professional advisors, the broad interpretation of the RDTI in the US courts bolsters confidence in advising with certainty on its operation.

Overall it is the addition of a temporary component into the RDTI that creates most uncertainty in the Japanese and American legislation. Accepting that no legislative provision can be immune from uncertainty, it is timely to appreciate that their permanent RDTIs are robust, most likely explaining their enduring existence.

Improving on the certainty criteria is the SA RDTI which comes with a ten year sunset clause. Ten years is sufficient time for most taxpayers to confidently plan R&D, however in the case of agriculture, where the lag time can be up to 25 years before benefits arise, this sunset clause could be viewed as lacking the necessary certainty (Pardey & Alston, 2012, p. 34). Also in this vein is the legislative option by the SA National Treasury to

²⁷⁸ Section 174 IRC86.

introduce additional regulations in regards to the RDTI uplift. This drafting flexibility could be viewed by taxpayers as hampering certainty, because at any time the government could modify the legislation. However, affected taxpayers could most likely expect the Parliamentary process would ensure adequate lead time and possible consultation. Additional uncertainty can be found in the approval process for extra R&D funding.²⁷⁹ Although the uplift is made available from the date of submitting the application (once approved), during the period of committee deliberation the taxpayer is left uncertain as to whether they will receive that additional funding. Naturally that will impact on the cashflow of R&D projects.

In concluding, it is considered that the US R&D tax deduction and the Australian RDTI perform the best on the certainty aspect. The US R&D deduction has existed since 1954 and has rarely been modified, despite Treasury's discretion to draft regulations on certain terms in the section there has not been an abuse of power. Even the use of defined terms affected by other legislation or court precedence has not detracted from the certainty of this section. Similarly, the Australian RDTI offers certainty through permanence and providing for specific advance rulings which bind the ATO.

5.6.2 Administrative efficiency

This criterion covers the administrative design of the RDTI, broadly this includes its simplicity or complexity, ease to comply and administer, compliance cost both to the administration and the taxpayer, language style, length of provision and generally whether the RDTI is efficient as a means to achieve policy objectives (Tan & Tower, 1992). Guiding this critique is the literature of Burton and Dirks (1995) whom have analysed the Tax Law Improvement Project.²⁸⁰ They surmised that tax law is intrinsically complex, but it is difficult to validly measure the extent of legislative complexity, therefore ascertaining optimal complexity (or simplicity) is almost elusive.

Ideally the RDTI should be simple for taxpayers to understand and apply; this can be achieved with plain and concise drafting. If this aspect is not satisfied, then the cost of compliance for the taxpayer increases which could deter the taxpayer from investing in

²⁷⁹ Subsection 11D(9).

²⁸⁰ The Tax Law Improvement Project (**TLIP**) was an attempt by the Australian Government commencing in 1994 to re-write the *Income Tax Assessment Act 1936* with a focus on simplifying the tax legislation. TLIP was not entirely successful, resulting in an additional *Income Tax Assessment Act 1997*. Therefore currently Australia has two operative *Income Tax Assessment Acts*.

R&D and therefore not fulfil policy intentions. This is similar to the discussion above on certainty. If the RDTI is too complex, it can lead to uncertainty, which can stifle taxpayer uptake. If the RDTI is difficult for the tax authority to understand, administer and enforce, productivity of staff will diminish and ultimately the cost of administration will rise – possibly through unnecessary R&D audits. It may also result in the tax authority seeking expensive legal advice and possibly even test case litigation. Administrative inefficiency can also lower taxpayer's respect of the tax system and weaken taxpayer morale as to the benefit of the tax incentive. From a broader perspective tax complexity interacts with the self-assessment regime (Burton & Dirkis, 1995). If the taxpayer is uncertain of the true application of the RDTI the taxpayer must take a considered approach in self-assessing. In Australia, they can either seek expert advice to establish a reasonably arguable position to mitigate penalties, seek a tax office ruling or take the chance of not being audited. Each option unnecessarily utilises taxpayer time, effort and money simply because the RDTI was too complex to confidently proceed. Finally it will be observed this criterion is distinct from economic efficiency which is more concerned with neutral resource allocations (Infanti, 2002, p. p.1114). Given the pragmatic approach of this thesis, the basic design of the RDTI is to allow taxpayers the discretion to determine how to best allocate finite resources. The RDTI is provided to stimulate taxpayer desire to invest in R&D, not dictate specific expenditure.

Having considered the reasons why administrative efficiency is imperative to the design of a RDTI, this section will examine the various RDTIs. It appears common for RDTIs to be structured with two components. One tends to be permanent and the other a temporary feature, even if it seems available most years. The permanent measure is often appropriately drafted, but the second component can either be administratively efficient or inefficient, which unfortunately can detract from the positive design of the permanent component. The Japanese and US temporary components are examples of administratively inefficient design. Both require the taxpayer to calculate an average R&D expenditure or sales level, often providing taxpayers with the choice of which formula to apply (under the US RDTI there are up to five choices). These types of components are difficult because they require detailed record-keeping and a comprehensive understanding of tax rules to maximise tax benefit. Thus any policy effort to encourage SMEs to apply may be lost due to the complexity of the legislation. Another complex issue that arises with 'average' calculations are the additional rules needed for start-ups, that have no

previous expenditure/sales or for merged entities with too much financial information. All these extra rules, amendments and temporary incentives add words and length to the provision which can be off-putting for taxpayers. Even if the policy intention is clear, to encourage greater R&D investment, the benefit is wasted if taxpayers are not confident to apply for it or even deliberately avoid it because their initial impression or previous experience is that the compliance cost outweighs the tax benefit.

In comparison, the US and Japanese permanent R&D components are concise, simple to understand and have withstood the test of time. The Japan component has one threshold requirement; the taxpayer must lodge a blue tax return. The base RDTI is then split into three classifications e.g. general corporations, SMEs and industry-academia-government. Depending on taxpayers' circumstances they only need to refer to the part that applies to them. The formula is timely and straight-forward, taxpayers are required to ascertain their current annual R&D expenditure, multiply by the relevant tax credit percentage, and finally check if that amount exceeds the annual RDTI cap. The only regular changes that occur are the tax credit percentage amounts and the number of years the tax credit can be carried forward. However these flexible legislative components enable the Japanese government to update the RDTI when necessary. This design can allow for changes in the state of the Japanese economy, the government's fiscal position or even target particular industries, without drastically altering the procedure or intention of the RDTI.

Similarly, the US permanent component is also split into sections, but not based on objective classifications such as that outlined in the Japanese RDTI e.g. SMEs, the US RDTI is differentiated by choices. Not every choice will apply to the circumstance of the taxpayer, but it is at the discretion of the taxpayer to ascertain which choice best applies to them. These choices (immediately deduct, capitalise, amortise over 60 months or ten years) enable the taxpayer to tailor the RDTI to their business for optimum benefit. Once the choice is made the taxpayer must generally continue with that tax treatment. Alternatively, these choices can also be seen to increase taxpayer compliance costs because inexperienced taxpayers may seek expert advice. This would be the preferred option to ensure the RDTI is still utilised, otherwise those taxpayers who cannot afford such advice may choose to forgo the RDTI because of its complexity; and that is only if they can recognise its subtle complexity. The complexity of the US RDTI is neatly disguised by its short length and easy readability. The two choices of immediate deductibility and

60 months amortisation are plainly written, but the option to capitalise is embedded as the default position and the ten year amortisation is contained within another provision. To further reduce legislative length, definitions of key RDTI terms are also lacking, such as R&E and reasonable research expenditures which are contained within the tax regulations. Finally an inexperienced taxpayer would also potentially not recognise the ability for R&E expenditure to be re-characterised. This raises the questions: Is the RDTI complex? Or is the permanent RDTI as simple as it looks and reads, it is just the broader tax act (IRC86) and concepts that make understanding the RDTI difficult?

The use of tax regulations to explain words which do not strictly follow their dictionary or layman definition is strategically clever and administratively efficient on the part of tax authorities. This protects the tax act/RDTI from regular amendments to reflect general changes in society, government preferences or court precedent. For tax authorities it provides for easier lobbying of change if it is determined that a provision is awkwardly drafted or presenting unintended results. From the perspective of the taxpayer the flexibility associated with regulations can suggest potential uncertainty and increased compliance costs to stay abreast of any changes. However the permanent RDTI has had minimal regulation changes (given its existence since 1954) and the few court cases on the provision have been liberally interpreted in favour of the taxpayer. Therefore any taxpayer concern of regulatory abuse by government or tax authorities has been seemingly quelled with time.

The SA RDTI comprises two components, but it does not follow the Japanese and US RDTI drafting of a temporary and permanent measure. It provides for a basic deduction and an additional deduction. Despite the existence of a legacy provision (section 11B) and a lingering pre-April 2012 version, the current SA RDTI (section 11D) is easily identifiable for taxpayers. To prevent confusion for taxpayers regarding what R&D expenses include, it is made plainly clear that there is a 100 per cent deduction for capital and revenue R&D outlays. The most complex aspect of the RDTI is interpreting what is eligible R&D. The definition is quite wordy and each word imports more than just its dictionary definition, which detracts from the simplicity of the operative deduction provision.²⁸¹ But overall it is difficult to fault the balance of complexity that this RDTI exhibits. Even the design of these two provisions directly following each other, makes it intrinsically easy for a taxpayer

²⁸¹ Subsection 11D(2) ITA97.

to realise the two should be read together. Often key provisions in a tax act are located apart from each other and in some cases located in entirely different chapters,²⁸² which for the astute tax advisor is easy to locate, but for the inexperienced – it presents a challenging task.

The second component of the SA RDTI provides for an additional 50 per cent deduction if the R&D expenditure is approved by a committee. Again the flow of this provision directly after the basic deduction makes it very clear that a taxpayer may wish to consider applying for the additional deduction. This suggests the SA government are encouraging of taxpayers pursuing this provision – this extra benefit is not hidden and its promotion is in line with government policy; to increase R&D investment. Again it is made clear upfront, that the additional deduction is only available to companies – this detail is not hidden or assumed. The advantage of drafting legislation with all key terms primarily in the one section and by stating key requirements plainly it highly improves the administrative efficiency for both the taxpayer and tax authority. Such drafting also provides certainty, as discussed earlier.

The introduction of the committee to determine the additional deduction brings to the legislation further challenges. It is imperative the committee process does not delay or hinder the taxpayer's R&D claim otherwise the simplicity of the RDTI will be diminished. Another aspect is ensuring the committee is reasonably satisfied with the taxpayer's information from the start, otherwise requesting too much extra information can be off-putting for the taxpayer. Fortunately it appears these factors have been considered in the committee design. Firstly by comprising diverse committee members covering the key aspects of the R&D process and secondly by allowing the committee scope to seek assistance. Hopefully these two design features will enable a determination to be made without excessive recourse to taxpayer requests for further information.

In concluding this evaluation of administrative efficiency, it is apparent certain RDTI qualities are exemplary, and should be considered when designing a model Australian RDTI. The first is readability of the RDTI (Burton & Dirkis, 1995). The US permanent provision and the SA RDTI are the strongest on this aspect, which includes their ability to provide taxpayers with a certain result. But the US RDTI falls down because of its

²⁸² For example, the definition of 'associate' in the ITAA97.

hidden detail, whereas the SA RDTI adopts plain English, upfront definitions and seems to provide a certain result. From a broader perspective the synthesis achieved between the US permanent RDTI and its liberal interpretation by the judiciary is commendable. It demonstrates that law is capable of smooth operation from congress intention, into legislation and then interpreted by the judiciary. Whether it is possible to successfully achieve this broad alignment between parliament and judiciary in Australia is lofty. Another aspect of design to evaluate the international RDTIs is legislative length (Burton & Dirkis, 1995). Although this is not indicative of simplicity, the shorter the RDTI the more likely a taxpayer will read the entire provision. The shorter the provision, the less likely the taxpayer may require expert advice, which results in lower compliance costs. Burton & Dirkis (1995) assert lengthy provisions may produce optimal simplicity if those reading the legislation can understand it. This assertion holds true when referring to tax advisors but for a general taxpayer, excessive length could have discouraging consequences. Given the global push to encourage R&D from all types of business, lengthy RDTIs could negatively impact on SMEs, both in level of understanding and increased compliance costs, which ultimately may impede the government's policy intention. The US permanent provision is the clear winner on this front however it is observed that its concise length is brought about through embedding definitions and relevant elements elsewhere. Finally it is necessary to acknowledge that each aspect of administrative efficiency cannot be viewed in isolation, a holistic evaluation is required and even then, such criteria are highly value laden (Burton & Dirkis, 1995).

5.6.3 Potential to improve global food security

The final aspect of which to evaluate the various RDTIs is their potential to increase sustainable R&D investment in agriculture which could assist with improving global food security. As outlined earlier at section 5.6, this criterion involves a holistic examination of whether the RDTI promotes the internationally recommended pillars of policy design such as:

- natural resource management, incorporating NRM professionals to stimulate creative opportunities to share knowledge and input
- farmers as critical managers of ecosystems (environmental stewardship)
- greater labour intensive farming (both small-scale and commercial)

- more involvement of the State to actively correct market failures by securing desirable social outcomes and
- ways to increase the purchasing power of citizens.

These factors cannot be analysed in isolation, therefore the context which was provided for each country case study is instrumental in understanding whether the RDTI, supported by its tax system and guided by its government's agriculture and tax policy edge their nation closer toward assisting global food security. It is important to note that the above factors are more focused on easing supply-side constraints. The OECD report (2013, p. 24) confirms that 'increased productivity offers more scope for increasing food production ...' It reiterates the high returns to spending on agricultural R&D as between 20 to 80 per cent as researched by Alston (2010) and cited in OECD, 2013, p. 28. Having stated that, the OECD (2013, p. 83) still acknowledge there is ample opportunity for change in each area along the food security spectrum, and the danger is to avoid looking for a 'magic bullet' in one area that makes actions in the other areas unimportant, when actions are needed across all areas. Each factor will be considered below, with no preference in order.

The priority each government place on these factors depends on their relevance to national interest. In SA, increasing the purchasing power of citizens is essential to the government addressing food insecurity. Given their nation's high unemployment, shortage of food supply is not the imminent threat - it is the inability of South Africans to afford sufficient food. Food insecurity is a legacy of the apartheid regime, which requires immense structural change by government to redistribute the wealth, jobs and knowledge. To a lesser extent the US also suffers from domestic food insecurity. Once again this is not due to a lack of agricultural production in the US, but disparity in individual earnings. Touching on the factor of government intervention, the US relies on the Farm Bill to rectify this imbalance through local food assistance.²⁸³ Japan is a society almost entirely comprising of the middle class. Therefore purchasing power is not a priority for their citizens to attain food security. This may seem ironic given Japan's heavy net food import status, but contrasting SA and USA with Japan is a poignant example of the different dimensions of food security.²⁸⁴ It has been explained throughout this thesis that the world is unlikely to run out of food – but it is likely the target people needing food may be unable

²⁸³ US Supplemental Nutrition Assistance Program (SNAP) (formerly named Food Stamps).

²⁸⁴ Refer Chapter Two.

to afford to purchase the available food. Either result in the same dire consequence. However the strategies to address this aspect of food insecurity are different.

For SA, the government priority is on generating employment which improves purchasing power; thus to claim the section 11D RDTI the taxpayer must undertake the R&D in SA – hopefully indirectly creating jobs. For the US, where there are sufficiently educated citizens (whom are unlikely to be the target demographic of the SNAP) to claim the RDTI, the taxpayer can conduct the R&D anywhere in the world. The same can be said for the Japanese RDTI, which can also be claimed for R&D undertaken anywhere in the world.

A similar approach to improving food security is through greater labour intensive farming. The governments of Japan and SA are making inroads on this. In Japan where farming is often conducted on small plots of fragile land, the government support permaculture and encourage part-time farms. In this slight manner, the government is able to demonstrate to citizens that it appreciates the powerful cultural ties families have to their farms. It also shows the government acts upon the national opinion polls which have conveyed concern amongst their citizens on food self-sufficiency and global food insecurity. Finally it affirms the change in government policy of past which attempted rationalisation and corporatisation of the agriculture industry. In SA, the government is focused on redistribution of farm land and skilling up of non-whites to conduct profitable small farms. Although progress has been slow, the effort is being made and any success is another step closer to achieving greater food security. Whereas in the US (the world's largest agro-food exporter) government policy is more concerned with maintaining and expanding internationally competitive agricultural exports, therefore labour intensive farming is not a priority. The US has an economy where the current industrial farm structure has worked well.

Japan, SA and the US have to some extent all endorsed natural resource management and farmers as critical managers of ecosystems (environmental stewardship), through their RDTI or agriculture and food security policies. Firstly each has drafted RDTIs which encourage all types of R&D (other than the standard Frascati exclusions), provide additional support for SMEs and promote collaboration between the private sector and academia or not-for-profits. Each also offers additional incentives for further R&D, or refundable tax credits to benefit SMEs and start-ups with cashflow. It appears unanimous that these governments are keen for sustainable agriculture and are open to the idea that

food security solutions could be found anywhere, and in any form. Even if critics argue otherwise²⁸⁵, there is certainly nothing in the RDTIs or governments' agriculture and tax policies to impede their performance. Specifically Japan appears to provide the most enabling policies to encourage NRM and environmental stewardship.

Japan openly promotes multifunctional agriculture²⁸⁶ and cultural lineage which aligns with international institutional literature on the appreciation of agriculture as more than just a food source.²⁸⁷ Furthermore the current Basic Plan (2010) focusses on the role of green innovation to solve global issues, fostering creative opportunities for all players along the food production chain to share knowledge and input – not knowing where the 'next solution' may appear. In parallel the S&T policy objectives also seek to encourage sustainable development of human society, which includes addressing climate change and global food insecurity. Within the tax system these agriculture and S&T policy intentions are buttressed by the *Special Taxation Measures Law* which specifically provides for temporary tax incentives to generate innovation and growth through R&D investments. The cohesive nature of all these policies and laws exhibit Japan's genuine commitment to NRM and environmental stewardship, and are reflective of the government's goal to meet their citizen's two opinion polls on the 'role of S&T' and 'national food security'.

Finally, and without repeating the specific policy efforts of Japan, SA and the US, each government has intervened in some manner to address the global challenge of food insecurity. In this instance Japan has taken the lead, not only by enshrining the right to minimum food supply at reasonable prices for citizens in their *Basic Law* (1999), but through re-enforcing actions such as international trade negotiations, and the weaving of agriculture, S&T and tax policies to portray a united vision of what the government aims to achieve in the field of R&D investment. The government supports both permaculture and monoculture as necessary means to maintain domestic food supply. The flexible policy designs and use of annual reports and committees demonstrate timely and responsive action. The use of temporary tax incentives, instead of penalties to steer taxpayers in the desired direction to achieve social outcomes is transparent and logical. The government shares progressive thinking in regards to working within existing resource

²⁸⁵ For example, SA has had some concerns with its use of GMOs which adversely impact on NRM and environmental stewardship – but it is has not been the government's intention to allow for GMO mishandling.

²⁸⁶ Article 3, Basic Law (1999).

²⁸⁷ Refer Chapter Two.

constraints to create a sixth industry via value-adding in agriculture, and to harness their citizen's intelligence to secure food security not only nationally but potentially worldwide. It is merely unfortunate that Japan's noble and generous actions cannot translate readily into physical food security, because of its limited arable land.

To a lesser extent the US and SA have organically crafted their food security visions, but they have specifically drafted RDTIs that encourage socially desirable outcomes. Starting with the US, there is an Energy Research Credit which has the capacity to influence R&D investment in the direction chosen by government. The US also has created Feed the Future (USA.gov, 2012), which is a global initiative to address food insecurity, and the US has been instrumental in establishing the Food Aid Assistance Convention (2013), which are highly influential in positioning the world closer to achieving food security. Regardless of critics' negativity, the fact America heavily supports monoculture; this 'business-as-usual' agricultural model is required to ensure there is enough food supply globally. Keeping in mind (for better or worse) excess domestic US food production contributes significantly to global food aid.

South Africa (similar to Japan) have enshrined the right to food in their Constitution,²⁸⁸ enacted the Land Distribution for Agricultural Development program and endorsed the 'Integrated Food Security Strategy'. There is also noted discussion between the mining and agriculture government departments about how the two industries can co-exist, both of which are vital to addressing food insecurity. Supporting these initiatives is the RDTI which further encourages local employment and most innovative is the additional RDTI which is approved by a government steering committee on R&D. This capacity to influence the direction of R&D investment; potentially in the national interest is socially desirable and hopefully will be effective. Read together these government interventions take a unified approach in addressing domestic food security. However, unlike Japan, there is one weakness on the South African innovation front brought about by lack of integration of science and technology objectives.

²⁸⁸ Section 27(b) *Constitution of the Republic of South Africa*.

5.6.4 Summary

In concluding the evaluation of the various RDTIs, it is imperative to remember that government action alone cannot alleviate global food insecurity. It is necessary to involve the private sector and the unique role government can play is to provide the framework conditions for investment in agriculture (OECD, 2013, p. 85). Any attempt by government which makes public investments that can induce complementary private investments associated with agriculture can be highly effective in addressing food insecurity. Government expenditure on agriculture's enabling environment, such as: roads, ports, power, storage, irrigation, and non-agriculture areas – education, hygiene, and clean water are instrumental in tackling the various dimensions of food insecurity. Additional investment by government in scientific research and development, technology transfer, education, training and advisory services are also ancillary to the agriculture industry and help ensure that successful practices are scaled up (OECD, 2013, p. 84). Finally OECD (2013) analysis suggests that agricultural development can best be achieved by prioritising agriculture's enabling environment, rather than supporting specific production activities. This type of government intervention has been demonstrated in these case study RDTIs. Each government has very much left the discretion of R&D spending up to the taxpayer, rather than dictate the type of investment (except for the US Energy Research Credit).

5.7 Conclusion

Chapter Five investigated the RDTIs of Japan, SA and the US within the context of agriculture, tax policy and global food security. The purpose of the case studies was to glean best practice for reform of Australia's RDTI. When compared with the case study of Chapter Four, these case studies indicate the basic structure of the current Australian RDTI is robust, but it suffers from three significant shortcomings. Firstly the Australian RDTI is too long and too complex. Secondly the application and interpretation is not sufficiently generous or liberal. Thirdly from an agricultural, food security and tax policy perspective Australia suffers from a fragmented R&D vision hindering potential to assist global food security. From this starting point it is proposed the basic Australian RDTI structure be maintained:

- refundable tax offset for entities with annual turnover less than \$20 million and
- a non-refundable R&D tax offset for all other entities.

The following modifications to the Australian RDTI are introduced:

- no minimum R&D expenditure outlay of \$20,000²⁸⁹
- more cohesive national objectives which align and support the object of the RDTI²⁹⁰
- removal of RDTI specific integrity measures²⁹¹ and greater reliance on the general anti-avoidance tax provision Part IVA²⁹²
- no distinction between core and supporting R&D activities²⁹³ thus eliminating the ‘directly related’ test
- more liberal interpretation of eligible R&D²⁹⁴
 - removal of certain exclusions²⁹⁵ (management studies, research in social sciences, commercial and legal aspects)
- more generous funding through an additional temporary component, perhaps with a preferential rate
- a government endorsed list of national R&D priorities linking access to the additional RDTI via tax regulations and
- use of a joint industry-academia-government committee to approve projects eligible for the additional RDTI component.

Design of the model Australian RDTI will borrow significantly from the US RDTI (section 174), given it has robustly withstood the test of time, with limited words and complexity. Also relevant will be the South African RDTI, which although re-written recently and partially based on Australia’s old RDTI, it is rather concise, and it incorporates a whole extra component involving an approval committee. Despite the SA and US RDTIs being deductions, not tax credits like the current Australian RDTI, the concepts of simplicity, brevity and ease of understanding can still be incorporated into the Australian RDTI reform. In addressing the third shortcoming, Chapter Six will also explore how best the Australian government can align its objectives of science and technology, innovation, agriculture and tax to foster an integrated R&D vision for Australia which could assist with alleviating global food insecurity. Guidance will be taken from Japan, where its government have organically co-ordinated national objectives to achieve a holistic approach to R&D reform and a unified innovation vision.

²⁸⁹ Subsection 355-100 ITAA97.

²⁹⁰ Subsection 355-5 ITAA97.

²⁹¹ Subsections 355-105, 355-400.

²⁹² Sections 177A to 177H, ITAA36, as amended by Tax Laws Amendment (Countering Tax Avoidance and Multinational Profit Shifting) Bill 2013, assented 29 June 2013.

²⁹³ Subsection 355-25 and 355-30 ITAA97.

²⁹⁴ Paragraph 355-25(2) ITAA97.

²⁹⁵ Subparagraphs 355-25(2)(c),(d) and (e) ITAA97.

Chapter 6

AUSTRALIAN MODEL R&D TAX INCENTIVE

6.1 Overview of the chapter

Chapter Six is a continuation of the cross-national comparative case study that commenced in Chapter Five. The purpose of Chapter Six is to propose a model Australian RDTI to enable increased agricultural R&D investment which could assist global food security. Fulfilling the pragmatic desire of the thesis, this model follows the basic structure of the current Australian RDTI, but with modifications based upon the findings of Chapter Five. Acknowledging that effective R&D reform traverses more than just tax, there is some discussion of the interacting laws which together establish the Australian innovation system.

The remainder of this chapter is divided into five parts. Part One begins with a recap of the value of comparative research and the influence this has on the proposed RDTI. Part Two introduces the proposed model Australian RDTI. Part Three provides a breakdown of each modification, detailing its origin, rationale and fit within the broader Australian Income Tax Assessment Acts. There is also discussion on why certain provisions remain. Part Four considers the importance of the Australian government aligning national objectives to ensure a cohesive R&D vision is established, and the contribution this model RDTI makes to the wider innovation system. Part Five concludes with a summary of the chapter.

6.2 The role of comparative research in reforming Australian tax policy

The model RDTI which is presented in section 6.3 is a product of comparative tax research. Chapter Five introduced the basic concepts of comparative tax research and in this section the invaluable input comparative case studies can have on the development of domestic law will be discussed. Infanti (2002) considered the term ‘spontaneous tax coordination’ when analysing the tax treatment of certain charitable contributions and his literature will guide this discussion. The goal of comparative tax research is ‘... to make a conscious, unilateral effort to ascertain the ... tax rules in force in other countries and then to compare and contrast those rules in order to determine the most suitable rule for enactment ...’ (Infanti, 2002, p. 1136). This is precisely what Chapters Five and Six seek to achieve.

Extracting from the functionalist and culturalist research approaches used in this thesis, there are three general phases of comparative case study: 1) descriptive 2) identification and 3) explanatory (Infanti, 2002, p. 1141). The case studies in Chapter Five commenced with a descriptive phase of each country's agricultural industry (including food security policy), tax system and then specifically their RDTI. This provided the historical and cultural context of each RDTI. Following that each RDTI was separately analysed for key features which cogently led into the second phase of identification. In that phase the similarities and differences among the various RDTIs were identified and evaluated against themes. To some extent this evaluation has overlapped with the explanatory phase which is continued in Chapter Six (sections 6.3 and 6.4). The results from Chapter Five act as a framework for formulating a model Australian RDTI (Infanti, 2002, p. 1159). Finally, the use of comparative case studies help shift the reform process from a narrow national perspective to an international perspective which can foster a more holistic approach (Infanti, 2002, p. 1233).

Given that tax policy is often tied to a country's fiscal position which is by nature inherently undulating, it is impossible to ascertain which tax rules are absolute (Infanti, 2002, p. 1141). Therefore in comparing and contrasting tax rules it is likely that even if a superior rule is identified, it may not be appropriate to transplant into another country's legislation (Infanti, 2002, p. 1142). From Chapter Five it was ascertained the permanent US RDTI was the superior rule, followed by the SA RDTI, whilst in terms of reform process, the Japanese holistic approach to policy appears superior. Balancing the benefits of these superior rules against the domestic tax policy considerations of certainty, administrative efficiency and potential to improve global food security, it is apparent that an amalgamation of the US, SA and Australian RDTI is the most appropriate alternative.

In concluding, voluntary borrowing of foreign law by legislative enactment is part of globalisation, just like people migrate so too can laws (Orucu, 1995 cited in Barker, 2004, p. 716). However before the receiving country enacts the foreign law it is vital for the law to be adapted to the domestic conditions and mores (Barker, 2004, p. 718). Thus essentially it is the 'concept' of the tax law that should be transplanted, not the actual 'rule-of-law'. For example, the concept of simplicity as observed in the permanent US RDTI is an attractive feature which the model Australian RDTI should emulate. This 'concept' and several others will be discussed in detail below.

6.3 Model Australian R&D Tax Incentive

As mentioned in section 6.2, the third phase of comparative research is explanatory. This section will build upon the analysis in Chapter Five to propose a model Australian RDTI. Using the Australian R&D tax legislation from Appendix C as the starting point, certain sections have been added, modified or abandoned to formulate the model Australian RDTI. Table 6.1 below comprises four columns:

- column one states the current legislative section, **colour coding** is used to highlight which part of the section will be discussed
- column two indicates whether that section has been modified, deleted or preserved
- column three contains the proposed legislative section, in the instance where the existing section has been preserved, it is repeated, in the instance it is deleted, the section is repeated with a strike through
- column four indicates the concept or type of improvement the proposed reform intends to achieve (e.g. simplicity, pragmatism) and using an alphabetical reference (e.g. A, B) leads readers to a more detailed explanation in sections 6.4 and 6.5.

To avoid repetition and to ensure a consistent rationale modifications are grouped together for analysis. For completion and ease of read, Appendix C contains the model RDTI as it would appear in the *Income Tax Assessment Act 1997*(Cth).

Table 6.1 Current verse proposed legislative section

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Guide to Division 355</p> <p>355-1 What this Division is about</p> <p>An R&D entity may be entitled to a tax offset for R&D activities. The tax offset may be a refundable tax offset if the R&D entity's aggregated turnover is less than \$20 million.</p> <p>To be entitled to the tax offset, the R&D entity needs one or more notional deductions under this Division. There are 2 main kinds of notional deductions. One is for expenditure on R&D activities. The other is for the decline in value of tangible depreciating assets used for R&D activities.</p> <p>Note: All of these notional deductions require the R&D entity to be registered for the R&D activities</p>	Preserved	<p>Guide to Division 355</p> <p>355-1 What this Division is about</p> <p>An R&D entity may be entitled to a tax offset for R&D activities. The tax offset may be a refundable tax offset if the R&D entity's aggregated turnover is less than \$20 million.</p> <p>To be entitled to the tax offset, the R&D entity needs one or more notional deductions under this Division. There are 2 main kinds of notional deductions. One is for expenditure on R&D activities. The other is for the decline in value of tangible depreciating assets used for R&D activities.</p> <p>Note: All of these notional deductions require the R&D entity to be registered for the R&D activities</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
under Part III of the Industry Research and Development Act 1986.		under Part III of the Industry Research and Development Act 1986.	
355-5 Object (1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy . (2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).	Preserved	355-5 Object (1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy. (2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
355-20 R&D activities R&D activities are *core R&D activities or *supporting R&D activities.	Deleted	355-20 R&D activities R&D activities are *core R&D activities or *supporting R&D activities.	Explanation B, C Simplicity International trend
355-25 Core R&D activities (1) Core R&D activities are experimental activities: (a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that: (i) is based on principles of established science; and	Modified	355-25 Core R&D activities (1) Core R&D activities are experimental activities: (a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that: (i) is based on principles of established science; and	Explanation B, C, D Simplicity International trend Social

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and</p> <p>(b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).</p> <p>(2) However, none of the following activities are core R&D activities:</p> <p>(a) market research, market testing or market development, or sales promotion (including consumer surveys);</p> <p>(b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:</p> <p>(i) discovering deposits;</p>		<p>(ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and</p> <p>(b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).</p> <p>(c) and any other activity listed in Subdivision 61-H of the Income Tax Assessment Regulations 1997</p> <p>Note: R&D activities include supporting activities</p> <p>(2) However, none of the following activities are core R&D activities:</p> <p>(a) market research, market testing or market development, or sales promotion (including consumer surveys);</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) determining more precisely the location of deposits;</p> <p>(iii) determining the size or quality of deposits;</p> <p>(c) management studies or efficiency surveys;</p> <p>(d) research in social sciences, arts or humanities;</p> <p>(e) commercial, legal and administrative aspects of patenting, licensing or other activities;</p> <p>(f) activities associated with complying with statutory requirements or standards, including one or more of the following:</p> <p>(i) maintaining national standards;</p> <p>(ii) calibrating secondary standards;</p> <p>(iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things;</p>		<p>(b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:</p> <p>(i) discovering deposits;</p> <p>(ii) determining more precisely the location of deposits;</p> <p>(iii) determining the size or quality of deposits;</p> <p>(e) management studies or efficiency surveys;</p> <p>(d) research in social sciences, arts or humanities;</p> <p>(e) commercial, legal and administrative aspects of patenting, licensing or other activities;</p> <p>(f) activities associated with complying with statutory requirements or standards, including one or more of the following:</p> <p>(i) maintaining national standards;</p> <p>(ii) calibrating secondary standards;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(g) any activity related to the reproduction of a commercial product or process:</p> <p>(i) by a physical examination of an existing system; or</p> <p>(ii) from plans, blueprints, detailed specifications or publically available information;</p> <p>(h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):</p> <p>(i) the entity (the developer) for which the software is developed, modified or customised;</p> <p>(ii) an entity *connected with the developer;</p> <p>(iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.</p>		<p>(iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things;</p> <p>(g) any activity related to the reproduction of a commercial product or process:</p> <p>(i) by a physical examination of an existing system; or</p> <p>(ii) from plans, blueprints, detailed specifications or publically available information;</p> <p>(h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):</p> <p>(i) the entity (the developer) for which the software is developed, modified or customised;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
		<p>(ii) an entity *connected with the developer;</p> <p>(iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.</p>	
<p>355-30 Supporting R&D activities</p> <p>(1) Supporting R&D activities are activities directly related to *core R&D activities.</p> <p>(2) However, if an activity:</p> <p>(a) is an activity referred to in subsection 355-25(2); or</p> <p>(b) produces goods or services; or</p> <p>(c) is directly related to producing goods or services;</p> <p>the activity is a supporting R&D activity only if it is undertaken for the dominant purpose of supporting *core R&D activities.</p>	Deleted	<p>355-30 Supporting R&D activities</p> <p>(1) Supporting R&D activities are activities directly related to *core R&D activities.</p> <p>(2) However, if an activity:</p> <p>(a) is an activity referred to in subsection 355-25(2); or</p> <p>(b) produces goods or services; or</p> <p>(c) is directly related to producing goods or services;</p> <p>the activity is a supporting R&D activity only if it is undertaken for the dominant purpose of supporting *core R&D activities.</p>	<p>Explanation</p> <p>B, C</p> <p>Simplicity</p> <p>International trend</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-35 R&D entities</p> <p>(1) Each of the following is an R&D entity:</p> <p> (a) a body corporate incorporated under an *Australian law;</p> <p> (b) a body corporate incorporated under a *foreign law that is an Australian resident.</p> <p>Note: Each of the above paragraphs extends to a body corporate acting in its capacity as trustee of a public trading trust (see subsection 102T(9) of the Income Tax Assessment Act 1936).</p> <p>(2) A body corporate incorporated under a *foreign law that:</p> <p> (a) is a resident of a foreign country for the purposes of an agreement in force between that country and Australia that:</p>	Preserved	<p>355-35 R&D entities</p> <p>(1) Each of the following is an R&D entity:</p> <p> (a) a body corporate incorporated under an *Australian law;</p> <p> (b) a body corporate incorporated under a *foreign law that is an Australian resident.</p> <p>Note: Each of the above paragraphs extends to a body corporate acting in its capacity as trustee of a public trading trust (see subsection 102T(9) of the Income Tax Assessment Act 1936).</p> <p>(2) A body corporate incorporated under a *foreign law that:</p> <p> (a) is a resident of a foreign country for the purposes of an agreement in force between that country and Australia that:</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) is a double tax agreement (as defined in Part X of the Income Tax Assessment Act 1936); and</p> <p>(ii) includes a definition of permanent establishment; and</p> <p>(b) carries on business in Australia through a permanent establishment (within the meaning of that definition) of the body corporate in Australia; is an R&D entity to the extent that it carries on business through that permanent establishment.</p> <p>(3) However, an *exempt entity cannot be an R&D entity.</p>		<p>(i) is a double tax agreement (as defined in Part X of the Income Tax Assessment Act 1936); and</p> <p>(ii) includes a definition of permanent establishment; and</p> <p>(b) carries on business in Australia through a permanent establishment (within the meaning of that definition) of the body corporate in Australia; is an R&D entity to the extent that it carries on business through that permanent establishment.</p> <p>(3) However, an *exempt entity cannot be an R&D entity.</p>	
<p>355-100 Entitlement to tax offset</p> <p>If notional deductions are at least \$20,000</p> <p>(1) An *R&D entity is entitled to a *tax offset for an income year equal to the percentage, set out in the table, of the total of the amounts (if any) that the</p>	Modified	<p>355-100 Entitlement to tax offset</p> <p>If notional deductions are at least \$20,000</p> <p>(1) An *R&D entity is entitled to a *tax offset for an income year equal to the percentage, set out in the table, of the total of the amounts (if any) that the</p>	<p>Explanation</p> <p>B,C</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>entity can deduct for the income year under any or all of the following provisions:</p> <p>(a) section 355-205 (R&D expenditure);</p> <p>(b) section 355-305 (decline in value of R&D assets);</p> <p>(c) section 355-315 (balancing adjustment for R&D assets);</p> <p>(d) section 355-480 (earlier year associate R&D expenditure);</p> <p>(e) section 355-520 (decline in value of R&D partnership assets);</p> <p>(f) section 355-525 (balancing adjustment for R&D partnership assets);</p> <p>(g) section 355-580 (CRC contributions).</p>		<p>entity can deduct for the income year under any or all of the following provisions:</p> <p>(a) section 355-205 (R&D expenditure);</p> <p>(b) section 355-305 (decline in value of R&D assets);</p> <p>(c) section 355-315 (balancing adjustment for R&D assets);</p> <p>(d) section 355-480 (earlier year associate R&D expenditure);</p> <p>(e) section 355-520 (decline in value of R&D partnership assets);</p> <p>(f) section 355-525 (balancing adjustment for R&D partnership assets);</p> <p>(g) section 355-580 (CRC contributions).</p>	International trend

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<table><tr><th colspan="3">Rate of R&D tax offset</th></tr><tr><th>Item</th><th>In this case:</th><th>The percentage is:</th></tr><tr><td>1</td><td>the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)</td><td>45%</td></tr><tr><td>2</td><td>at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored</td><td>40%</td></tr><tr><td>3</td><td>any other case</td><td>40%</td></tr></table> <p>Note: The tax offset will be a refundable tax offset if the percentage applicable to the entity is 45% (see section 67-30).</p>	Rate of R&D tax offset			Item	In this case:	The percentage is:	1	the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%	2	at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored	40%	3	any other case	40%		<table><tr><th colspan="5">Rate of R&D tax offset</th></tr><tr><th>Item</th><th>In this case:</th><th>The basic percentage is:</th><th>Regulation approved percentage is:</th><th>Tax offset refundable</th></tr><tr><td>1</td><td>the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)</td><td>45%</td><td>60%</td><td>Yes see section 67-30</td></tr><tr><td>2</td><td>at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored</td><td>40%</td><td>50%</td><td>No</td></tr><tr><td>3</td><td>any other case</td><td>40%</td><td>50%</td><td>No</td></tr></table> <p>Note: Regulation approved R&D activities are contained in Subdivision 61-H of the Income Tax Assessment Regulations 1997.</p>	Rate of R&D tax offset					Item	In this case:	The basic percentage is:	Regulation approved percentage is:	Tax offset refundable	1	the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%	60%	Yes see section 67-30	2	at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored	40%	50%	No	3	any other case	40%	50%	No	
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		Note: The tax offset will be a refundable tax offset if the percentage applicable to the entity is 45% (see section 67-30).	
<p>If notional deductions are less than \$20,000</p> <p>(2) However, if the total of those amounts is less than \$20,000, the *R&D entity is instead entitled to a *tax offset for the income year equal to that percentage of the total of the following kinds of expenditure (if any):</p>	Deleted	<p>If notional deductions are less than \$20,000</p> <p>(2) However, if the total of those amounts is less than \$20,000, the *R&D entity is instead entitled to a *tax offset for the income year equal to that percentage of the total of the following kinds of expenditure (if any):</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5																
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2	Expenditure that the *R&D entity can deduct under section 355-580 (CRC contributions) for the income year																		
<p>355-105 Deductions under this Division are notional only</p> <p>An amount (the notional amount) that an *R&D entity can deduct under this Division is disregarded except for the purposes of:</p>	Preserved	<p>355-105 Deductions under this Division are notional only</p> <p>An amount (the notional amount) that an *R&D entity can deduct under this Division is disregarded except for the purposes of:</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>																

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) working out whether the R&D entity is entitled under section 355-100 to a *tax offset; and</p> <p>(b) a provision (of this Act or any other Act) that refers to an entitlement of the R&D entity under section 355-100 to a tax offset; and</p> <p>(c) a provision (of this Act or any other Act) that:</p> <p style="padding-left: 40px;">(i) prevents some or all of the notional amount from being deducted; or</p> <p style="padding-left: 40px;">(ii) changes the income year for which some or all of the notional amount can be deducted; and</p> <p>Note: Examples are Divisions 26 and 27 of this Act, Subdivision H of Division 3 of Part III of the Income Tax Assessment Act 1936 and Part IVA of that Act.</p>		<p>(a) working out whether the R&D entity is entitled under section 355-100 to a *tax offset; and</p> <p>(b) a provision (of this Act or any other Act) that refers to an entitlement of the R&D entity under section 355-100 to a tax offset; and</p> <p>(c) a provision (of this Act or any other Act) that:</p> <p style="padding-left: 40px;">(i) prevents some or all of the notional amount from being deducted; or</p> <p style="padding-left: 40px;">(ii) changes the income year for which some or all of the notional amount can be deducted; and</p> <p>Note: Examples are Divisions 26 and 27 of this Act, Subdivision H of Division 3 of Part III of the Income Tax Assessment Act 1936 and Part IVA of that Act.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(d) a provision (of this Act or any other Act) that includes an amount in assessable income wholly or partly because of the notional amount; and</p> <p>Note: An example is Subdivision 20-A, which may include in assessable income a recoupment of a loss or outgoing if the entity can deduct an amount for the loss or outgoing.</p> <p>(e) a provision (of this Act or any other Act) that excludes expenditure from:</p> <p> (i) the *cost base or *reduced cost base of a *CGT asset; or</p> <p> (ii) an element of that cost base or reduced cost base.</p>		<p>(d) a provision (of this Act or any other Act) that includes an amount in assessable income wholly or partly because of the notional amount; and</p> <p>Note: An example is Subdivision 20-A, which may include in assessable income a recoupment of a loss or outgoing if the entity can deduct an amount for the loss or outgoing.</p> <p>(e) a provision (of this Act or any other Act) that excludes expenditure from:</p> <p> (i) the *cost base or *reduced cost base of a *CGT asset; or</p> <p> (ii) an element of that cost base or reduced cost base.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
Note: An example is section 110-45, which may exclude deductible expenditure from elements of the cost base of an asset.		Note: An example is section 110-45, which may exclude deductible expenditure from elements of the cost base of an asset.	
355-110 Notional deductions include prepaid expenditure For the purposes of this Division, if: <p>(a) apart from Subdivision H (prepaid expenditure) of Division 3 of Part III of the Income Tax Assessment Act 1936, an *R&D entity can deduct an amount under section 355-205 or 355-480 for an income year (the present year) or an earlier income year; and</p> <p>(b) that Subdivision applies to the calculation of that amount; and</p>	Preserved	355-110 Notional deductions include prepaid expenditure For the purposes of this Division, if: <p>(a) apart from Subdivision H (prepaid expenditure) of Division 3 of Part III of the Income Tax Assessment Act 1936, an *R&D entity can deduct an amount under section 355-205 or 355-480 for an income year (the present year) or an earlier income year; and</p> <p>(b) that Subdivision applies to the calculation of that amount; and</p>	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(c) the entity can deduct an amount, as a result of that application of that Subdivision, for the present year; the entity is taken to be able to deduct under section 355-205 or 355-480 (as appropriate) the amount referred to in paragraph (c) for the present year.</p> <p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p>		<p>(c) the entity can deduct an amount, as a result of that application of that Subdivision, for the present year; the entity is taken to be able to deduct under section 355-205 or 355-480 (as appropriate) the amount referred to in paragraph (c) for the present year.</p> <p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p>	
<p>355-200 What this Subdivision is about</p> <p>An R&D entity can notionally deduct its expenditure on registered R&D activities for which certain conditions are met.</p> <p>There are special conditions for R&D activities conducted for foreign residents.</p>	Preserved	<p>355-200 What this Subdivision is about</p> <p>An R&D entity can notionally deduct its expenditure on registered R&D activities for which certain conditions are met.</p> <p>There are special conditions for R&D activities conducted for foreign residents.</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-205 When notional deductions for R&D expenditure arise</p> <p>(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurs during that year to the extent that the expenditure:</p> <p> (a) is incurred on one or more *R&D activities:</p> <p> (i) for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and</p> <p> (ii) that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p> (b) if the expenditure is incurred to the R&D entity's *associate—is paid to that associate during the present year.</p> <p>Note 1: If the matters in subparagraphs (a)(i) and (ii) are not satisfied until a later income year, the R&D</p>	Modified	<p>355-205 When notional deductions for R&D expenditure arise</p> <p>(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurs during that year to the extent that the expenditure:</p> <p> (a) is incurred on one or more *R&D activities:</p> <p> (i) for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and</p> <p> (ii) that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p> (b) if the expenditure is incurred to the R&D entity's *associate—is paid to that associate during the present year.</p> <p>Note 1: If the matters in subparagraphs (a)(i) and (ii) are not satisfied until a later income year, the R&D</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>entity will need to wait until then before it can deduct the expenditure for the present year.</p> <p>Note 2: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).</p> <p>Note 3: The entity may also be able to deduct expenditure incurred to an associate in an earlier income year (see section 355-480).</p> <p>Note 4: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p>		<p>entity will need to wait until then before it can deduct the expenditure for the present year.</p> <p>Note 2: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).</p> <p>Note 3: The entity may also be able to deduct expenditure incurred to an associate in an earlier income year (see section 355-480).</p> <p>Note 4: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
(2) This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).		(2) This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).	
355-210 Conditions for R&D activities (1) An *R&D activity covered by one or more of the following paragraphs is an activity to which this section applies: <ul style="list-style-type: none"> (a) the R&D activity is conducted for the *R&D entity solely within Australia or an external territory; (b) if the R&D entity is a body corporate carrying on business through a permanent establishment (as described in subsection 355-35(2))—the R&D activity is conducted: 	Preserved	355-210 Conditions for R&D activities (1) An *R&D activity covered by one or more of the following paragraphs is an activity to which this section applies: <ul style="list-style-type: none"> (a) the R&D activity is conducted for the *R&D entity solely within Australia or an external Territory; (b) if the R&D entity is a body corporate carrying on business through a permanent establishment (as described in subsection 355-35(2))—the R&D activity is conducted: 	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) for the body corporate; but</p> <p>(ii) not for the purposes of that permanent establishment; and the conditions in section 355-215 (activities conducted for a body corporate by its permanent establishment) are met for the R&D activity;</p> <p>(c) the R&D activity is conducted for one or more foreign residents who are each:</p> <p>(i) incorporated under a *foreign law; and</p> <p>(ii) a resident of a foreign country for the purposes of an agreement of a kind described in subsection 355-35(2); and the conditions in section 355-220 (activities conducted for a foreign entity) are met for the R&D activity;</p> <p>(d) the R&D activity is:</p>		<p>(i) for the body corporate; but</p> <p>(ii) not for the purposes of that permanent establishment; and the conditions in section 355-215 (activities conducted for a body corporate by its permanent establishment) are met for the R&D activity;</p> <p>(c) the R&D activity is conducted for one or more foreign residents who are each:</p> <p>(i) incorporated under a *foreign law; and</p> <p>(ii) a resident of a foreign country for the purposes of an agreement of a kind described in subsection 355-35(2); and the conditions in section 355-220 (activities conducted for a foreign entity) are met for the R&D activity;</p> <p>(d) the R&D activity is:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) conducted for the R&D entity solely outside Australia and the external Territories; and</p> <p>(ii) covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986;</p> <p>(e) the R&D activity consists of several parts, with</p> <p>(i) some parts being conducted for the R&D entity solely within Australia or an external Territory; and</p> <p>(ii) the other parts being conducted for the R&D entity outside Australia and the external Territories while covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986.</p> <p>Note: An activity can be covered by a finding under paragraph 28C(1)(a) of the Industry Research and</p>		<p>(i) conducted for the R&D entity solely outside Australia and the external Territories; and</p> <p>(ii) covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986;</p> <p>(e) the R&D activity consists of several parts, with:</p> <p>(i) some parts being conducted for the R&D entity solely within Australia or an external Territory; and</p> <p>(ii) the other parts being conducted for the R&D entity outside Australia and the external Territories while covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986.</p> <p>Note: An activity can be covered by a finding under paragraph 28C(1)(a) of the Industry Research and</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Development Act 1986 if the activity cannot be conducted in Australia or the external Territories.</p> <p>(2) However, an *R&D activity is not an activity to which this section applies if the activity is conducted, to a significant extent, for one or more other entities not covered by any paragraph of subsection (1).</p> <p>Note: An entity would not be covered by, for example, paragraph (1)(c) if the conditions in section 355-220 were not met for the R&D activity in relation to that entity.</p>		<p>Development Act 1986 if the activity cannot be conducted in Australia or the external Territories.</p> <p>(2) However, an *R&D activity is not an activity to which this section applies if the activity is conducted, to a significant extent, for one or more other entities not covered by any paragraph of subsection (1).</p> <p>Note: An entity would not be covered by, for example, paragraph (1)(c) if the conditions in section 355-220 were not met for the R&D activity in relation to that entity.</p>	
<p>355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate</p> <p>For the purposes of paragraph 355-210(1)(b), the conditions for an *R&D activity are as follows:</p>	Modified	<p>355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate</p> <p>For the purposes of paragraph 355-210(1)(b), the conditions for an *R&D activity are as follows:</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) the R&D activity is conducted solely within Australia or an external Territory;</p> <p>(b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:</p> <p>(i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and</p> <p>(ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;</p>		<p>(a) the R&D activity is conducted solely within Australia or an external Territory;</p> <p>(b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:</p> <p>(i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and</p> <p>(ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(c) there is written evidence that the R&D activity is conducted for the body corporate but not for the purposes of that permanent establishment.</p> <p>Note: The body corporate is the R&D entity to the extent that it carries on business through that permanent establishment (see subsection 355-35(2)).</p>		<p>(c) there is written evidence that the R&D activity is conducted for the body corporate but not for the purposes of that permanent establishment.</p> <p>Note: The body corporate is the R&D entity to the extent that it carries on business through that permanent establishment (see subsection 355-35(2)).</p>	
<p>355-220 R&D activities conducted for a foreign entity</p> <p>(1) For the purposes of paragraph 355-210(1)(c), the conditions for an *R&D activity conducted for one or more foreign residents are as follows:</p> <p>(a) the R&D activity is conducted solely within Australia or an external Territory;</p>	Modified	<p>355-220 R&D activities conducted for a foreign entity</p> <p>(1) For the purposes of paragraph 355-210(1)(c), the conditions for an *R&D activity conducted for one or more foreign residents are as follows:</p> <p>(a) the R&D activity is conducted solely within Australia or an external Territory;</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:</p> <p> (i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and</p> <p> (ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;</p> <p>(c) when the R&D activity is conducted:</p> <p> (i) each foreign resident is *connected with the R&D entity; or</p>		<p>(b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:</p> <p> (i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and</p> <p> (ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;</p> <p>(c) when the R&D activity is conducted:</p> <p> (i) each foreign resident is *connected with the R&D entity; or</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) for each foreign resident—either the foreign resident is an *affiliate of the R&D entity or the R&D entity is an affiliate of the foreign resident;</p> <p>(d) the R&D activity is conducted:</p> <p>(i) in accordance with a written agreement binding on only the R&D entity and each foreign resident; and</p> <p>(ii) either directly by the R&D entity, or indirectly by another entity under an agreement binding on the R&D entity;</p> <p>(e) the R&D activity is not conducted in connection with an agreement covered by subsection (2).</p> <p>Note: An example of conducting an R&D activity indirectly under a contract is conducting the R&D</p>		<p>(ii) for each foreign resident—either the foreign resident is an *affiliate of the R&D entity or the R&D entity is an affiliate of the foreign resident;</p> <p>(d) the R&D activity is conducted:</p> <p>(i) in accordance with a written agreement binding on only the R&D entity and each foreign resident; and</p> <p>(ii) either directly by the R&D entity, or indirectly by another entity under an agreement binding on the R&D entity;</p> <p>(e) the R&D activity is not conducted in connection with an agreement covered by subsection (2).</p> <p>Note: An example of conducting an R&D activity indirectly under a contract is conducting the R&D</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>activity under a subcontract, or one of a chain of subcontracts, under the contract.</p> <p>(2) An agreement is covered by this subsection if:</p> <p> (a) the agreement is binding on the R&D entity (the first entity) and an R&D entity that:</p> <p> (i) is *connected with the first entity; or</p> <p> (ii) has the first entity as an *affiliate, or is an affiliate of the first entity; while the *R&D activity is conducted; and</p> <p> (b) the R&D activity is to be conducted under the agreement by the first entity or by an entity:</p> <p> (i) who is not bound by the agreement; and</p> <p> (ii) who is to conduct the R&D activity directly or indirectly under another agreement to which the first entity is, or will become, bound.</p>		<p>activity under a subcontract, or one of a chain of subcontracts, under the contract.</p> <p>(2) An agreement is covered by this subsection if:</p> <p> (a) the agreement is binding on the R&D entity (the first entity) and an R&D entity that:</p> <p> (i) is *connected with the first entity; or</p> <p> (ii) has the first entity as an *affiliate, or is an affiliate of the first entity; while the *R&D activity is conducted; and</p> <p> (b) the R&D activity is to be conducted under the agreement by the first entity or by an entity:</p> <p> (i) who is not bound by the agreement; and</p> <p> (ii) who is to conduct the R&D activity directly or indirectly under another agreement to which the first entity is, or will become, bound.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note: One effect of this subsection is that, even if the R&D entity has an agreement with the foreign resident for conducting the R&D activity, the R&D entity cannot deduct expenditure incurred:</p> <p>(a) for conducting the R&D activity as a subcontractor under a subcontract with an affiliated R&D entity; or</p> <p>(b) if the R&D entity is a subcontractor to an affiliated R&D entity—for further subcontracting the conducting of the R&D activity.</p>		<p>Note: One effect of this subsection is that, even if the R&D entity has an agreement with the foreign resident for conducting the R&D activity, the R&D entity cannot deduct expenditure incurred:</p> <p>(a) for conducting the R&D activity as a subcontractor under a subcontract with an affiliated R&D entity; or</p> <p>(b) if the R&D entity is a subcontractor to an affiliated R&D entity—for further subcontracting the conducting of the R&D activity.</p>	
<p>355-225 Expenditure that cannot be notionally deducted</p> <p>Expenditure on buildings, certain assets and interest</p>	Preserved	<p>355-225 Expenditure that cannot be notionally deducted</p> <p>Expenditure on buildings, certain assets and interest</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(1) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to the following expenditure:</p> <p> (a) expenditure incurred to acquire or construct:</p> <p> (i) a building or a part of a building; or</p> <p> (ii) an extension, alteration or improvement to a building;</p> <p> (b) expenditure included in the *cost of a tangible *depreciating asset for the purposes of Division 40 (as that Division applies as described in section 355-310 or otherwise);</p> <p> (c) expenditure incurred for interest (within the meaning of Division 11A of Part III of the Income Tax Assessment Act 1936) payable to an entity.</p>		<p>(1) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to the following expenditure:</p> <p> (a) expenditure incurred to acquire or construct:</p> <p> (i) a building or a part of a building; or</p> <p> (ii) an extension, alteration or improvement to a building;</p> <p> (b) expenditure included in the *cost of a tangible *depreciating asset for the purposes of Division 40 (as that Division applies as described in section 355-310 or otherwise);</p> <p> (c) expenditure incurred for interest (within the meaning of Division 11A of Part III of the Income Tax Assessment Act 1936) payable to an entity.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note 1: Expenditure covered by paragraph (a) may be deductible under Division 43 (capital works).</p> <p>Note 2: The decline in value of an asset covered by paragraph (b) may be notionally deductible under section 355-305.</p> <p>Note 3: Expenditure covered by paragraph (c) may be deductible under section 8-1.</p> <p>Expenditure on core technology</p> <p>(2) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to expenditure incurred in acquiring, or in acquiring the right to use, technology wholly or partly for the purposes of one or more *R&D activities if:</p> <p>(a) a purpose of the R&D activities was or is:</p>		<p>Note 1: Expenditure covered by paragraph (a) may be deductible under Division 43 (capital works).</p> <p>Note 2: The decline in value of an asset covered by paragraph (b) may be notionally deductible under section 355-305.</p> <p>Note 3: Expenditure covered by paragraph (c) may be deductible under section 8-1.</p> <p>Expenditure on core technology</p> <p>(2) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to expenditure incurred in acquiring, or in acquiring the right to use, technology wholly or partly for the purposes of one or more *R&D activities if:</p> <p>(a) a purpose of the R&D activities was or is:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) to obtain new knowledge based on that technology; or</p> <p>(ii) to create new or improved materials, products, devices, processes, techniques or services to be based on that technology; or</p> <p>(b) the R&D activities were or are an extension, continuation, development or completion of the activities that produced that technology.</p>		<p>(i) to obtain new knowledge based on that technology; or</p> <p>(ii) to create new or improved materials, products, devices, processes, techniques or services to be based on that technology; or</p> <p>(b) the R&D activities were or are an extension, continuation, development or completion of the activities that produced that technology.</p>	
<p>355-300 What this Subdivision is about</p> <p>An R&D entity can notionally deduct the decline in value of a tangible depreciating asset used for R&D activities. If a balancing adjustment event later happens for the asset, the R&D entity may be able to notionally deduct a further amount. Alternatively, an</p>	Preserved	<p>355-300 What this Subdivision is about</p> <p>An R&D entity can notionally deduct the decline in value of a tangible depreciating asset used for R&D activities. If a balancing adjustment event later happens for the asset, the R&D entity may be able to notionally deduct a further amount. Alternatively, an</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
amount may be included in the R&D entity's assessable income.		amount may be included in the R&D entity's assessable income.	
355-305 When notional deductions for decline in value arise (1) If: (a) an *R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year (the present year) for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and (b) while a tangible *depreciating asset is *held by the R&D entity during the present year, the asset is	Preserved	355-305 When notional deductions for decline in value arise (1) If: (a) an *R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year (the present year) for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and (b) while a tangible *depreciating asset is *held by the R&D entity during the present year, the asset is	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>used for the purpose of conducting one or more of those R&D activities; and</p> <p>(c) the R&D entity could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and</p> <p>(d) the R&D entity cannot deduct an amount for the asset for:</p> <p>(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or</p> <p>(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied;</p>		<p>used for the purpose of conducting one or more of those R&D activities; and</p> <p>(c) the R&D entity could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and</p> <p>(d) the R&D entity cannot deduct an amount for the asset for:</p> <p>(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or</p> <p>(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
the R&D entity can deduct the amount referred to in paragraph (c) for the present year. (2) This section has effect subject to subsection 355-580(4) (CRC contributions).		the R&D entity can deduct the amount referred to in paragraph (c) for the present year. (2) This section has effect subject to subsection 355-580(4) (CRC contributions).	
355-310 Notional application of Division 40 (1) In addition to its application apart from this section, Division 40 also applies with the changes set out in this section for the purposes of: (a) paragraph 355-225(1)(b) (excluded expenditure); and (b) paragraph 355-305(1)(c); and (c) section 355-315 (balancing adjustments). (2) Firstly, substitute the following for references to a *taxable purpose in Subdivisions 40-A to 40-D (other	Preserved	355-310 Notional application of Division 40 (1) In addition to its application apart from this section, Division 40 also applies with the changes set out in this section for the purposes of: (a) paragraph 355-225(1)(b) (excluded expenditure); and (b) paragraph 355-305(1)(c); and (c) section 355-315 (balancing adjustments). (2) Firstly, substitute the following for references to a *taxable purpose in Subdivisions 40-A to 40-D (other	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5																								
than for the purposes of sections 40-100, 40-105 and 40-110): <div><table><tr><th colspan="3">Replacing references to a taxable purpose</th></tr><tr><th>Item</th><th>If this application of Division 40 is for the purposes of:</th><th>Substitute a reference to:</th></tr><tr><td>1</td><td>paragraph 355-225(1)(b) or 355-305(1)(c)</td><td>the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)</td></tr><tr><td>2</td><td>section 355-315</td><td>the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate</td></tr></table></div> <p>Note: Sections 40-100, 40-105 and 40-110 are about working out an asset’s effective life. Those sections already refer to the use of the asset for R&D activities.</p> <p>(3) Secondly, assume that Division 40 does not apply to a building, nor to an extension, alteration or</p>	Replacing references to a taxable purpose			Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:	1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)	2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate		than for the purposes of sections 40-100, 40-105 and 40-110): <div><table><tr><th colspan="3">Replacing references to a taxable purpose</th></tr><tr><th>Item</th><th>If this application of Division 40 is for the purposes of:</th><th>Substitute a reference to:</th></tr><tr><td>1</td><td>paragraph 355-225(1)(b) or 355-305(1)(c)</td><td>the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)</td></tr><tr><td>2</td><td>section 355-315</td><td>the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate</td></tr></table></div> <p>Note: Sections 40-100, 40-105 and 40-110 are about working out an asset’s effective life. Those sections already refer to the use of the asset for R&D activities.</p> <p>(3) Secondly, assume that Division 40 does not apply to a building, nor to an extension, alteration or</p>	Replacing references to a taxable purpose			Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:	1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)	2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate	
Replacing references to a taxable purpose																											
Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:																									
1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)																									
2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate																									
Replacing references to a taxable purpose																											
Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:																									
1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)																									
2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate																									

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>improvement to a building, (the building works) for which the *R&D entity:</p> <p>(a) can deduct amounts under Division 43 (capital works); or</p> <p>(b) could deduct amounts under Division 43:</p> <p>(i) apart from expenditure being incurred, or the building works being started, before a particular day; or</p> <p>(ii) had the R&D entity used the building works for a purpose relevant to those building works under section 43-140 (using an area in a deductible way).</p> <p>(4) Finally, assume that the following provisions had not been enacted:</p> <p>(a) subsection 40-25(7) (meaning of taxable purpose);</p>		<p>improvement to a building, (the building works) for which the *R&D entity:</p> <p>(a) can deduct amounts under Division 43 (capital works); or</p> <p>(b) could deduct amounts under Division 43:</p> <p>(i) apart from expenditure being incurred, or the building works being started, before a particular day; or</p> <p>(ii) had the R&D entity used the building works for a purpose relevant to those building works under section 43-140 (using an area in a deductible way).</p> <p>(4) Finally, assume that the following provisions had not been enacted:</p> <p>(a) subsection 40-25(7) (meaning of taxable purpose);</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(b) subsection 40-45(2) (assets to which Division 40 does not apply);</p> <p>(c) section 40-425 (low-value pools);</p> <p>(d) Subdivision 328-D (capital allowances for small business entities).</p> <p>Note: Subsection (3) and paragraph (4)(b) mean that deductions under section 355-305 may be available for capital works other than building works.</p>		<p>(b) subsection 40-45(2) (assets to which Division 40 does not apply);</p> <p>(c) section 40-425 (low-value pools);</p> <p>(d) Subdivision 328-D (capital allowances for small business entities).</p> <p>Note: Subsection (3) and paragraph (4)(b) mean that deductions under section 355-305 may be available for capital works other than building works.</p>	
<p>355-315 Balancing adjustments—assets only used for R&D activities</p> <p>(1) This section applies to an *R&D entity if:</p> <p>(a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by the R&D entity; and</p>	Preserved	<p>355-315 Balancing adjustments—assets only used for R&D activities</p> <p>(1) This section applies to an *R&D entity if:</p> <p>(a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by the R&D entity; and</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(b) the R&D entity cannot deduct an amount under section 40-25, as that section applies apart from:</p> <p> (i) this Division; and</p> <p> (ii) former section 73BC of the Income Tax Assessment Act 1936; for the asset for an income year; and</p> <p>(c) the R&D entity is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-305 for the asset; and</p> <p>(d) the entity is registered under section 27A of the Industry Research & Development Act 1986 for one or more *R&D activities for the event year; and</p> <p>(e) if Division 40 applied with the changes described in section 355-310:</p>		<p>(b) the R&D entity cannot deduct an amount under section 40-25, as that section applies apart from:</p> <p> (i) this Division; and</p> <p> (ii) former section 73BC of the Income Tax Assessment Act 1936; for the asset for an income year; and</p> <p>(c) the R&D entity is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-305 for the asset; and</p> <p>(d) the entity is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and</p> <p>(e) if Division 40 applied with the changes described in section 355-310:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) the entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or</p> <p>(ii) an amount would be included in the entity's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.</p> <p>Note 1: This section applies in a modified way if the entity also has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-320 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>Note 2: Section 40-292 applies if the entity can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the ITAA 1936.</p>		<p>(i) the entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or</p> <p>(ii) an amount would be included in the entity's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.</p> <p>Note 1: This section applies in a modified way if the entity also has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-320 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>Note 2: Section 40-292 applies if the entity can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Notional deduction</p> <p>(2) If the *R&D entity could deduct for the event year an amount under subsection 40-285(2) for the asset & the event if Division 40 applied as described in paragraph (1)(e), the R&D entity can deduct that amount for the event year.</p> <p>Amount to be included in assessable income</p> <p>(3) If an amount (the section 40-285 amount) would be included in the *R&D entity's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the sum of that amount and the following amount is included in the R&D entity's assessable income for the event year:</p>		<p>Notional deduction</p> <p>(2) If the *R&D entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the R&D entity can deduct that amount for the event year.</p> <p>Amount to be included in assessable income</p> <p>(3) If an amount (the section 40-285 amount) would be included in the *R&D entity's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the sum of that amount and the following amount is included in the R&D entity's assessable income for the event year:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
Adjusted section 40-285 amount $\times \frac{1}{3}$ where: adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value. total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).		Adjusted section 40-285 amount $\times \frac{1}{3}$ where: adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value. total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).	
355-400 Expenditure incurred while not at arm's length If: (a) an *R&D entity incurs expenditure to another entity on all or part of an *R&D activity; and (b) either:	Deleted	355-400 Expenditure incurred while not at arm's length If: (a) an *R&D entity incurs expenditure to another entity on all or part of an *R&D activity; and (b) either:	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) when the R&D entity incurs the expenditure, the R&D entity and the other entity do not deal with each other at *arm's length; or</p> <p>(ii) the other entity is the R&D entity's *associate; and</p> <p>(c) the expenditure exceeds the *market value of the relevant R&D activity or part (as appropriate); for the purposes of this Division, the R&D entity is treated as if the amount of expenditure it incurred on the relevant R&D activity or part (as appropriate) were equal to that market value.</p> <p>Note: For the purposes of a deduction under section 355-305 or 355-520 for an asset's decline in value, the arms' length rules in Division 40 apply as part of the</p>		<p>(i) when the R&D entity incurs the expenditure, the R&D entity and the other entity do not deal with each other at *arm's length; or</p> <p>(ii) the other entity is the R&D entity's *associate; and</p> <p>(e) the expenditure exceeds the *market value of the relevant R&D activity or part (as appropriate); for the purposes of this Division, the R&D entity is treated as if the amount of expenditure it incurred on the relevant R&D activity or part (as appropriate) were equal to that market value.</p> <p>Note: For the purposes of a deduction under section 355-305 or 355-520 for an asset's decline in value, the arms' length rules in Division 40 apply as part of the</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
notional application of that Division under that section.		notional application of that Division under that section.	
355-405 Expenditure not at risk (1) An *R&D entity cannot deduct expenditure under section 355-205 or 355-480 if: <p>(a) when it incurs the expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:</p> <p>(i) as a direct or indirect result of the expenditure being incurred; and</p> <p>(ii) regardless of the results of the activities on which the expenditure is incurred; and</p> <p>(b) that consideration is equal to or greater than the expenditure.</p>	Deleted	355-405 Expenditure not at risk (1) An *R&D entity cannot deduct expenditure under section 355-205 or 355-480 if: <p>(a) when it incurs the expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:</p> <p>(i) as a direct or indirect result of the expenditure being incurred; and</p> <p>(ii) regardless of the results of the activities on which the expenditure is incurred; and</p> <p>(b) that consideration is equal to or greater than the expenditure.</p>	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p> <p>(2) If:</p> <p> (a) when an *R&D entity incurs expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:</p> <p> (i) as a direct or indirect result of the expenditure being incurred; and</p> <p> (ii) regardless of the results of the activities on which the expenditure is incurred; and</p> <p> (b) that consideration is less than the expenditure; the R&D entity cannot deduct under section 355-205 or 355-480 so much of the expenditure as is equal to the consideration.</p>		<p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p> <p>(2) If:</p> <p> (a) when an *R&D entity incurs expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:</p> <p> (i) as a direct or indirect result of the expenditure being incurred; and</p> <p> (ii) regardless of the results of the activities on which the expenditure is incurred; and</p> <p> (b) that consideration is less than the expenditure; the R&D entity cannot deduct under section 355-205 or 355-480 so much of the expenditure as is equal to the consideration.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(3) For the purposes of paragraphs (1)(a) and (2)(a), have regard to:</p> <p> (a) anything that happened or existed before or at the time the expenditure is incurred; and</p> <p> (b) anything that is likely to happen or exist after that time.</p> <p>(4) This section does not apply to expenditure incurred on *R&D activities covered by paragraph 355-210(1)(b) or (c).</p> <p>Note: Those paragraphs cover R&D activities conducted for foreign residents.</p>		<p>(3) For the purposes of paragraphs (1)(a) and (2)(a), have regard to:</p> <p> (a) anything that happened or existed before or at the time the expenditure is incurred; and</p> <p> (b) anything that is likely to happen or exist after that time.</p> <p>(4) This section does not apply to expenditure incurred on *R&D activities covered by paragraph 355-210(1)(b) or (c).</p> <p>Note: Those paragraphs cover R&D activities conducted for foreign residents.</p>	
<p>355-410 Disposal of R&D results</p> <p>(1) This section applies to an *R&D entity if:</p>	Deleted	<p>355-410 Disposal of R&D results</p> <p>(1) This section applies to an *R&D entity if:</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) the R&D entity is entitled under section 355-100 to a *tax offset because it can:</p> <p>(i) deduct under section 355-205 or 355-480 expenditure incurred on *R&D activities; or</p> <p>(ii) deduct under section 355-305 or 355-520 an amount for an asset (the R&D asset) used for the purpose of conducting one or more R&D activities; and</p> <p>(b) the R&D entity receives or becomes entitled to receive one or more of the following amounts (the results amounts) in an income year (the results year):</p> <p>(i) an amount for the results of any of the R&D activities;</p> <p>(ii) an amount from granting access to, or the right to use, any of those results;</p>		<p>(a) the R&D entity is entitled under section 355-100 to a *tax offset because it can:</p> <p>(i) deduct under section 355-205 or 355-480 expenditure incurred on *R&D activities; or</p> <p>(ii) deduct under section 355-305 or 355-520 an amount for an asset (the R&D asset) used for the purpose of conducting one or more R&D activities; and</p> <p>(b) the R&D entity receives or becomes entitled to receive one or more of the following amounts (the results amounts) in an income year (the results year):</p> <p>(i) an amount for the results of any of the R&D activities;</p> <p>(ii) an amount from granting access to, or the right to use, any of those results;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(iii) an amount attributable to the R&D entity having incurred the expenditure, including an amount it is entitled to receive regardless of the results of the R&D activities;</p> <p>(iv) an amount attributable to the R&D asset being used for the purpose mentioned in subparagraph (a)(ii), including an amount the R&D entity is entitled to receive regardless of the results of the R&D activities;</p> <p>(v) an amount from *disposing of a *CGT asset, or from granting a right to occupy or use a CGT asset, where the disposal or grant resulted in another person acquiring a right to access or use any of those results.</p>		<p>(iii) an amount attributable to the R&D entity having incurred the expenditure, including an amount it is entitled to receive regardless of the results of the R&D activities;</p> <p>(iv) an amount attributable to the R&D asset being used for the purpose mentioned in subparagraph (a)(ii), including an amount the R&D entity is entitled to receive regardless of the results of the R&D activities;</p> <p>(v) an amount from *disposing of a *CGT asset, or from granting a right to occupy or use a CGT asset, where the disposal or grant resulted in another person acquiring a right to access or use any of those results.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note: This section also applies with changes to the partners of an R&D partnership (see section 355-535).</p> <p>(2) For each results amount, the following amount is included in the *R&D entity's assessable income for the results year:</p> <p> (a) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is a *depreciating asset—an amount equal to the extent (if any) that the results amount exceeds the asset's *cost just before the disposal or grant;</p> <p> (b) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is not a depreciating asset—an amount equal to the extent</p>		<p>Note: This section also applies with changes to the partners of an R&D partnership (see section 355-535).</p> <p>(2) For each results amount, the following amount is included in the *R&D entity's assessable income for the results year:</p> <p> (a) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is a *depreciating asset—an amount equal to the extent (if any) that the results amount exceeds the asset's *cost just before the disposal or grant;</p> <p> (b) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is not a depreciating asset—an amount equal to the extent (if any) that</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(if any) that the results amount exceeds the asset's *cost base just before the disposal or grant;</p> <p>(c) otherwise—the results amount.</p> <p>(3) For the purposes of paragraph (2)(a), assume that subsection 40-45(2) did not, except in the case of buildings and extensions, alterations and improvements to buildings, prevent Division 40 from applying to certain capital works.</p>		<p>the results amount exceeds the asset's *cost base just before the disposal or grant;</p> <p>(c) otherwise—the results amount.</p> <p>(3) For the purposes of paragraph (2)(a), assume that subsection 40-45(2) did not, except in the case of buildings and extensions, alterations and improvements to buildings, prevent Division 40 from applying to certain capital works.</p>	
<p>355-415 Reducing deductions to reflect mark-ups within groups</p> <p>(1) This section applies to an *R&D entity if:</p> <p>(a) the R&D entity can deduct an amount under section 355-205 or 355-480 for an income year for one or more *R&D activities; and</p>	Deleted	<p>355-415 Reducing deductions to reflect mark-ups within groups</p> <p>(1) This section applies to an *R&D entity if:</p> <p>(a) the R&D entity can deduct an amount under section 355-205 or 355-480 for an income year for one or more *R&D activities; and</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(b) one or more other entities (the grouped entities) incurred expenditure during the income year, or an earlier income year, on one or more of those *R&D activities; and</p> <p>(c) when each grouped entity incurred the expenditure:</p> <p style="padding-left: 40px;">(i) the grouped entity was *connected with the R&D entity; or</p> <p style="padding-left: 40px;">(ii) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.</p> <p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p> <p>(2) Reducing deductions by group mark-ups The amount the *R&D entity can deduct, apart from this</p>		<p>(b) one or more other entities (the grouped entities) incurred expenditure during the income year, or an earlier income year, on one or more of those *R&D activities; and</p> <p>(c) when each grouped entity incurred the expenditure:</p> <p style="padding-left: 40px;">(i) the grouped entity was *connected with the R&D entity; or</p> <p style="padding-left: 40px;">(ii) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.</p> <p>Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.</p> <p>(2) Reducing deductions by group mark-ups The amount the *R&D entity can deduct, apart from this</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>section, under section 355-205 or 355-480 for the income year is reduced by the amount (the reduction amount) worked out as follows:</p> <p><i>Method statement</i></p> <p>Step 1. For each grouped entity, work out the sum of the amounts derived during the income year, or an earlier income year, by the grouped entity for goods or services relating to one or more of the *R&D activities while:</p> <p>(a) the grouped entity was *connected with the *R&D entity; or</p> <p>(b) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.</p>		<p>section, under section 355-205 or 355-480 for the income year is reduced by the amount (the reduction amount) worked out as follows:</p> <p><i>Method statement</i></p> <p>Step 1. For each grouped entity, work out the sum of the amounts derived during the income year, or an earlier income year, by the grouped entity for goods or services relating to one or more of the *R&D activities while:</p> <p>(a) the grouped entity was *connected with the *R&D entity; or</p> <p>(b) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Step 2. From the sum of those amounts, subtract the actual cost to each grouped entity of providing the goods or services that correspond to those amounts.</p> <p>(3) If R&D entity has deductions for both R&D expenditure and earlier year associate R&D expenditure. However, if the *R&D entity can deduct amounts under both sections 355-205 and 355-480 for the income year, those amounts are reduced as follows:</p> <p>(a) apply the reduction amount to reduce the amount otherwise deductible under section 355-205 (but not below zero); and</p> <p>(b) then apply any remainder of the reduction amount to reduce the amount otherwise deductible under section 355-480 (but not below zero).</p>		<p>Step 2. From the sum of those amounts, subtract the actual cost to each grouped entity of providing the goods or services that correspond to those amounts.</p> <p>(3) If R&D entity has deductions for both R&D expenditure and earlier year associate R&D expenditure. However, if the *R&D entity can deduct amounts under both sections 355-205 and 355-480 for the income year, those amounts are reduced as follows:</p> <p>(a) apply the reduction amount to reduce the amount otherwise deductible under section 355-205 (but not below zero); and</p> <p>(b) then apply any remainder of the reduction amount to reduce the amount otherwise deductible under section 355-480 (but not below zero).</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
(4) Disregard mark-ups already taken into account For the purposes of step 1 of the method statement in subsection (2), disregard any of the amounts from that step that have already been taken into account under this section for the *R&D entity and the *R&D activities for an earlier income year.		(4) Disregard mark-ups already taken into account For the purposes of step 1 of the method statement in subsection (2), disregard any of the amounts from that step that have already been taken into account under this section for the *R&D entity and the *R&D activities for an earlier income year.	
355-430 What this Subdivision is about An entity must pay extra income tax on its recoupments from government of expenditure on R&D activities for which it has obtained tax offsets under this Division.	Deleted	355-430 What this Subdivision is about An entity must pay extra income tax on its recoupments from government of expenditure on R&D activities for which it has obtained tax offsets under this Division.	Explanation B Simplicity
355-435 When extra income tax is payable An entity must pay extra income tax on a *recoupment if the conditions in sections 355-440 and 355-445 are met for the recoupment.	Deleted	355-435 When extra income tax is payable An entity must pay extra income tax on a *recoupment if the conditions in sections 355-440 and 355-445 are met for the recoupment.	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note 1: Section 355-450 sets out how much of the recoupment is subject to extra income tax.</p> <p>Note 2: A recoupment includes a grant (see subsection 20-25(1)).</p>		<p>Note 1: Section 355-450 sets out how much of the recoupment is subject to extra income tax.</p> <p>Note 2: A recoupment includes a grant (see subsection 20-25(1)).</p>	
<p>355-440 Entity receives government recoupment</p> <p>The condition in this section is met if the entity receives or becomes entitled to receive the *recoupment from:</p> <p>(a) an *Australian government agency; or</p> <p>(b) an STB (within the meaning of Division 1AB of Part III of the Income Tax Assessment Act 1936); otherwise than under the *CRC program.</p>	Deleted	<p>355-440 Entity receives government recoupment</p> <p>The condition in this section is met if the entity receives or becomes entitled to receive the *recoupment from:</p> <p>(a) an *Australian government agency; or</p> <p>(b) an STB (within the meaning of Division 1AB of Part III of the Income Tax Assessment Act 1936); otherwise than under the *CRC program.</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-445 Recoupment could relate to R&D activities</p> <p>The condition in this section is met if:</p> <p>(a) the *recoupment is received, or the entitlement to receive the recoupment arises, during an income year (the trigger year); and</p> <p>(b) either:</p> <p>(i) the recoupment is of expenditure incurred on or in relation to certain activities; or</p> <p>(ii) the recoupment requires expenditure (the project expenditure) to have been incurred, or to be incurred, on certain activities.</p> <p>Note: Paragraph (b) includes expenditure incurred in purchasing a tangible depreciating asset to be used when conducting R&D activities.</p>	Deleted	<p>355-445 Recoupment could relate to R&D activities</p> <p>The condition in this section is met if:</p> <p>(a) the *recoupment is received, or the entitlement to receive the recoupment arises, during an income year (the trigger year); and</p> <p>(b) either:</p> <p>(i) the recoupment is of expenditure incurred on or in relation to certain activities; or</p> <p>(ii) the recoupment requires expenditure (the project expenditure) to have been incurred, or to be incurred, on certain activities.</p> <p>Note: Paragraph (b) includes expenditure incurred in purchasing a tangible depreciating asset to be used when conducting R&D activities.</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-450 Amount on which extra income tax is payable</p> <p>Amount on which extra income tax is payable</p> <p>(1) The extra income tax is payable for the trigger year on an amount (the R&D expenditure) equal to the sum of:</p> <p> (a) so much of the expenditure referred to in section 355-445 that is deducted under this Division; and</p> <p> (b) for each asset (if any) for which expenditure referred to in section 355-445 is included in the asset's *cost—each amount (if any) equal to the asset's decline in value that is deducted under this Division; in working out *tax offsets under section 355-100 obtained by the entity (the recipient), or an</p>	Deleted	<p>355-450 Amount on which extra income tax is payable</p> <p>Amount on which extra income tax is payable</p> <p>(1) The extra income tax is payable for the trigger year on an amount (the R&D expenditure) equal to the sum of:</p> <p> (a) so much of the expenditure referred to in section 355-445 that is deducted under this Division; and</p> <p> (b) for each asset (if any) for which expenditure referred to in section 355-445 is included in the asset's *cost—each amount (if any) equal to the asset's decline in value that is deducted under this Division; in working out *tax offsets under section 355-100 obtained by the entity (the recipient), or an</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>entity mentioned in subsection (4), for one or more income years.</p> <p>Note 1: Section 12B or 31 of the Income Tax Rates Act 1986 sets the rate at which the entity must pay extra income tax on this amount.</p> <p>Note 2: Paragraphs (a) and (b) of this subsection refer to amounts notionally deducted under this Division (see section 355-105).</p> <p>Amount is reduced by any repayments of the recoupment</p> <p>(2) For the purposes of subsection (1), reduce the expenditure referred to in subparagraph 355-445(b)(i) by any repayments of the *recoupment during an income year.</p> <p>Cap on extra income tax if recoupment relates to a project</p>		<p>entity mentioned in subsection (4), for one or more income years.</p> <p>Note 1: Section 12B or 31 of the Income Tax Rates Act 1986 sets the rate at which the entity must pay extra income tax on this amount.</p> <p>Note 2: Paragraphs (a) and (b) of this subsection refer to amounts notionally deducted under this Division (see section 355-105).</p> <p>Amount is reduced by any repayments of the recoupment</p> <p>(2) For the purposes of subsection (1), reduce the expenditure referred to in subparagraph 355-445(b)(i) by any repayments of the *recoupment during an income year.</p> <p>Cap on extra income tax if recoupment relates to a project</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(3) Despite subsection (1), if the *recoupment is covered by subparagraph 355-445(b)(ii), the amount of extra income tax payable for the trigger year on the recoupment cannot exceed the following amount:</p> $\text{Net amount of the recoupment} \times \frac{\text{R\&D expenditure}}{\text{Project expenditure}}$ <p>where:</p> <p>net amount of the recoupment means the total amount of the *recoupment, less any repayments of the recoupment during an income year.</p> <p>Related entities</p> <p>(4) The other entities for the purposes of subsection (1) are as follows:</p> <p>(a) an entity *connected with the recipient;</p>		<p>(3) Despite subsection (1), if the *recoupment is covered by subparagraph 355-445(b)(ii), the amount of extra income tax payable for the trigger year on the recoupment cannot exceed the following amount:</p> $\text{Net amount of the recoupment} \times \frac{\text{R\&D expenditure}}{\text{Project expenditure}}$ <p>where:</p> <p>net amount of the recoupment means the total amount of the *recoupment, less any repayments of the recoupment during an income year.</p> <p>Related entities</p> <p>(4) The other entities for the purposes of subsection (1) are as follows:</p> <p>(a) an entity *connected with the recipient;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
(b) an *affiliate of the recipient or an entity of which the recipient is an affiliate.		(b) an *affiliate of the recipient or an entity of which the recipient is an affiliate.	
355-460 What this Subdivision is about An amount is included in an R&D entity's assessable income if it can deduct under this Division expenditure on goods, materials or energy used during R&D activities to produce: <ul style="list-style-type: none"> (a) marketable products; or (b) products applied to the R&D entity's own use. 	Deleted	355-460 What this Subdivision is about An amount is included in an R&D entity's assessable income if it can deduct under this Division expenditure on goods, materials or energy used during R&D activities to produce: <ul style="list-style-type: none"> (a) marketable products; or (b) products applied to the R&D entity's own use. 	Explanation B Simplicity
355-465 Feedstock adjustment to assessable income (1) This section applies to an *R&D entity for an income year (the present year) if:	Deleted	355-465 Feedstock adjustment to assessable income (1) This section applies to an *R&D entity for an income year (the present year) if:	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) it incurs expenditure in one or more income years in acquiring or producing goods, or materials, (the feedstock inputs) transformed or processed during *R&D activities in producing one or more tangible products (the feedstock outputs); and</p> <p>(b) it obtains under section 355-100 *tax offsets for one or more income years for deductions under this Division:</p> <p>(i) for the expenditure; or</p> <p>(ii) for expenditure it incurs on any energy input directly into the transformation or processing; or</p> <p>(iii) for the decline in value of assets used in acquiring or producing the feedstock inputs; and</p> <p>(c) during the present year, a feedstock output, or a transformed feedstock output, (the marketable product) is:</p>		<p>(a) it incurs expenditure in one or more income years in acquiring or producing goods, or materials, (the feedstock inputs) transformed or processed during *R&D activities in producing one or more tangible products (the feedstock outputs); and</p> <p>(b) it obtains under section 355-100 *tax offsets for one or more income years for deductions under this Division:</p> <p>(i) for the expenditure; or</p> <p>(ii) for expenditure it incurs on any energy input directly into the transformation or processing; or</p> <p>(iii) for the decline in value of assets used in acquiring or producing the feedstock inputs; and</p> <p>(c) during the present year, a feedstock output, or a transformed feedstock output, (the marketable product) is:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(i) *supplied by the R&D entity to another entity; or</p> <p>(ii) applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.</p> <p>(2) The *R&D entity's assessable income for the present year includes an amount equal to 1/3 of the lesser of:</p> <p>(a) the *feedstock revenue for the feedstock output; and</p> <p>(b) so much of the total of the amounts deducted as described in paragraph (1)(b) that is reasonably attributable to the production of the feedstock output.</p> <p>Note: This subsection applies separately for each of the feedstock outputs.</p>		<p>(i) *supplied by the R&D entity to another entity; or</p> <p>(ii) applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.</p> <p>(2) The *R&D entity's assessable income for the present year includes an amount equal to 1/3 of the lesser of:</p> <p>(a) the *feedstock revenue for the feedstock output; and</p> <p>(b) so much of the total of the amounts deducted as described in paragraph (1)(b) that is reasonably attributable to the production of the feedstock output.</p> <p>Note: This subsection applies separately for each of the feedstock outputs.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(3) Subsection (2) does not apply to the feedstock output if:</p> <p>(a) it becomes, or is transformed into, a feedstock input; or</p> <p>(b) that subsection already applies to the feedstock output because of the application of paragraph (1)(c) to:</p> <p>(i) an earlier time during the present year; or</p> <p>(ii) an earlier income year.</p>		<p>(3) Subsection (2) does not apply to the feedstock output if:</p> <p>(a) it becomes, or is transformed into, a feedstock input; or</p> <p>(b) that subsection already applies to the feedstock output because of the application of paragraph (1)(c) to:</p> <p>(i) an earlier time during the present year; or</p> <p>(ii) an earlier income year.</p>	
<p>355-470 Feedstock revenue</p> <p>The feedstock revenue, for the feedstock output, is worked out as follows:</p> <p>*Market value of the marketable product \times $\frac{\text{Cost of producing the feedstock output}}{\text{Cost of producing the marketable product}}$</p> <p>where:</p>	Deleted	<p>355-470 Feedstock revenue</p> <p>The feedstock revenue, for the feedstock output, is worked out as follows:</p> <p>*Market value of the marketable product \times $\frac{\text{Cost of producing the feedstock output}}{\text{Cost of producing the marketable product}}$</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
market value of the marketable product means the marketable product's *market value at the time it is: <p>(a) *supplied by the *R&D entity to the other entity; or</p> <p>(b) first applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.</p>		where: <p>market value of the marketable product means the marketable product's *market value at the time it is:</p> <p>(a) *supplied by the *R&D entity to the other entity; or</p> <p>(b) first applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.</p>	
355-475 Application to connected entities and affiliates <p>This Subdivision applies to a *supply or use of the marketable product by:</p> <p>(a) an entity *connected with the *R&D entity; or</p> <p>(b) an *affiliate of the R&D entity or an entity of which the R&D entity is an affiliate;</p>	Deleted	355-475 Application to connected entities and affiliates <p>This Subdivision applies to a *supply or use of the marketable product by:</p> <p>(a) an entity *connected with the *R&D entity; or</p> <p>(b) an *affiliate of the R&D entity or an entity of which the R&D entity is an affiliate;</p>	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
as if it were by the R&D entity.		as if it were by the R&D entity.	
355-480 Notional deductions for expenditure incurred to associate in earlier income years Notional deductions for earlier year associate expenditure (1) An *R&D entity can deduct for an income year (the present year) expenditure it incurred to its *associate during an earlier income year to the extent that: (a) the expenditure was incurred on one or more *R&D activities: (i) for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and	Modified	355-480 Notional deductions for expenditure incurred to associate in earlier income years Notional deductions for earlier year associate expenditure (1) An *R&D entity can deduct for an income year (the present year) expenditure it incurred to its *associate during an earlier income year to the extent that: (a) the expenditure was incurred on one or more *R&D activities: (i) for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p>(b) the expenditure is paid to that associate during the present year; and</p> <p>(c) subsection (2) applies to the expenditure.</p> <p>Note 1: This section applies in a modified way to R&D partnership expenditure (see sections 355-510 and 355-515).</p> <p>Note 2: Expenditure paid in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>(2) Expenditure cannot have been otherwise deducted etc. This subsection applies to the expenditure if:</p>		<p>(ii) that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p>(b) the expenditure is paid to that associate during the present year; and</p> <p>(c) subsection (2) applies to the expenditure.</p> <p>Note 1: This section applies in a modified way to R&D partnership expenditure (see sections 355-510 and 355-515).</p> <p>Note 2: Expenditure paid in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>(2) Expenditure cannot have been otherwise deducted etc. This subsection applies to the expenditure if:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) the *R&D entity can deduct the expenditure, or is entitled to a *tax offset for the expenditure, under any other Division of this Act for an earlier income year; and</p> <p>(b) by the time of lodging its *income tax return for the most recent income year before the present year, the R&D entity had neither:</p> <p style="padding-left: 40px;">(i) deducted the expenditure; nor</p> <p style="padding-left: 40px;">(ii) obtained a tax offset for the expenditure;</p> <p>as described in paragraph (a).</p> <p>(3) The entitlement to the deduction, or *tax offset, described in paragraph (2)(a) ceases to the extent that subsection (2) applies to the expenditure.</p> <p>Example: If, by the time mentioned in paragraph (2)(b), an R&D entity chose to deduct only a third of the expenditure it could have deducted under another</p>		<p>(a) the *R&D entity can deduct the expenditure, or is entitled to a *tax offset for the expenditure, under any other Division of this Act for an earlier income year; and</p> <p>(b) by the time of lodging its *income tax return for the most recent income year before the present year, the R&D entity had neither:</p> <p style="padding-left: 40px;">(i) deducted the expenditure; nor</p> <p style="padding-left: 40px;">(ii) obtained a tax offset for the expenditure;</p> <p>as described in paragraph (a).</p> <p>(3) The entitlement to the deduction, or *tax offset, described in paragraph (2)(a) ceases to the extent that subsection (2) applies to the expenditure.</p> <p>Example: If, by the time mentioned in paragraph (2)(b), an R&D entity chose to deduct only a third of the expenditure it could have deducted under</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Division, then the remaining 2 thirds of that expenditure:</p> <p>(a) can be deducted under this section; but</p> <p>(b) can no longer be deducted under the other Division.</p> <p>(4) Notional deduction is subject to integrity rules etc. This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).</p>		<p>another-Division, then the remaining 2 thirds of that expenditure:</p> <p>(a) can be deducted under this section; but</p> <p>(b) can no longer be deducted under the other Division.</p> <p>(4) Notional deduction is subject to integrity rules etc. This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).</p>	
<p>355-500 What this Subdivision is about</p> <p>This Subdivision modifies the rules in this Division for partners of R&D partnerships.</p>	Preserved	<p>355-500 What this Subdivision is about</p> <p>This Subdivision modifies the rules in this Division for partners of R&D partnerships.</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
In particular, the rules about deducting R&D expenditure are modified to allow a partner to deduct the partner's proportion of the R&D partnership's expenditure on R&D activities. A partner of an R&D partnership may also be able to deduct under this Subdivision the decline in value of partnership assets used for R&D activities.		In particular, the rules about deducting R&D expenditure are modified to allow a partner to deduct the partner's proportion of the R&D partnership's expenditure on R&D activities. A partner of an R&D partnership may also be able to deduct under this Subdivision the decline in value of partnership assets used for R&D activities.	
355-505 Meaning of R&D partnership and partner's proportion (1) A partnership is an R&D partnership at a particular time if, at that time, each of the partners is an *R&D entity. (2) For an amount attributable to an *R&D partnership for an income year, each partner of the	Preserved	355-505 Meaning of R&D partnership and partner's proportion (1) A partnership is an R&D partnership at a particular time if, at that time, each of the partners is an *R&D entity. (2) For an amount attributable to an *R&D partnership for an income year, each partner of the	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>R&D partnership is taken to bear or be entitled to (as appropriate) this proportion (the partner's proportion) of the amount:</p> <p>(a) the proportion the partners agreed the partner should bear or be entitled to (as appropriate); or</p> <p>(b) if there is no such agreement—the proportion of the partner's interest in the *net income or *partnership loss of the R&D partnership for the income year.</p>		<p>R&D partnership is taken to bear or be entitled to (as appropriate) this proportion (the partner's proportion) of the amount:</p> <p>(a) the proportion the partners agreed the partner should bear or be entitled to (as appropriate); or</p> <p>(b) if there is no such agreement—the proportion of the partner's interest in the *net income or *partnership loss of the R&D partnership for the income year.</p>	
<p>355-510 R&D partnership expenditure on R&D activities</p> <p>If an *R&D partnership incurs expenditure on one or more R&D activities during an income year, this Division applies in relation to each *R&D entity that</p>	Modified	<p>355-510 R&D partnership expenditure on R&D activities</p> <p>If an *R&D partnership incurs expenditure on one or more R&D activities during an income year, this Division applies in relation to each *R&D entity that</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>is a partner of the R&D partnership at some time during the income year as if:</p> <p>(a) the partner incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and</p> <p>(b) neither the R&D partnership, nor any other partner of the R&D partnership, incurred expenditure during the income year on the R&D activities; and</p> <p>(c) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.</p> <p>Note: This section and section 355-515 may result in:</p>		<p>is a partner of the R&D partnership at some time during the income year as if:</p> <p>(a) the partner incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and</p> <p>(b) neither the R&D partnership, nor any other partner of the R&D partnership, incurred expenditure during the income year on the R&D activities; and</p> <p>(c) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.</p> <p>Note: This section and section 355-515 may result in:</p> <p>(a) the partner being able to deduct the partner's proportion of the partnership expenditure under</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) the partner being able to deduct the partner's proportion of the partnership expenditure under section 355-205 (R&D expenditure) or 355-480 (earlier year associate R&D expenditure) for the R&D activities; and</p> <p>(b) the partner being affected by the integrity rules in Subdivisions 355-F, 355-G and 355-H.</p>		<p>section 355-205 (R&D expenditure) or 355-480 (earlier year associate R&D expenditure) for the R&D activities; and</p> <p>(b) the partner being affected by the integrity rules in Subdivisions 355-F, 355-G and 355-H.</p>	
<p>355-515 R&D activities conducted by or for an R&D partnership</p> <p>If one or more *R&D activities are conducted by or for an *R&D partnership during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:</p>	Preserved	<p>355-515 R&D activities conducted by or for an R&D partnership</p> <p>If one or more *R&D activities are conducted by or for an *R&D partnership during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) the R&D activities were conducted by or for the partner in a corresponding way to the way the R&D activities were conducted by or for the R&D partnership; and</p> <p>(b) the partner had relationships with other entities in relation to the R&D activities that corresponded to the relationships the R&D partnership had with those other entities in relation to the R&D activities; and</p> <p>(c) a thing done by, or in relation to, the R&D partnership in relation to the R&D activities were a thing done by, or in relation to, the partner; and</p> <p>(d) the R&D activities were neither:</p> <p style="padding-left: 20px;">(i) conducted by or for the R&D partnership; nor</p>		<p>(a) the R&D activities were conducted by or for the partner in a corresponding way to the way the R&D activities were conducted by or for the R&D partnership; and</p> <p>(b) the partner had relationships with other entities in relation to the R&D activities that corresponded to the relationships the R&D partnership had with those other entities in relation to the R&D activities; and</p> <p>(c) a thing done by, or in relation to, the R&D partnership in relation to the R&D activities were a thing done by, or in relation to, the partner; and</p> <p>(d) the R&D activities were neither:</p> <p style="padding-left: 20px;">(i) conducted by or for the R&D partnership; nor</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) conducted by or for any other partner of the R&D partnership; and</p> <p>(e) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.</p> <p>Note 1: For the purposes of this Division, entities that are associates or affiliates of, or connected with, the R&D partnership are taken to be associates or affiliates of, or connected with, the partner (see paragraph (b)).</p> <p>Note 2: For the purposes of this Division, payments and agreements made by the R&D partnership for the R&D activities are taken to be made by the partner (see paragraph (c)).</p>		<p>(ii) conducted by or for any other partner of the R&D partnership; and</p> <p>(e) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.</p> <p>Note 1: For the purposes of this Division, entities that are associates or affiliates of, or connected with, the R&D partnership are taken to be associates or affiliates of, or connected with, the partner (see paragraph (b)).</p> <p>Note 2: For the purposes of this Division, payments and agreements made by the R&D partnership for the R&D activities are taken to be made by the partner (see paragraph (c)).</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships</p> <p>(1) When notional deductions arise If:</p> <p> (a) an *R&D entity is a partner of an *R&D partnership at some time during an income year (the present year); and</p> <p> (b) the partner is registered under section 27A of the Industry Research and Development Act 1986 for the present year for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p>Note: Section 355-210 applies with changes for this paragraph (see section 355-515).</p> <p> (c) while a tangible *depreciating asset is *held by the R&D partnership during the present year, the</p>	Preserved	<p>355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships</p> <p>(1) When notional deductions arise If:</p> <p> (a) an *R&D entity is a partner of an *R&D partnership at some time during an income year (the present year); and</p> <p> (b) the partner is registered under section 27A of the Industry Research and Development Act 1986 for the present year for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and</p> <p>Note: Section 355-210 applies with changes for this paragraph (see section 355-515).</p> <p> (c) while a tangible *depreciating asset is *held by the R&D partnership during the present year, the</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>asset is used for the purpose of conducting one or more of those R&D activities; and</p> <p>(d) the R&D partnership could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and</p> <p>Note: Section 355-310 applies with changes for this paragraph (see subsection (2) of this section).</p> <p>(e) the R&D partnership cannot deduct an amount for the asset for:</p> <p>(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or</p> <p>(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools)</p>		<p>asset is used for the purpose of conducting one or more of those R&D activities; and</p> <p>(d) the R&D partnership could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and</p> <p>Note: Section 355-310 applies with changes for this paragraph (see subsection (2) of this section).</p> <p>(e) the R&D partnership cannot deduct an amount for the asset for:</p> <p>(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or</p> <p>(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools)</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5																																				
<p>applied; the partner can deduct the partner's proportion of the amount referred to in paragraph (d) for the present year.</p> <p>(2) Changed application of Division 40 for this Subdivision For the purposes of this Subdivision, section 355-310 applies as if the following changes were made:</p> <table><tr><th colspan="3">Changes to be made</th></tr><tr><th>Item</th><th>For a reference in section 355-310 to...</th><th>substitute a reference to...</th></tr><tr><td>1</td><td>paragraph 355-305(1)(c)</td><td>paragraph 355-520(1)(d)</td></tr><tr><td>2</td><td>section 355-315</td><td>section 355-525</td></tr><tr><td>3</td><td>paragraph 355-305(1)(b)</td><td>paragraph 355-520(1)(c)</td></tr><tr><td>4</td><td>*R&D entity</td><td>*R&D partnership</td></tr></table>	Changes to be made			Item	For a reference in section 355-310 to...	substitute a reference to...	1	paragraph 355-305(1)(c)	paragraph 355-520(1)(d)	2	section 355-315	section 355-525	3	paragraph 355-305(1)(b)	paragraph 355-520(1)(c)	4	*R&D entity	*R&D partnership		<p>applied; the partner can deduct the partner's proportion of the amount referred to in paragraph (d) for the present year.</p> <p>(2) Changed application of Division 40 for this Subdivision For the purposes of this Subdivision, section 355-310 applies as if the following changes were made:</p> <table><tr><th colspan="3">Changes to be made</th></tr><tr><th>Item</th><th>For a reference in section 355-310 to...</th><th>substitute a reference to...</th></tr><tr><td>1</td><td>paragraph 355-305(1)(c)</td><td>paragraph 355-520(1)(d)</td></tr><tr><td>2</td><td>section 355-315</td><td>section 355-525</td></tr><tr><td>3</td><td>paragraph 355-305(1)(b)</td><td>paragraph 355-520(1)(c)</td></tr><tr><td>4</td><td>*R&D entity</td><td>*R&D partnership</td></tr></table>	Changes to be made			Item	For a reference in section 355-310 to...	substitute a reference to...	1	paragraph 355-305(1)(c)	paragraph 355-520(1)(d)	2	section 355-315	section 355-525	3	paragraph 355-305(1)(b)	paragraph 355-520(1)(c)	4	*R&D entity	*R&D partnership	
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4	*R&D entity	*R&D partnership																																					
<p>(3) Disregard certain assets held because of CRC contributions This section has effect subject to subsection 355-580(4) (CRC contributions).</p>		<p>(3) Disregard certain assets held because of CRC contributions This section has effect subject to subsection 355-580(4) (CRC contributions).</p>																																					

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-525 Balancing adjustments for R&D partnership assets only used for R&D activities</p> <p>(1) This section applies to an *R&D entity (the partner) if:</p> <p> (a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by an *R&D partnership; and</p> <p> (b) the R&D partnership cannot deduct an amount under section 40-25, as that section applies apart from:</p> <p> (i) this Division; and</p> <p> (ii) former section 73BC of the Income Tax Assessment Act 1936;</p> <p>for the asset for an income year; and</p> <p> (c) the partner is entitled under section 355-100 to *tax offsets for one or more income years for</p>	Preserved	<p>355-525 Balancing adjustments for R&D partnership assets only used for R&D activities</p> <p>(1) This section applies to an *R&D entity (the partner) if:</p> <p> (a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by an *R&D partnership; and</p> <p> (b) the R&D partnership cannot deduct an amount under section 40-25, as that section applies apart from:</p> <p> (i) this Division; and</p> <p> (ii) former section 73BC of the Income Tax Assessment Act 1936;</p> <p>for the asset for an income year; and</p> <p> (c) the partner is entitled under section 355-100 to *tax offsets for one or more income years for</p>	<p>Explanation</p> <p>A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>deductions (the R&D deductions) under section 355-520 for the asset; and</p> <p>(d) the partner is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and</p> <p>(e) if Division 40 applied with the changes described in section 355-310 (as affected by subsection 355-520(2)):</p> <p>(i) the R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or</p> <p>(ii) an amount would be included in the R&D partnership's assessable income for the event year</p>		<p>deductions (the R&D deductions) under section 355-520 for the asset; and</p> <p>(d) the partner is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and</p> <p>(e) if Division 40 applied with the changes described in section 355-310 (as affected by subsection 355-520(2)):</p> <p>(i) the R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or</p> <p>(ii) an amount would be included in the R&D partnership's assessable income for the event year</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>under subsection 40-285(1) for the asset and the balancing adjustment event.</p> <p>Note 1: This section applies in a modified way if the partner has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-325 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>Note 2: Section 40-293 applies if the R&D partnership can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.</p> <p>(2) Notional deduction If the *R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e),</p>		<p>under subsection 40-285(1) for the asset and the balancing adjustment event.</p> <p>Note 1: This section applies in a modified way if the partner has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-325 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>Note 2: Section 40-293 applies if the R&D partnership can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.</p> <p>(2) Notional deduction If the *R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e),</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>the partner can deduct the partner's proportion of that amount for the event year.</p> <p>(3) Amount to be included in assessable income</p> <p>If an amount (the section 40-285 amount) would be included in the *R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner's proportion of the sum of:</p> <p> (a) that amount; and</p> <p> (b) the following amount;</p> <p>is included in the partner's assessable income for the event year:</p> <p>Adjusted section 40-285 amount $\times \frac{1}{3}$</p> <p>where:</p>		<p>the partner can deduct the partner's proportion of that amount for the event year.</p> <p>(3) Amount to be included in assessable income</p> <p>If an amount (the section 40-285 amount) would be included in the *R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner's proportion of the sum of:</p> <p> (a) that amount; and</p> <p> (b) the following amount;</p> <p>is included in the partner's assessable income for the event year:</p> <p>Adjusted section 40-285 amount $\times \frac{1}{3}$</p> <p>where:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.</p> <p>total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).</p>		<p>adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.</p> <p>total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).</p>	
<p>355-530 Implications for partner's aggregated turnover</p> <p>For the purposes of sections 40-292 (balancing adjustments for decline in value) and 355-100 (tax offsets for R&D), if:</p> <p>(a) an *R&D entity is a partner of an *R&D partnership at some time during an income year; and</p>	Preserved	<p>355-530 Implications for partner's aggregated turnover</p> <p>For the purposes of sections 40-292 (balancing adjustments for decline in value) and 355-100 (tax offsets for R&D), if:</p> <p>(a) an *R&D entity is a partner of an *R&D partnership at some time during an income year; and</p> <p>(b) the partner's *aggregated turnover for the income year does not include the R&D partnership's</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
(b) the partner's *aggregated turnover for the income year does not include the R&D partnership's *annual turnover for the income year; the partner's aggregated turnover for the income year includes the *partner's proportion of the R&D partnership's annual turnover for the income year.		*annual turnover for the income year; the partner's aggregated turnover for the income year includes the *partner's proportion of the R&D partnership's annual turnover for the income year.	
355-535 Disposal of R&D results for R&D partnerships In addition to its application apart from this section, section 355-410 (disposal of R&D results) also applies to each partner of an *R&D partnership with such changes as are appropriate having regard to: <p>(a) amounts (the results amounts) of a kind set out in subparagraphs 355-410(1)(b)(i) to (v) that the</p>	Deleted	355-535 Disposal of R&D results for R&D partnerships In addition to its application apart from this section, section 355-410 (disposal of R&D results) also applies to each partner of an *R&D partnership with such changes as are appropriate having regard to: <p>(a) amounts (the results amounts) of a kind set out in subparagraphs 355-410(1)(b)(i) to (v) that the</p>	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>R&D partnership receives or becomes entitled to receive in an income year; and</p> <p>(b) the principle that any amount to be included in the partner's assessable income for the income year for a results amount should be the partner's proportion of the amount arising under subsection 355-410(2) for the results amount.</p> <p>Note: The ordinary application of section 355-410 will apply to any of the partner's deductions under this Division that do not relate to the R&D partnership.</p>		<p>R&D partnership receives or becomes entitled to receive in an income year; and</p> <p>(b) the principle that any amount to be included in the partner's assessable income for the income year for a results amount should be the partner's proportion of the amount arising under subsection 355-410(2) for the results amount.</p> <p>Note: The ordinary application of section 355-410 will apply to any of the partner's deductions under this Division that do not relate to the R&D partnership.</p>	
<p>355-540 Application of recoupment rules</p> <p>(1) If:</p> <p>(a) an *R&D partnership incurs expenditure (the partnership expenditure) on *R&D activities; and</p>	Deleted	<p>355-540 Application of recoupment rules</p> <p>(1) If:</p> <p>(a) an *R&D partnership incurs expenditure (the partnership expenditure) on *R&D activities; and</p>	<p>Explanation B</p> <p>Simplicity</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(b) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-205 or 355-480, deduct some or all of that expenditure; and</p> <p>(c) the R&D partnership receives an amount as a *recoupment of any or all of the partnership expenditure;</p> <p>the partner is taken, for the purposes of Subdivisions 20-A and 355-G:</p> <p>(d) to have incurred the partner's proportion of the partnership expenditure when the R&D partnership incurred that expenditure; and</p> <p>(e) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.</p> <p>(2) If:</p>		<p>(b) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-205 or 355-480, deduct some or all of that expenditure; and</p> <p>(c) the R&D partnership receives an amount as a *recoupment of any or all of the partnership expenditure;</p> <p>the partner is taken, for the purposes of Subdivisions 20-A and 355-G:</p> <p>(d) to have incurred the partner's proportion of the partnership expenditure when the R&D partnership incurred that expenditure; and</p> <p>(e) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.</p> <p>(2) If:</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">DeletedModifiedPreserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(a) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-520, deduct an amount for an income year for an asset; and</p> <p>(b) the applicable *R&D partnership receives an amount as a *recoupment of any or all of the R&D partnership's expenditure included in the *cost of the asset for the purposes of the application of Division 40 as described in paragraph 355-520(1)(d); the partner is taken, for the purposes of Subdivisions 20-A and 355-G:</p> <p>(c) to have incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and</p>		<p>(a) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-520, deduct an amount for an income year for an asset; and</p> <p>(b) the applicable *R&D partnership receives an amount as a *recoupment of any or all of the R&D partnership's expenditure included in the *cost of the asset for the purposes of the application of Division 40 as described in paragraph 355-520(1)(d); the partner is taken, for the purposes of Subdivisions 20-A and 355-G:</p> <p>(c) to have incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
(d) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.		(d) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.	
355-545 Relevance for net income, and losses, of the R&D partnership For an *R&D entity that is a partner of an *R&D partnership, none of the following: (a) any expenditure the R&D entity is taken to have incurred because of this Subdivision; (b) any amount the R&D entity can deduct under this Subdivision; (c) any *recoupment the R&D entity is taken to have received because of this Subdivision; are to be taken into account in determining the *net income of the	Modified	355-545 Relevance for net income, and losses, of the R&D partnership For an *R&D entity that is a partner of an *R&D partnership, none of the following: (a) any expenditure the R&D entity is taken to have incurred because of this Subdivision; (b) any amount the R&D entity can deduct under this Subdivision; (c) any *recoupment the R&D entity is taken to have received because of this Subdivision; are to be taken into account in determining the *net income of the	Explanation B Simplicity

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
R&D partnership, or any *partnership loss of the R&D partnership, for an income year.		R&D partnership, or any *partnership loss of the R&D partnership, for an income year.	
355-580 When notional deductions for CRC contributions arise (1) Monetary contributions are deductible. An *R&D entity can deduct for an income year expenditure it incurs during that year to the extent that: <ul style="list-style-type: none"> (a) the expenditure is in the form of monetary contributions under the *CRC program; and (b) the contributions have been or will be spent under the CRC program on one or more *R&D activities for which the R&D entity is registered 	Preserved	355-580 When notional deductions for CRC contributions arise (1) Monetary contributions are deductible. An *R&D entity can deduct for an income year expenditure it incurs during that year to the extent that: <ul style="list-style-type: none"> (a) the expenditure is in the form of monetary contributions under the *CRC program; and (b) the contributions have been or will be spent under the CRC program on one or more *R&D activities for which the R&D entity is registered 	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>under section 27A of the Industry Research and Development Act 1986 for an income year.</p> <p>Note 1: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).</p> <p>Note 2: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>(2) Subsection (1) does not apply to expenditure to the extent that it is incurred out of Commonwealth funding.</p>		<p>under section 27A of the Industry Research and Development Act 1986 for an income year.</p> <p>Note 1: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).</p> <p>Note 2: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).</p> <p>(2) Subsection (1) does not apply to expenditure to the extent that it is incurred out of Commonwealth funding.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(3) No other deductions arise for monetary contributions etc. Neither:</p> <p> (a) a contribution an *R&D entity can deduct under subsection (1); nor</p> <p> (b) expenditure incurred under the CRC program, to the extent that the expenditure is incurred out of:</p> <p> (i) a contribution an R&D entity can deduct under subsection (1); or</p> <p> (ii) Commonwealth funding;</p> <p>can be deducted by any R&D entity under any other provision of this Division for any income year.</p> <p>(4) If an asset's *cost includes expenditure incurred under the *CRC program out of:</p> <p> (a) a contribution an *R&D entity can deduct under subsection (1); or</p> <p> (b) Commonwealth funding;</p>		<p>(3) No other deductions arise for monetary contributions etc. Neither:</p> <p> (a) a contribution an *R&D entity can deduct under subsection (1); nor</p> <p> (b) expenditure incurred under the *CRC program, to the extent that the expenditure is incurred out of:</p> <p> (i) a contribution an R&D entity can deduct under subsection (1); or</p> <p> (ii) Commonwealth funding;</p> <p>can be deducted by any R&D entity under any other provision of this Division for any income year.</p> <p>(4) If an asset's *cost includes expenditure incurred under the *CRC program out of:</p> <p> (a) a contribution an *R&D entity can deduct under subsection (1); or</p> <p> (b) Commonwealth funding;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
an amount equal to the asset's decline in value cannot be deducted under this Division by any R&D entity for any income year.		an amount equal to the asset's decline in value cannot be deducted under this Division by any R&D entity for any income year.	
355-705 Effect of findings by Innovation Australia (1) Findings about registration or core technology If: (a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out: (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or	Preserved	355-705 Effect of findings by Innovation Australia (1) Findings about registration or core technology If: (a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out: (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or</p> <p>(iii) a finding under section 28E of that Act about an R&D entity and one or more *R&D activities conducted or to be conducted during one or more income years; and</p> <p>(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);</p> <p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year or years (as appropriate).</p> <p>Note: Section 28E of the Industry Research and Development Act 1986 deals with findings that technology is core technology for particular R&D</p>		<p>(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or</p> <p>(iii) a finding under section 28E of that Act about an R&D entity and one or more *R&D activities conducted or to be conducted during one or more income years; and</p> <p>(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);</p> <p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year or years (as appropriate).</p> <p>Note: Section 28E of the Industry Research and Development Act 1986 deals with findings that technology is core technology for particular R&D</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>activities. Expenditure incurred in acquiring such technology is not deductible under this Division (see subsection 355-225(2)).</p> <p>(2) Advance findings about activities yet to be completed If:</p> <p> (a) an activity is being conducted, or is yet to be conducted, in an income year; and</p> <p> (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and</p> <p> (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p>		<p>activities. Expenditure incurred in acquiring such technology is not deductible under this Division (see subsection 355-225(2)).</p> <p>(2) Advance findings about activities yet to be completed If:</p> <p> (a) an activity is being conducted, or is yet to be conducted, in an income year; and</p> <p> (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and</p> <p> (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year and the next 2 income years.</p> <p>(3) Advance findings about completed activities.</p> <p>However, if:</p> <p> (a) an activity is completed during an income year; and</p> <p> (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and</p> <p> (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p>		<p>the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year and the next 2 income years.</p> <p>(3) Advance findings about completed activities.</p> <p>However, if:</p> <p> (a) an activity is completed during an income year; and</p> <p> (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and</p> <p> (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none"> Deleted Modified Preserved 	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year.		the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year.	
355-710 Amendment of assessments (1) Dealing with findings of Innovation Australia. If: (a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out: (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or	Preserved	355-710 Amendment of assessments (1) Dealing with findings of Innovation Australia. If: (a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out: (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or	Explanation A Pragmatism

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or</p> <p>(iii) a finding under section 28A or 28C of that Act made on application by an R&D entity during an income year; or</p> <p>(iv) a finding under section 28E of that Act about an R&D entity and one or more R&D activities conducted or to be conducted during one or more income years; and</p> <p>(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);</p> <p>despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the</p>		<p>(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or</p> <p>(iii) a finding under section 28A or 28C of that Act made on application by an R&D entity during an income year; or</p> <p>(iv) a finding under section 28E of that Act about an R&D entity and one or more R&D activities conducted or to be conducted during one or more income years; and</p> <p>(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);</p> <p>despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>finding at any time for the purposes of giving effect to the finding.</p> <p>(2) However, the Commissioner may only do so within 2 years after the Commissioner is given the certificate if giving effect to the finding would increase the R&D entity's liability.</p> <p>(3) Dealing with key decisions of Innovation Australia and others If:</p> <p> (a) an internal review decision (the key decision) under subsection 30D(2) of the Industry Research and Development Act 1986 relates to an *R&D entity; or</p> <p> (b) a decision (also the key decision) under the Administrative Appeals Tribunal Act 1975:</p> <p> (i) varies a decision covered by paragraph (a); or</p>		<p>finding at any time for the purposes of giving effect to the finding.</p> <p>(2) However, the Commissioner may only do so within 2 years after the Commissioner is given the certificate if giving effect to the finding would increase the R&D entity's liability.</p> <p>(3) Dealing with key decisions of Innovation Australia and others If:</p> <p> (a) an internal review decision (the key decision) under subsection 30D(2) of the Industry Research and Development Act 1986 relates to an *R&D entity; or</p> <p> (b) a decision (also the key decision) under the Administrative Appeals Tribunal Act 1975:</p> <p> (i) varies a decision covered by paragraph (a); or</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(ii) sets aside a decision covered by paragraph (a), whether or not that key decision also includes a decision made in substitution for the decision covered by paragraph (a); or</p> <p>(c) a decision (also the key decision) of a court is about:</p> <p>(i) a decision under Part III of the Industry Research and Development Act 1986 relating to an R&D entity; or</p> <p>(ii) a decision covered by paragraph (b);</p> <p>despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the key decision at any time for the purposes of giving effect to that decision.</p>		<p>(ii) sets aside a decision covered by paragraph (a), whether or not that key decision also includes a decision made in substitution for the decision covered by paragraph (a); or</p> <p>(c) a decision (also the key decision) of a court is about:</p> <p>(i) a decision under Part III of the Industry Research and Development Act 1986 relating to an R&D entity; or</p> <p>(ii) a decision covered by paragraph (b);</p> <p>despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the key decision at any time for the purposes of giving effect to that decision.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>355-715 Implications for other deductions and tax offsets</p> <p>(1) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for expenditure it can deduct under section 355-205, 355-480 or 355-580, that expenditure:</p> <p>(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act for any income year; and</p> <p>(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year.</p> <p>Note: Section 355-205 is about R&D expenditure, section 355-480 is about earlier year associate R&D expenditure, and section 355-580 is about CRC contributions.</p>	Preserved	<p>355-715 Implications for other deductions and tax offsets</p> <p>(1) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for expenditure it can deduct under section 355-205, 355-480 or 355-580, that expenditure:</p> <p>(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act for any income year; and</p> <p>(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year.</p> <p>Note: Section 355-205 is about R&D expenditure, section 355-480 is about earlier year associate R&D expenditure, and section 355-580 is about CRC contributions.</p>	<p>Explanation A</p> <p>Pragmatism</p>

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>(2) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for a deduction under section 355-305, 355-315, 355-520 or 355-525 of an amount equal to the decline in value of an asset, that decline in value:</p> <p>(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act (other than section 40-292 or 40-293) for any income year; and</p> <p>(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year;</p> <p>to the extent that the decline in value is attributable to the use of the asset for the purpose of conducting one or more of the *R&D activities to which the deduction relates.</p>		<p>(2) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for a deduction under section 355-305, 355-315, 355-520 or 355-525 of an amount equal to the decline in value of an asset, that decline in value:</p> <p>(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act (other than section 40-292 or 40-293) for any income year; and</p> <p>(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year;</p> <p>to the extent that the decline in value is attributable to the use of the asset for the purpose of conducting one or more of the *R&D activities to which the deduction relates.</p>	

Current legislative section	The current legislative section is: <ul style="list-style-type: none">• Deleted• Modified• Preserved	Proposed legislative section	Concept or improvement & reference to explanation in section 6.4 or 6.5
<p>Note 1: A deduction may be available under section 40-25 to the extent that the asset's decline in value is attributable to another purpose. If so, that deduction under section 40-25 will not take into account the asset's decline in value to the extent that it is attributable to the R&D activities (see also subsection 40-25(2)).</p> <p>Note 2: Section 355-305 is about the decline in value of R&D assets, section 355-315 is about balancing adjustments for R&D assets, section 355-520 is about the decline in value of R&D partnership assets, and section 355-525 is about balancing adjustments for R&D partnership assets.</p> <p>Note 3: Sections 40-292 and 40-293 deal with balancing adjustments when deductions have been available for the asset's decline in value both under this Division and section 40-25.</p>		<p>Note 1: A deduction may be available under section 40-25 to the extent that the asset's decline in value is attributable to another purpose. If so, that deduction under section 40-25 will not take into account the asset's decline in value to the extent that it is attributable to the R&D activities (see also subsection 40-25(2)).</p> <p>Note 2: Section 355-305 is about the decline in value of R&D assets, section 355-315 is about balancing adjustments for R&D assets, section 355-520 is about the decline in value of R&D partnership assets, and section 355-525 is about balancing adjustments for R&D partnership assets.</p> <p>Note 3: Sections 40-292 and 40-293 deal with balancing adjustments when deductions have been available for the asset's decline in value both under this Division and section 40-25.</p>	

6.4 Explanation of modifications

This section follows on from Table 6.1 to explain why sections have been modified, deleted or preserved. The key concepts identified in column four, establish four prominent themes: A) pragmatism (encompassing consistency and certainty), B) simplicity (encompassing brevity), C) international trend and D) social. Each is discussed below.

6.4.1 Explanation A: pragmatism

As stated in Chapters One and Five, the overarching research paradigm for this thesis is pragmatism. In translating this paradigm from a conceptual level to a practical level, guidance is sought from Posner (2003). Without wholly accepting Posner's theories, his idea of 'everyday pragmatism' in which common sense and reasonableness are used to resolve problems is most pertinent for explaining why so many provisions within the existing RDTI are preserved. In line with Posner's rejection of 'pie-in-the-sky' abstract theories of reform, this model RDTI is based on practical considerations. Specifically these considerations include:

- Fiscal cost – Although this is not quantified²⁹⁶ in the thesis, it can be assumed that legislative change is expensive for all stakeholders involved and should not be dismissed when pursuing reform.
- Realistic acceptance – For reform to be embraced it needs to win over politicians, citizens and industry alike. Acknowledging this concept is nebulous, it is nevertheless important to achieving reform.
- Cultural acceptance – This dovetails with 'realistic acceptance' in that if the tax transplant is too foreign for the Australian taxpayer culture to embrace then the reform is likely to fail.
- Administratively feasible – Although Treasury may draft the legislation it is ATO personnel which administer and (to a certain extent) interpret the law. If the provisions are difficult to understand or the consequences are mathematically difficult to amend, the ATO's compliance and enforcement costs will rise.
- Consistency – *The Income Tax Assessment Acts 1936 and 1997* of Australia are voluminous. As the Acts have expanded a certain style of drafting has appeared which often links one provision to another which may be wholly contained in the

²⁹⁶ The lack of quantification of this reform is raised as a thesis weakness in Chapter Seven.

other ITAA or to a provision in another chapter or division of the same Act. Consequently, changing one provision may require follow up changes in the linked provisions. Such a task is formidable and even if the all the linked changes are made, there could still be ambiguity as to the spirit of the law.

The issue of consistency also impedes drastic changes to the structure of the RDTI. The trend within the ITAAs show provisions wholly contain definitions and specific integrity measures. It is possible that all definitions could be located in the Dictionary Division²⁹⁷ and all integrity measures could be co-located, but such changes would require a whole re-write to ensure consistency. The purpose of this thesis is to reform the Australian RDTI, in such a manner that it could be realistically accepted and easily inserted into the ITAA97, without disrupting the remaining operation of the tax system.

- Certainty – The Australian RDTI has undergone several changes since its introduction. Each legislative change undermines the level of certainty that the RDTI requires to engage taxpayers. Therefore where a provision could be preserved within the existing RDTI that would uphold taxpayer certainty, it has.

Table 6.2 below lists the provisions which have been wholly or partially preserved in line with pragmatism.

Table 6.2 Wholly or partially preserved provisions in line with pragmatism

355-1	355-5	355-35	355-105	355-110
355-200	355-205	355-210	355-225	355-300
355-305	355-310	355-315	355-480	355-500
355-505	355-510	355-515	355-520	355-525
355-530	355-580	355-705	355-710	355-715

Consistency

Sections 355-1, 355-105, 355-110, 355-200, 355-205, 355-300, 355-305, 355-310, 355-315 and 355-580 are preserved to maintain consistency with the concept of ‘notional deductions’. Notional deductions are used solely for calculating the R&D tax offset, they cannot be utilised as actual deductions for tax. The concept of notional deductions complicates the

²⁹⁷ For example in section 995-1 ITAA97.

RDTI however it is necessary to prevent taxpayers from receiving a double benefit (a deduction and a tax offset). It is also observed that ‘notional deductions’ interact with several other provisions of the ITAAs.²⁹⁸

Sections 355-35, 355-210, 355-315, 355,480, 355-500, 355-505, 355-510, 355-515, 355-520, 355-525 and 355-530 contain definitions specific to the RDTI, these cover R&D entities, conditions for R&D entities, associates, balancing adjustments and partnerships. As mentioned above, it is questionable why the ITAAs do not co-locate all definitions, as it would shorten the length of the RDTI. Given the overriding aim to be pragmatic with this reform it would be inconsistent drafting to place these R&D definitions within the tax dictionary (section 995-1 ITAA97). Another feature impeding the removal of these provisions is their interactions with other provisions. Like a domino effect, removal of one linked provision would require a re-assessment of all the linked provisions, and that is beyond the scope of this thesis.

Certainty

Sections 355-5, 355-705, 355-710 and 355-715 have been preserved to maintain certainty for the taxpayer. The driver behind reforming the RDTI is to generate greater investment in agriculture to assist global food security. Therefore the objective provided at the start of section 355-5 identifying the purpose of the RDTI and its role in Australia’s wider innovation system remains the same – which is to encourage industry to conduct R&D likely to benefit the wider Australian economy. The other provisions deal with findings by Innovation Australia²⁹⁹, amendment of assessments³⁰⁰ and implications for other sections³⁰¹ which currently provide certainty to taxpayers and therefore should remain.

Fiscal

Section 355-1 sets a \$20 million aggregate turnover ceiling for a refundable tax offset. The purpose of a refundable tax offset is to provide a tax benefit to small or start-up taxpayers with tight cash flow; the concept is not designed to benefit large corporate taxpayers. Although this threshold could be removed thereby broadening the RDTI, consideration must be had to the cost on government and the purpose behind the refundable tax offset.

²⁹⁸ For example: Division 27 ITAA97 effect of input tax credits; Division 245 ITAA97 debt forgiveness; Parts 3-1 and 3-3 ITAA97 CGT cost base and Subdivision H of Division 3 of Part III of ITAA36 prepayment rules.

²⁹⁹ Section 355-705 ITAA97.

³⁰⁰ Section 355-710 ITAA97.

³⁰¹ Section 355-715 ITAA97.

This thesis is guided by pragmatism, therefore it is necessary to be reasonable not idealistic to ensure the model RDTI is affordable to government.

6.4.2 Explanation B: simplicity

Following on (and not repeating) the discussion in Chapter Five³⁰² one of the main weaknesses identified in the existing Australian RDTI is lack of simplicity. Therefore every attempt has been made to simplify the model RDTI but within the constraints of pragmatism. Table 6.3 below lists the provision which have been preserved, modified or deleted in the name of simplicity.

Table 6.3 Affected provisions to achieve simplicity

355-20	355-25	355-30	355-100	355-215
355-220	355-400	355-405	355-410	355-415
355-430	355-435	355-440	355-445	355-450
355-460	355-465	355-470	355-475	355-535
355-540	355-545			

Core verse supporting activities

Sections 355-20, 355-30, 355-215(b) and 355-220(b) have been deleted to remove the classification of R&D activities into ‘core’ and ‘supporting’ activities. The purpose of this is two-fold, for simplicity and to bring the Australian RDTI in line with international trends (discussed later). By removing this classification, it makes applying and complying with the RDTI easier. The taxpayer is relieved from having to trace and monitor its expenditure. Such a task could be manageable for a large taxpayer, but it could be very difficult and costly for small or start-up taxpayers. It also relieves the ATO of having to verify the type of R&D expenditure. In particular section 355-30 is deleted which introduced the controversial tests of ‘directly related’ and ‘dominant purpose’.³⁰³

If the policy intent as stated in section 355-5 is to encourage R&D then semantics over classification should be removed because R&D cannot be successfully conducted without both core and supporting activities. If Treasury is concerned there may be an abuse of the RDTI through exorbitant ‘supporting activity expenditure’ than reliance should be had on the anti-avoidance measure Part IVA (ITAA97). By deliberately drafting legislation with tax manipulators in mind, the complexity of the law is stretched and the spirit of the law

³⁰² See ‘administrative efficiency’ Chapter Five.

³⁰³ Refer Chapter Four.

to provide incentive to encourage R&D expenditure is diminished. To support this simplification all linked provisions referring to ‘supporting activities’ have been removed. Instead a note has been inserted in section 355-25 specifying that R&D activities include supporting activities.

Minimum expenditure

Section 355-100 sets a \$20,000 minimum notional R&D expenditure amount which must be met before a taxpayer is entitled to a tax offset. If the taxpayer does not meet this minimum it may still be entitled to a tax offset if it pays a Research Service Provider to conduct R&D or it makes a contribution to a Co-operative Research Centre. The rationale for this is to encourage small taxpayers to invest in R&D regardless of the amount.

It is proposed this provision is unnecessary. A taxpayer will spend whatever amount it can in whatever manner it sees feasible to ensure a successful R&D activity. There should be no prescribed rules or limits by Treasury regarding how best a taxpayer allocates its resources to invest in R&D. It is asserted the wider economic benefits outweigh the compliance of a notional threshold. It is also likely, that removal of the threshold will have limited material fiscal cost to government, as taxpayers are unlikely to invest in R&D in amounts significantly below \$20,000 due to the compliance cost, time and effort, in administrative matters such as R&D registration. However, in the spirit of section 355-5 any additional R&D conducted by taxpayers is welcome.

From the compliance perspective of the ATO, the enforcement of a \$20,000 notional threshold is difficult. It is often problematic for tax officers to accurately calculate the amount of actual deductions to which a taxpayer is entitled, thus the calculation of notional deductions seems an unproductive use of resources.

Finally the table in section 355-100 is redesigned to plainly display that only taxpayers with an aggregated annual turnover of less than \$20 million are entitled to a refundable tax offset. Currently this vital information is contained in a note under the table, yet it was a key selling point by government when the RDTI was first introduced. More discussion on section 355-100 is at section 6.5.

Integrity measures

All the integrity measures are removed: sections 355-400, 355-405, 355-410 and 355-415. Australia has a general anti-avoidance rule relevantly contained in Part IVA ITAA36 which can be invoked by the ATO. Given this overarching deterrent it seems unnecessary to have additional integrity measures, when Part IVA (which was recently reformed) has been

flexibly designed to cater for any taxpayer mischief and could apply appropriately in respect of these provisions. The removal of these provisions shortens the model RDTI significantly and thereby increases the readability for all taxpayers.

Turning to the first integrity measure, section 355-400, expenditure incurred while not at arm's length. If such behaviour is detected by ATO audit activity, it would be assumed that it involved a significant revenue loss. To that extent it is likely a multinational taxpayer is involved and if it crosses into the realm of transfer pricing, Division 13 ITAA36 prevails over section 355-400 (ATO, 2013). Although it is common for Australian tax divisions to incorporate an arm's length rule (e.g. Division 40 depreciation and Division 70 trading stock) it does not justify in this instance for section 355-400 to remain.

The second integrity measure is section 355-405 'expenditure not at risk'. This measure prevents taxpayers from receiving a notional deduction for R&D expenditure when the taxpayer is reasonably expected to receive consideration. The section does not generally apply to permanent establishments and foreign company interactions (ATO, 2013). Finally if the expenditure is in breach of this section it may still be deductible under the ordinary tax rules.³⁰⁴ Thus the revenue impact is likely to be minimal.

Section 355-415, 'mark-ups within groups' is another integrity measure with limited utility. The section is designed to reduce the notional deduction to the extent the consideration paid to the other entity exceeds the actual cost of the R&D activity (ATO, 2013). Similar to section 355-405, even if the notional deduction is reduced, the taxpayer may be entitled to an actual deduction for the 'mark-up' under the ordinary rules.

Lastly section 355-410 is designed to treat any proceeds from disposal of R&D results as assessable income instead of capital gains. Given its complicated wording, its interaction with Division 40 (depreciation) and the fact the taxpayer is still going to report the proceeds as taxable whether it is under income or capital demonstrates this provision primarily has a timing purpose. It is also probable that companies with carried forward capital losses are likely to benefit from a capital gain however it is unlikely to be material. Whereas, it is likely non-corporate taxpayers may significantly benefit from the removal of this integrity measure, because of their access to concessional capital gains provisions. Further research is required to confirm this fiscal consequence.

³⁰⁴ Section 8-1 ITAA97.

Clawback measures

All of the clawback measures are removed on the basis that for all their complexity they do not achieve much in the way of preventing or reducing revenue leakage. Their presence merely adds unnecessary words, confusion to taxpayers and increased compliance costs for taxpayers and administrative costs for the ATO.

Section 355-430 requires a taxpayer to pay extra income tax on its recoupment from government for R&D expenditure. The rationale is to prevent the taxpayer from enjoying a double benefit of a tax offset and a government grant. To resolve this, Treasury devised a complex series of provisions and a calculation to ensure tax is paid on the difference between the tax offset (40 per cent or 45 per cent) and the company tax rate (30 per cent). Presumably aware of the provision's complexity, Treasury decided to simplify the section by treating the R&D tax offset to be a standard 40 per cent (ignoring the taxpayer may receive a 45 per cent offset). Therefore the tax incentive is clawed back by a 10 per cent tax on the amount equalling the R&D expenditure for which an R&D tax offset was claimed. The extra income tax is payable when the recoupment is received or receivable, thus allowing clawback adjustments to be made retrospectively and/or amendments of past tax returns (ATO, 2013).

By removing these provisions, two considerations are proposed. First, if the R&D activity has received a government grant or reimbursement through a competitive and rigorous process, and been approved by AusIndustry³⁰⁵ for R&D registration, then it is likely that the R&D investment is highly desirable and the taxpayer should probably forgo having to pay extra tax on the 10 per cent difference. There needs to be a compromise between creating a fair playing field for all taxpayers and over-complicating a minor tax provision where the revenue loss is negligible and few taxpayers are likely to be affected.

Alternatively, if the government is concerned about this revenue loss or lack of horizontal fairness then a condition could be inserted in each grant denying the taxpayer any form of deduction or R&D tax offset for the amount of the grant. Any additional R&D expenditure the taxpayer contributes themselves should attract the usual tax benefits. A simple integrity measure to monitor this could be found on the R&D registration form which requires the taxpayer to disclose if they are in receipt of a grant or reimbursement

³⁰⁵ Throughout this chapter there is reference to AusIndustry. Since 1 July 2014, this federal government agency merged with many others to become The Department of Industry Single Business Service.

in relation to this R&D activity. AusIndustry could compile a list of such taxpayers for the ATO who could then monitor to ensure there is no double-dipping. The disadvantage of this approach is that it may require further provisions to be inserted into the RDTI. Therefore another option is to insert a clawback provision within the grant system. In effect, this would directly reduce the grant by the amount of the available RDTI benefit. This would streamline the R&D tax process and reduce the compliance cost of taxpayers because they will not be required to adjust their tax return to report any double benefit received.³⁰⁶

On similar grounds the feedstock adjustments under section 355-460 are removed. Again Treasury have devised a series of complex sections which basically tax the difference between the excess tax offset (40 per cent or 45 per cent) over the company tax rate (30 per cent) compared against the tax benefit that would otherwise have been obtained under the ordinary deduction rules. Consequently the tax offset is available on feedstock expenditure only to the extent that it is not offset by feedstock revenue. Like section 355-430 Treasury decided to simplify the feedstock calculation by treating the tax offset at 40 per cent, ignoring the 45 per cent rate, therefore reducing the tax benefit on 10 per cent of the RDTI (ATO, 2013). Given the complexity involved, the limited taxpayers affected, the minimal revenue loss and the high compliance costs borne by taxpayers and the ATO to fulfil this measure, it is proposed under a pragmatic approach that section 355-460 to 355-475 be removed.

Finally, the clawback measures associated with R&D partnerships, sections 355-535 and 355-540 have also been removed to ensure consistency with the above deletions.

6.4.3 Explanation C: international trend

This reasoning overlaps to some extent with the above analysis on simplicity. As identified in Chapter Five the strengths of the SA and US³⁰⁷ (section 174) RDTIs are their brevity. Their legislative drafting creates a R&D tax incentive with broad application, easy readability and few words. Perhaps this is because their RDTIs are deductions, whereas tax offsets are naturally more complex. However that still does not explain away some of the fundamental differences regarding the following matters. Table 6.4 below lists the provisions affected by international trend.

³⁰⁶ Further research could be conducted however the design of taxpayer grants for R&D is outside the scope of this thesis.

³⁰⁷ Section 174 IRC86.

Table 6.4 Provisions affected by international trend

355-20	355-25	355-30	355-100
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Common terms

Common to the SA, Japanese and US RDTIs is that there is no intricate defining of R&D entity, R&D partnership or R&D activity. Turning to the first definition of R&D entity,³⁰⁸ the Australian legislation provides a detailed outline of who is considered a R&D entity and therefore is eligible for the RDTI. Then another definition is provided specific to R&D partnerships.³⁰⁹ Under the current RDTI the only entities specifically excluded are ‘exempt entities’ and ‘corporate limited partnerships’. This is in contrast to the US, SA and Japanese RDTIs. The US and SA RDTIs refer to the universal term ‘taxpayer’ in their legislation. In Japan, the RDTI is only available to taxpayers who file a blue tax return. Regardless, the international trend is to make eligibility for the RDTI a non-issue.

Turning to the definition of R&D activity Australian legislation utilises three sections³¹⁰ to explain R&D activity specifically distinguishing between ‘core’ and ‘supporting’ R&D activities. Australian legislation also outlines conditions for R&D activities over another three sections.³¹¹ Examining the RDTIs of Japan, SA and the US, none defines R&D activity into core and supporting activities. Basically any R&D expenditure that is paid or incurred by the taxpayer as part of their business qualifies for the incentive.³¹²

SA legislation does define ‘research and development’ to mean ‘systemic investigative or systemic experimental activities’ but it does not drill further.³¹³ The temporary US tax credit³¹⁴ is similar to the Australian RDTI in that it over-engineers R&D definitions, specifically distinguishing between: ‘qualified research expenses’³¹⁵, ‘in-house research expenses’³¹⁶, ‘qualified services’³¹⁷, ‘qualified research’³¹⁸, ‘basic research’³¹⁹ and ‘energy

³⁰⁸ Sections 355-35 ITAA97.

³⁰⁹ Section 355-505 ITAA97.

³¹⁰ Sections 355-20, 355-25 and 355-30 ITAA97.

³¹¹ Sections 355-210, 355-215 and 355-220 ITAA97.

³¹² Subsection 11D(2) ITA62, Paragraph 26(a)(1) IRC86.

³¹³ Subsection 11D(1) ITA62.

³¹⁴ Section 41 IRC86.

³¹⁵ Subsection 41(b) IRC86.

³¹⁶ Paragraph 41(b)(2) IRC86.

³¹⁷ Subparagraph 41(b)(2)(B) IRC86.

³¹⁸ Subsection 41(d) IRC86.

³¹⁹ Subparagraph 41(e)(7)(A) IRC86.

research’.³²⁰ As was critiqued in Chapter Five, this type of legislative drafting is not appealing.

Integrity and clawback provisions

The Australian RDTI is littered with integrity and clawback provisions which add significant length and complexity. In contrast the US and SA RDTIs do not contain such extensive provisions, but merely references. The US section 174 specifically mentions sections 167, 611 and 1016(a)(1) relating to depreciation, depletion and property adjustments. However no specific detail outlining their interaction is provided. The SA RDTI mentions recoupment in regards to a taxpayer receiving a government grant, but quickly deals with the matter by denying the taxpayer the equivalent deduction.

From the RDTI international case studies (bar the US tax credit) it is plain that convoluted technical complexity and excessive detail is almost non-existent. The SA RDTI is wordy (which is not synonymous with technical), but this can be explained by its introduction of an approval committee.³²¹ Therefore it is difficult to reconcile how Australia’s recently reformed (in 2011) RDTI is out of sync with international trend. If Australia did not have a GAAR then potentially its overbearing legislation could be explained, however Australia does have a GAAR - so too does SA and the US. Japan does not have a GAAR, but it does have a Corporation Tax Law containing anti-avoidance rules (PwC, 2012), therefore all four countries have similar overarching deterrent rules. The question is what integrity and clawback measures do Japan, SA and the US rely on to correct minor tax benefits such as feedstock adjustments? Are these revenue losses so negligible that their drafters chose deliberately not to capture them? Or is the taxpayer culture of Japan, SA and the US so compliant that their drafters do not need to over-legislate for potential mischievous behaviour? This issue raises many interlinking questions however they are beyond the scope of this thesis.³²²

6.4.4 Summary

Although the fourth theme ‘social’ has not been presented, now is an opportune time to pause in this analysis, as the next section is quite large and leads into broader matters. Summarising the changes thus far, several concepts have been preserved or removed. Firstly, notional deductions, although they complicate the RDTI they are necessary to ensure the smooth operation with the rest of the ITAAs. Secondly, the integrity measures

³²⁰ Subparagraph 41(f)(6)(E) IRC86.

³²¹ Sections 11D(9) to 11D(19) ITA62.

³²² This weakness is discussed further in Chapter Seven.

have been removed as they unduly burden the RDTI. Greater emphasis is placed on using the newly reformed Part IVA to pursue significant R&D tax abuse. Thirdly, the clawback measures have been removed. Their existence is sensible in attempting to prevent RDTI-claiming taxpayers from benefiting above those of non-claiming RDTI taxpayers. However their wordy and complex nature diminishes the attractiveness and readability of the RDTI. Given the policy intent of the RDTI is to encourage R&D, particularly amongst small and start-up taxpayers, it appears the integrity and clawback measures may impede RDTI uptake. Without accurate cost analysis of the loss to government revenue if these provisions were removed it is difficult to ascertain their necessity. This compromise between the 'expense and intrusiveness of a rigorous administration' and the 'losses of revenue suffered when administration is comfortably trustful' is a challenge that was identified in the Asprey Report (1975, p. 48) and remains today. Therefore it is proposed that upon removal of these integrity and clawback provisions from the model RDTI, the ATO publish a taxpayer guide which contains similar provisions. This guide could outline suggested methods of R&D reporting, such as how to accurately calculate feedstock adjustments and recoupments so that taxpayers do not under self-assess.

Moving forward the next section will discuss the fourth theme, social. It will also examine the two major features of the model RDTI which significantly depart from the current RDTI. Hence the next section will go beyond legislative analysis to include policy implementation.

6.5 The R&D Tax Incentive within the Australian innovation system

Posner (1995) surmised that although law is grounded in permanent principles, those principles can be logically manipulated to use law as an instrument for social ends. The challenge is determining which 'social ends' should be addressed and who should decide. It is with this concept in mind that the fourth theme social is discussed and the main RDTI change is introduced.

6.5.1 Explanation D: social

Section 355-25 labelled 'core R&D activities' outlines what is considered an experimental activity eligible for the RDTI. Subsection 355-25(2) then excludes particular activities.

Three activity classifications currently excluded are examined below with the purpose of explaining why under the model RDTI they should be included as eligible R&D activities.

- **(c) management studies or efficiency surveys;**

Management studies are removed from the exclusions based upon the findings of the Australian Innovation System Reports 2012 and 2013 (DI, 2013 & DIISR, 2012) which specifically concluded that Australian management is hindering innovation progress.³²³ Australian strategic management approaches were contrasted with international management, suggesting this weakness may be a peculiar cultural feature of Australia. Therefore it is proposed that the model Australian RDTI include management studies as an eligible R&D activity so that further research can be undertaken to address this impediment. It is acknowledged that this position is in contrast with guidance of the Frascati Manual (OECD, 2002, p.34) which stresses the point that although such studies employ established methodologies, there is a lack ‘... of an appreciable element of novelty and the resolution of scientific and/or technological uncertainty ...’ However it is considered in this instance that the significance of researching this innovation impediment is paramount to encourage R&D in Australian industry.

- **(d) research in social sciences, arts or humanities;**

This provision has been modified to remove social sciences from the exclusion list because it is not reflective of the current state of the world. Global social challenges are ubiquitous – and any solution or idea may hold the answer, therefore this type of research should be encouraged for the greater good. Again this is contrary to the Frascati Manual (OECD, 2002, p.40) which advocates against including social research because of the difficulty in ‘... evaluating the appropriate share of R&D ...’ within the project which may have an appreciable element of novelty and uncertainty.³²⁴ Such institutional thinking appears outdated given the threat social challenges pose on humanity.

- **(e) commercial, legal and administrative aspects of patenting, licensing or other activities;**

This exclusion is modified to allow for commercial and legal (not administrative) aspects of patenting, licensing or other activities based on the rationale that patenting, commercialisation and other legal acts associated are expensive costs, but are a legitimate and often essential part of the R&D process. This would also bring Australia in line with the US RDTI, which is well-favoured by taxpayers, industry and academics.³²⁵ From a

³²³ Refer Chapter Four.

³²⁴ Refer Chapter Three.

³²⁵ Section 174 IRC86, Reg. 1.174-2. Refer Chapter Five.

broader economic perspective, improving the attractiveness of the RDTI feeds into encouraging employment, because the Australian RDTI is based on the R&D being undertaken in Australia. The immediate concern with allowing such expenditure is the fiscal cost to government and the likelihood of taxpayer abuse. Again without quantitative revenue analysis such cost is unknown however taxpayer abuse can be deterred through strategic use of the Part IVA anti-avoidance provision.

Finally, it must be recalled that the Australian RDTI requires companies to register annually with Innovation Australia (AusIndustry) and then self-assess their claim for the RDTI in their tax return. Therefore AusIndustry can scrutinise every R&D application and if it appears that the widening of eligible R&D activities is creating taxpayer abuse then there are appropriate channels for AusIndustry to feed this back to Treasury to instigate change. Meanwhile AusIndustry have the authority to deny registration of activities they characterise as ineligible, or request further information from applicants to evaluate and lastly AusIndustry can publish public advice on these additional R&D activities to assist applicants.

6.5.2 Introduction of R&D Tax Incentive regulations

Given the model RDTI is to include social sciences as an eligible R&D activity, this opens the door for government to steer the direction of such investment towards addressing social challenges – such as global food insecurity. As discussed in Chapter Three, at any time Australia has diverse ‘lists’ which various government bodies and industry committees release recommending research priorities. However there is no cohesive approach aligning these various lists or an umbrella body overseeing these lists to prevent duplication and inconsistency. Nor is there any connection made between the ‘lists’ and the RDTI, yet one should feed into the other. It is proposed that the model RDTI incorporate tax regulations which contain a list of research priorities the federal government have identified of national significance and urgency. To stress the importance of this list above any other government list, there should be preferential tax treatment afforded to taxpayers who choose to undertake R&D in these listed areas. In this instance it is suggested that the table at subsection 355-100(1) be amended to include another tax offset percentage at a more favourable rate, as recreated in Table 6.5.

Table 6.5 Subsection 355-100(1)

Rate of R&D tax offset				
Item	In this case:	The basic percentage is:	Regulation approved percentage is:	Tax offset refundable
1	the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%	60%	Yes see section 67-30
2	at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored	40%	50%	No
3	any other case	40%	50%	No

Note: Regulation approved R&D activities are contained in Subdivision 61-H of the Income Tax Assessment Regulations 1997.

To undertake such a task requires numerous steps all of which are entirely feasible because Australia already has the fundamental parts in place, it is merely lacking a cohesive national R&D framework. This section will outline the sequence of steps required to ensure the model RDTI can be operational. However, this is a legal reform orientated thesis therefore getting the policy and law right is more important than the pedantic implementation and as such only limited words can be afforded.

- Developing the regulations

Developing and drafting the list of National R&D Priorities that should benefit from favourable R&D tax offsets is the first step – this entails deciding on the content of the list and which government agency will be responsible for compiling. Determining the content of the list, of relevance to this thesis are several potential reports and lists, such as: Venturous Australia (Cutler, 2008), Powering Ideas (Carr, 2009), Australian Rural Research & Development Priorities (RRDC, 2011) and the National Research Priorities, which have recently been replaced by the Strategic Research Priorities effective 1 July 2014 (DIISRT, 2012). Recalling the RDTI has national application, it is likely there are many more priority lists that exist Australia-wide to cater for other industries. The process will require identifying these various lists and who owns them (which government agency), reconciling similar priorities and consulting with stakeholders until a final list of National R&D Priorities is established. Which government agency will be responsible for this

process is the next question. In this instance it is proposed the Office of the Chief Scientist undertake this task, but whether a more appropriate government body exists is an implementation matter beyond the scope of this thesis.

Alternatively, Australia could follow Japan's process whereby each year academics, industry bodies, government agencies, technical experts and politicians meet to report on a particular issue – such as R&D which impacts various government departments. The Japanese government developed this strategy to address the shortcomings associated with the independent promotion of government policies. As a result they have been able to organically co-ordinate competing economic policies to achieve a holistic approach to R&D reform. This allows for a fair, transparent, collaborative and consultative approach which could greatly assist in designing National R&D Priorities which are likely to be accepted by most. There could also be scope for draft National R&D Priorities to be circulated for public feedback and improvement. This hopefully will allow for Australia's social expectations and demands to be reflected in the direction of government expenditure on R&D.

For now it is fitting to use the Strategic Research Priorities drafted by the Office of the Chief Scientist (2012) as a starting point for the National R&D Priorities because they are current, comprehensive, cover national/global concerns, include social challenges, are in line with international trends and there are only five priorities making it manageable to implement. Finally the National R&D Priorities are to remain current for ten years. Any taxpayer R&D activities which are approved under the regulations during their reign have benefit of the higher R&D tax offset for ten years.

The ten year time frame is a compromise between the likely fiscal cost to government and the need to provide cashflow certainty to taxpayers. R&D projects are usually risky and can span ten years or more (World Bank, 2008, p. 167), particularly in agriculture and this extensive period needs to be weighed up against the fiscal and political climate. Some studies (Pardey & Alston, 2012; Alston, Anderson, James, & Pardey, 2010) suggest lag times of 15 to 25 years between investing in agricultural R&D and realising a return. Therefore the value of certainty, stability and longevity cannot be underestimated as a means to entice taxpayers to invest in R&D activities listed in the regulations. Flexibility for government is equally important, thus in bifurcating the two key variable components (National R&D Priorities and the tax offset percentage) of the RDTI there is a balanced

approach to R&D reform. The use of regulations provide the government with easier ability to amend the National R&D Priorities, which given the dynamic nature of the world, priorities could understandably shift. Whereas by stipulating the value of the tax offset percentage in the ITAA97, taxpayers are given slightly more certainty the financial outlay for R&D projects are less likely to change because of government fiscal policy. To avoid any type of amendment, there is the also the option for government to instruct AusIndustry to be quite specific about the type of R&D activity they would like approved under the higher tax offset. This strategy could ideally eliminate the need for changes to the National R&D Priorities or the tax offset percentage, by ‘administratively’ reducing government expenditure on the RDTI. Bearing in mind that at all times taxpayers will still have the basic tax offset available if they are declined the higher tax offset. Table 6.6 below contains the National R&D Priorities.

Table 6.6 National R&D Priorities

Item	National Research and Development Priority ³²⁶	Commencing 1 July ending 30 June
1	Living in a changing environment: Research outcomes will identify strategies to develop resilient natural (ecosystems) and human environments (people, communities and their utilities and industry) that can all thrive in a changing environment.	2015 to 2025
2	Promoting population health and wellbeing: Research outcomes will help to build resilient communities and achieve a state of physical, mental and social wellbeing, and not merely the absence of disease, or infirmity, for all Australians in whichever part of Australia they live.	2015 to 2025
3	Managing our food and water assets: Research outcomes will identify new food production practices and systems that can accommodate competing demands for soil and water while ensuring the long-term sustainability of these assets.	2015 to 2025
4	Securing Australia's place in a changing world: Research outcomes will identify ways to improve Australia's capacity to deliver national security and identify the means by which personal security in Australia will be safeguarded. This challenge should be considered in the context of global uncertainty and changes in the Asia Pacific region.	2015 to 2025
5	Lifting productivity and economic growth: Research outcomes will identify the challenges and opportunities in a changing world economy, particularly in the context of the economic rise of Asia, and help to build a resilient new economy so that Australia can thrive, while also identifying the means to enhance the wellbeing of all Australians.	2015 to 2025

Note: The item number is not an indication of priority preference.

Note: Once the R&D activity is approved as a national research and development priority, the regulation approved tax offset percentage applies for duration of the activity to a maximum of ten years.

³²⁶ These national priorities are taken from the Strategic Research Priorities (Department of Industry Australian Government, 2013).

- Implementing the regulations

Touching briefly on the legal implementation side for these National R&D Priorities to have the legal force proposed they need to be incorporated within Division 355 ITAA97. This has been achieved by mentioning the location of this list at sections 355-25 and 355-100. Next is linking the tax regulations into the *Industry Research and Development Act* 1986 which deals with ‘registering for the R&D tax offset’. This has been achieved by stating in the Income Tax Assessment Regulations 1997 that the regulations are complementary to the *Industry Research and Development Act* 1986.³²⁷

- Approval process

It is proposed that AusIndustry as authorised under the IR&D86 approve R&D activities eligible for the higher tax offset. This expansion of responsibility is pragmatic use of the existing legal and administrative structure. Currently Innovation Australia (through AusIndustry) may register an R&D entity for R&D activities conducted during an income year, make findings about the nature of an R&D entity’s activities which bind the ATO Commissioner under Division 355 ITAA97 and can vary or revoke registrations.³²⁸ Therefore it seems appropriate and feasible for AusIndustry to take on the additional role of approving R&D activities eligible for the higher R&D tax offset. To assist with decision making AusIndustry are currently empowered to request further information from applicants.³²⁹ There are also appeal procedures in place under the IR&D86³³⁰ which the ATO or applicant can utilise to review AusIndustry’s findings.

Incorporating learning from the South African case study additional provisions could be inserted in the IR&D86 similar to sections 11D(9) to 11D(19) ITA62 which govern the additional 50 per cent uplift for R&D projects if approved by the committee. Of significance to Australia in introducing this higher tax offset will be provisions that cover the following:

- The decision-making criteria to determine if the R&D activity falls within any of the National R&D Priorities

³²⁷ The actual steps of creating and passing these amendments in Parliament are not investigated as that is beyond the scope of this thesis.

³²⁸ Section 27 IR&D86.

³²⁹ Section 27E IR&D86.

³³⁰ Division 5 IR&D86.

- The right for AusIndustry to withdraw access to the higher tax offset if the applicant materially misleads or does not meet ongoing requirements
 - Retrospective access to the higher tax offset from date the application is submitted, rather than once approved
 - The right for AusIndustry to request expert assistance when evaluating R&D activities if needed
 - Empower AusIndustry to investigate and monitor each approved R&D activity to determine if the research outcomes of the regulations are being met
 - Require each taxpayer with access to a regulation approved higher tax offset to provide annual progress updates to AusIndustry on the R&D activity
 - Require AusIndustry (with assistance from the ATO) to annually report to Parliament advising of the benefits, weaknesses and aggregate expenditure of the higher tax offset R&D activities.
- Administrative detail

The fiscal cost of introducing these regulations is unknown and beyond the scope of this primarily legal reform-orientated thesis. However as discussed in Chapter Seven this could be an area for further research.

6.6 Conclusion

This chapter introduced the model Australian RDTI. Based on the learning gained from the international case studies a newly fashioned RDTI was designed using parts of the different overseas RDTIs to address existing Australian RDTI shortcomings. The shortcomings identified in Chapter Five are: lack of simplicity, legislative length of RDTI, over-engineering of provisions, not as competitive (liberal) as overseas RDTIs and limited capacity for addressing social challenges. The RDTI reform was controlled by the overarching research paradigm of pragmatism. As such, addressing these shortcomings needed to be realistic and feasible with minimal legislative and cost intrusion. To some pragmatism could be seen as a constraint limiting the imagination for R&D reform, however in accordance with Farber's (1999) theory pragmatism is 'an opportunity to avoid

‘grand theories’ and to build instead ‘an interlocking web of arguments that will support a decision based on diverse, overlapping considerations’ (Heinzerling, 2000, p. 1424).

The main features of the model RDTI are removal of unnecessary provisions to shorten the legislation, minimise over-engineering, improve its readability and removal of certain restrictions to make the model RDTI more competitive and in line with international trend. In tackling the social aspect National R&D Priorities via tax regulations are introduced and to ensure uptake a higher R&D tax offset is offered. The purpose is to steer private sector R&D investment toward funding solutions for national social challenges, without fettering their business discretion. Such strategy also frees up to an extent government R&D resources, widens the opportunity for answers and shares the burden of funding costs with the private sector. Finally to enable this part of the RDTI to operate successfully there was discussion of policy implementation. It is hoped the pragmatic approach to designing the model RDTI has brought to light, in one place, the great robust features currently existing within the Australian tax and innovation systems. The united vision aims to marry the hopes of innovation found in the various priority lists with the means to achieve it found in the RDTI.

Chapter 7

CONCLUSION

This final chapter is set out in five parts. The first part provides an overview of the thesis and the significance of each chapter to the thesis as a whole. The next part discusses the contribution of the thesis to the literature. The third part examines the limitations of the research, followed by consideration of future directions for this research. The last part ends the thesis with concluding remarks.

7.1 Overview of the thesis

The research problem this thesis addresses is how the Australian federal tax system can be reformed to assist with the achievement of global food security. The thesis posits that the RDTI is an appropriate tax incentive to enable increased investment in agricultural R&D, and that increasing such investment has been determined a cornerstone for minimising food insecurity (IAASTD, 2009a).

The literature review in Chapter Two demonstrated that R&D investment in agriculture is needed now due to its long-lag effect of ten years or more (World Bank, 2008, p. 167). It also emphasised the current business-as-usual approach is not sufficient, with government intervention required. However, the literature does not prescribe the type of government intervention that is necessary.

This thesis focused on the type of government intervention which could enable increased private sector investment in agricultural R&D. Literature confirms that taxation and innovation are intricately linked, and that targeted tax policy can be effective in achieving social and economic goals (Palazzi, 2011). On this basis, federal tax law was chosen as a strategy to contribute towards addressing the social challenge of global food insecurity, with one potential outcome - increased agricultural R&D investment. This broad proposal was then contextualised to a case study on Australia's R&D tax system and its potential for reform that could stimulate agricultural R&D investment by the private sector and thereby assist global food security.

Chapter Three examined the type of tax law provision which could be the most appropriate. Guided by a pragmatic framework, the preference was to find an existing Australian tax provision which could be adapted to address global social challenges.

Analysis showed that worldwide agricultural R&D is growing, but at a decreasing rate, and due to its public good characteristics, the private sector tend to under-invest (IAASTD, 2009a; World Bank, 2008). While it is accepted that public (rather than private) R&D can better incorporate wider social objectives, constrained public resources make it difficult for governments to fill this R&D investment void (IAASTD, 2009a; World Bank, 2008). Consequently the literature suggests any solution would entail a compromise, with funding required from both the private and public sectors.

Existing government strategies and current agricultural R&D funding in Australia were examined, from which the proposition was formed that a tax expenditure measure would be the most appropriate mechanism to promote joint public and private investment. The RDTI was selected because it allows policy makers to encourage the private sector to increase their R&D investment to levels that ‘maximise social welfare’ (Palazzi, 2011, p. 9).

Chapter Four tested the proposition reached in Chapter Three by critically analysing the Australian RDTI. The Australian RDTI had recently been reformed, moving from a volume and incremental based tax deduction to a volume-based refundable and non-refundable tax credit. This structural change eliminated the connection between the value of R&D tax relief provided and the Australian income tax rate. The refundable nature also provided greater promise for start-up companies to invest in R&D. Therefore it was determined, despite its minor short-comings that the Australian RDTI was a structurally sound provision to incorporate social goals, in particular, global food security.

Chapter Five analysed the RDTIs of Japan, SA and the US in relation to agriculture and global food security. Through comparative case studies with Australia, this chapter evaluated the characteristics of each RDTI to ascertain best practice. The thrust of the evaluation was whether the RDTI in each country sufficiently enabled the potential for increased investment in agricultural R&D and thereby could assist with addressing global food insecurity. In particular, the following conclusions relevant to the drafting and implementation of a model Australian RDTI were made:

- legislative certainty and consistency cannot be underestimated
- liberal interpretation is required to fulfil policy intent and encourage taxpayer uptake
- simplicity and ease of understanding is paramount

- the length of the RDTI needs to be considered, but a certain degree of complexity is necessary
- the RDTI needs to be sufficiently generous to be attractive and
- the RDTI is only one part of the national innovation system therefore it needs to be integrated cohesively to ensure government objectives are aligned.

Building upon the findings of Chapter Five, the sixth chapter proposed a model Australian RDTI to better enable increased agricultural R&D investment which could lead to improved global food security. Fulfilling the pragmatic desire of the thesis, this model followed the basic structure of the current Australian RDTI as outlined in Chapter Four, but with modifications based upon the analyses of Chapter Five.

Thus the proposed model borrows from the US, Japanese and South African tax systems. The US design, which features the use of tax regulations to provide additional detail without burdening the RDTI in the tax act with excessive words, allows the RDTI to remain sharp and easy to read. The use of regulations also provides greater flexibility to modify the RDTI in a timely and responsive manner. Further, to the eye of the layman it makes (if perhaps deceptively) the RDTI appear more robust and certain, despite the existence of minor regulatory amendments. The Japanese R&D system involves organic co-ordination of diverse economic objectives, to align with a unified innovation policy. Such a cohesive approach is logical and rational economic policy, although lofty to achieve. Finally, the SA RDTI incorporates the design structure of two RDTI rates, as well as the use of a diverse appointed committee, comprising staff from National Treasury, SARS and Department of Science and Technology to determine which R&D projects should receive additional public funding under the RDTI uplift. To ensure a balanced deliberation process, it is proposed the Australian committee is similarly comprised with staff from various backgrounds. Combining these international best practices has led to the most significant structural reform of the model Australian RDTI which is utilising tax regulations to incorporate national R&D priorities that have a social policy intent. To provide consistency within the model RDTI, 'social research' was removed from the list of funding exclusions.

Finally, Chapter Six briefly considered the role of the model RDTI within the wider innovation system of Australia. Chapter Three had identified that Australia has numerous 'research lists' which frustrate Australia's ability to establish a unified vision of innovation.

The model RDTI aims to consolidate these various lists, promote key national objectives, provide additional incentive to entice taxpayer uptake and involve appropriate government bodies to ensure public funding is directed towards fulfilling these critical research goals. Recognising tax transplants can suffer from cultural rejection, the model RDTI utilises existing mechanisms to gently incorporate these international practices. Thus the National R&D Priorities have not been created without foundation; they are adapted from the Strategic Research Priorities drafted by the Australian Office of the Chief Scientist (2012). Also the manner in which the National R&D Priorities are incorporated into the RDTI provision in the ITAA97 is through the traditional path of income tax regulations, the ITAR97. This approach has been used with other successful legislative changes such as the private health insurance offset³³¹ and the cents per kilometre vehicle deduction.³³² Finally, the use of two RDTI offset rates is not alarming, given that prior to the RDTI the R&D deduction provided a base rate and a premium rate which was an extra incentive for taxpayers who continued to undertake additional R&D. Employing a government body to evaluate each R&D project submitted for consideration under the uplift, is merely building upon the current R&D registration process of AusIndustry (Single Business Service). A similar evaluation system exists for the carbon sink legislation, whereby the expertise of the Department of the Environment is jointly involved in approving carbon sink applications with the ATO.³³³

7.2 Contribution to the literature

This thesis contributes to the literature in three significant ways. Firstly, it identifies a feasible manner to increase private R&D investment in agriculture in Australia. Secondly, it demonstrates how readily the ITAAs could incorporate social goals without weakening tax collection. Thirdly, it puts forward well-drafted legislation reflecting a unified vision for innovation in Australia.

The thesis contributions build upon the established literature commencing with the chief catalyst of the thesis topic, namely the IAASTD (2009a) and World Bank Report (2008, p. 158). Both of these concluded that R&D investment in agriculture is essential to improving global food security. In seeking to explore tax reform as a potential strategy to increase R&D investment, Palazzi (2011) confirmed that taxation fosters innovation (of

³³¹ Regulations 61-220.01 and .02 ITAR97.

³³² Regulation 28-25.01 and Schedule 1 ITAR97.

³³³ Subdivision 40-J ITAA97.

which R&D is one component) and demonstrated that the level of R&D investment is influenced by tax policy. In addition, Posner (1995) suggested legal pragmatism can be used to achieve social ends, supporting the concept of introducing social goals into the model RDTI via the tax regulations. Research by Lattimore (1997) suggested innovation spurs national competitiveness and increases national productivity, while further supporting the place of the model RDTI in the wider R&D reform process and the alignment of Australia's economic, tax and social goals. Finally, incorporating best practice from international case studies while recognising the importance of Australian tax culture (Richardson, 2000), the model RDTI fulfils the goal of this investigation; which was to find a tax measure capable of assisting Australia's contribution to global food security.

There are several strengths of this thesis. Firstly, it provides a unique contribution of comparative case studies to the tax literature. Each of the case studies; Japan, SA and the US, although on first consideration appear an unlikely combination, have provided a unique insight to R&D tax reform contributing to the design of the model Australian RDTI. Secondly, the topic of the thesis is both timely and of global relevance. Multi-disciplinary research has concluded that advances in sustainable food production and availability is achievable given existing technologies, provided there is sufficient political will and investment in R&D (Godfray, et al., 2010). It is asserted this thesis has managed to bring these possibilities together through a tax law lens and propose a R&D stimulus strategy. Thirdly, the model Australian RDTI is practical and should be actively considered for future implementation by the Australian government (with additional testing/research). Aside from this, the model RDTI can be used to assist governments and policy makers throughout the world who may be contemplating how to increase private investment in agricultural R&D. Fourthly, this is an example of a law thesis that has borrowed from the social sciences literature to address the multi-functional challenge of global food security in an attempt to provide a practical resolution. On a similar note, the thesis may also be used to further develop legal literature on tax and social challenges, in a broader context, for use by Australian and international scholars. Finally, by combining the RDTI provision with the Australian Strategic Research Priorities the thesis has created a unified national vision for the direction and purpose of federally funded R&D in Australia. The thesis has confirmed that whilst R&D is but one part of the

innovation process, the power of tax policy can positively influence R&D investment in agriculture and thereby assist with global food security.

7.3 Limitations of this research

Notwithstanding the strength of the research and analysis underpinning this thesis it does have limitations. Firstly, it is conceded that water, biotechnology and climate change are linked to global food security, but their impacts were considered out of scope given their likelihood to detract from the core of the thesis, viz. taxation. Secondly, this thesis does not discuss in detail the implementation aspects of the RDTI, despite that being a significant factor in introducing any legal reform. The thrust of the thesis deals with the design of appropriate policy and law in R&D, which could then be a platform from which implementation can follow, mindful that additional research may be required. Thirdly, there is no quantitative analysis testing the relationship between the RDTI and R&D investment in agriculture. This shortcoming applies to all countries involved. The evaluation undertaken focused on whether the RDTI in each country sufficiently enables the potential for increased investment in agricultural R&D and thereby may assist with addressing global food insecurity. The thesis is primarily a reform-orientated law thesis, which by nature is qualitative and at times doctrinal. Thus along similar lines, the thesis does not undertake revenue cost analysis to ascertain the costs of implementing, administering and enforcing the model RDTI. Therefore this thesis presents a considered supposition, within limitations, that reforming the Australian RDTI to target specific social challenges, such as global food insecurity can lead to increased R&D investment in agriculture. Fifthly, this thesis examined only three countries, Japan, SA and the US to compare with Australia. While consideration was given to including more countries, this was dismissed because of the concern for both loss in depth of analysis and only marginal increases in insight. For a more comprehensive review, further international case studies could in future be undertaken however it is unlikely this will change the proposed model. Selection of Japan as a case study provided some drawbacks to the collection of literature available due to language constraints, as expected in multi-lingual research. Seventhly, this thesis does not examine the implications of IP on agricultural R&D. It is acknowledged that IP restrictions imposed by the private sector may hinder the transmission of new technology to less developed countries and could skew investment in agricultural R&D towards more profitable markets (Godfray, et al., 2010, p. 2775). Finally, despite attempts to draft a simple and easy to read RDTI which could be adopted by other countries, it is

noted that the model RDTI involves notional (refundable) deductions. These tax concepts are by their nature complex and would require the receiving country to have robust tax legislation and highly skilled compliance staff for successful implementation.

7.4 Future directions for this research

This thesis proposed a model Australian RDTI could be used to increase R&D investment in agriculture and thereby assist with global food security. Further research could be undertaken to estimate the revenue cost of administering the model RDTI. There is the possibility that if the revenue cost exceed the likely economic benefits then implementation of the model RDTI would not proceed. Alternatively, if the revenue cost is reasonable, further research could examine implementation of the model RDTI. This research could make greater use of the Japan case study which highlighted the importance of a holistic innovation system. Finally, quantitative analysis could be undertaken on the relationship between the model RDTI and its effect on R&D investment in agriculture though this would require input from others with the necessary expertise. This quantitative analysis could even extend to other social challenges as listed in the National R&D Priorities contained in the tax regulations.

7.5 Concluding remarks

This thesis concludes that Australia can contribute to achieving global food security by reforming the current RDTI to incorporate best practice from international case studies and integrating the Strategic Research Priorities into the RDTI via tax regulations. At the same time, the thesis suggests that further research into the aspects of revenue costing, implementation and quantitative analysis is necessary should government consider the proposed tax law reform.

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**Australia's contribution to achieving global food security: to what extent can reform of the
federal research and development tax incentives assist?**

by

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A thesis in fulfilment of the requirements for the degree of

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School of Taxation and Business Law

Faculty of UNSW Business School

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VOLUME II

Appendix A

National Innovation Priorities (Carr, 2009, p. 4)

Priority 1: Public research funding supports high-quality research that addresses national challenges and opens up new opportunities.

Priority 2: Australia has a strong base of skilled researchers to support the national research effort in both the public and private sectors.

Priority 3: The innovation system fosters industries of the future, securing value from the commercialisation of Australian research and development.

Priority 4: More effective dissemination of new technologies, processes, and ideas increases innovation across the economy, with a particular focus on small and medium-sized enterprises.

Priority 5: The innovation system encourages a culture of collaboration within the research sector and between researchers and industry.

Priority 6: Australian researchers and businesses are involved in more international collaborations on research and development.

Priority 7: The public and community sectors work with others in the innovation system to improve policy development and service delivery.

Rural Research and Development Priorities (DAFF, 2007)

- **Productivity and Adding Value**

Improve the productivity and profitability of existing industries and support the development of viable new industries.

- **Supply Chain and Markets**

Better understand and respond to domestic and international market and consumer requirements and improve the flow of such information through the whole supply chain, including to consumers.

- **Natural Resource Management**

Support effective management of Australia's natural resources to ensure primary industries are both economically and environmentally sustainable.

- **Climate Variability and Climate Change**

Build resilience to climate variability and adapt to and mitigate the effects of climate change.

- **Biosecurity**

Protect Australia's community, primary industries and environment from biosecurity threats.

- **Supporting the Rural Research and Development Priorities**

Improve the skills to undertake research and apply its findings.

Promote the development of new and existing technologies.

Comparison of R&D definitions

- **Innovation definition as per Oslo Manual (OECD, 2005, p. 46)**

An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organisational method in business practices, workplace organisation or external relations.

- **Innovation activities definition as per Oslo Manual (OECD, 2005, p. 47)**

Innovation activities are all scientific, technological, organisational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations. Some innovation activities are themselves innovative, others are not novel activities but are necessary for the implementation of innovations. Innovation activities also include R&D that is not directly related to the development of a specific innovation.

- **Research and Experimental Development definition as per Frascati Manual (OECD, 2002, p. 30)**

Research and experimental development (R&D) comprise creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications.

- **Experimental development definition as per Frascati Manual (OECD, 2002, p. 30)**

Experimental development is systemic work, drawing on existing knowledge gained from research and/or practical experience, which is directed to producing new materials, products or devices, to installing new processes, systems and services, or to improving substantially those already produced or installed. R&D covers both formal R&D in R&D units and informal or occasional R&D in other units.

Notional Deductions (Commonwealth Parliament EM, 2010, p. 60)

An R&D entity can notionally deduct amounts under the R&D provisions for the income year for:

- certain expenditure on registered R&D activities
- a decline in value of depreciating assets used for registered R&D activities
- a balancing adjustment for those depreciating assets used only for R&D activities
- R&D expenditure incurred to an associate in an earlier income year and paid in the current income year
- a decline in value of R&D partnership assets
- a monetary contribution to a Cooperative Research Centre.

Strategic Research Priorities (Department of Industry Australian Government, 2013)

Living in a changing environment

- Identify vulnerabilities and boundaries to the adaptability of changing natural and human systems
- Manage risk and capture opportunities for sustainable natural and human systems
- Enable societal transformation to enhance sustainability and wellbeing

Promoting population health and wellbeing

- Optimise effective delivery of health care and related systems and services
- Maximise social and economic participation in society
- Improve the health and wellbeing of Aboriginal and Torres Strait Islander people

Managing our food and water assets

- Optimise food and fibre production using our land and marine resources
- Develop knowledge of the changing distribution, connectivity, transformation and sustainable use of water in the Australian landscape
- Maximise the effectiveness of the production value chain from primary to processed food

Securing Australia's place in a changing world

- Improve cybersecurity for all Australians
- Manage the flow of goods, information, money and people across our national and international boundaries
- Understand political, cultural, economic and technological change, particularly in our region

Lifting productivity

- Identify the means by which Australia can lift productivity and economic growth
- Maximise Australia's competitive advantage in critical sectors
- Deliver skills for the new economy

A p p e n d i x B

USA: *Internal Revenue Code (1986)*

U.S. Code › Title 26 › Subtitle A › Chapter 1 › Subchapter B › Part VI › § 174 (Cornell University Law School)

26 U.S. Code § 174 - Research and experimental expenditures

(a) Treatment as expenses

(1) In general

A taxpayer may treat research or experimental expenditures which are paid or incurred by him during the taxable year in connection with his trade or business as expenses which are not chargeable to capital account. The expenditures so treated shall be allowed as a deduction.

(2) When method may be adopted

(A) Without consent

A taxpayer may, without the consent of the Secretary, adopt the method provided in this subsection for his first taxable year—

- (i) which begins after December 31, 1953, and ends after August 16, 1954, and
- (ii) for which expenditures described in paragraph (1) are paid or incurred.

(B) With consent

A taxpayer may, with the consent of the Secretary, adopt at any time the method provided in this subsection.

(3) Scope

The method adopted under this subsection shall apply to all expenditures described in paragraph (1). The method adopted shall be adhered to in computing taxable income for the taxable year and for all subsequent taxable years unless, with the approval of the Secretary, a change to a different method is authorized with respect to part or all of such expenditures.

(b) Amortization of certain research and experimental expenditures

(1) In general

At the election of the taxpayer, made in accordance with regulations prescribed by the Secretary, research or experimental expenditures which are—

(A) paid or incurred by the taxpayer in connection with his trade or business,
(B) not treated as expenses under subsection (a), and
(C) chargeable to capital account but not chargeable to property of a character which is subject to the allowance under section [167](#) (relating to allowance for depreciation, etc.) or section [611](#) (relating to allowance for depletion), may be treated as deferred expenses. In computing taxable income, such deferred expenses shall be allowed as a deduction ratably over such period of not less than 60 months as may be selected by the taxpayer (beginning with the month in which the taxpayer first realizes benefits from such expenditures). Such deferred expenses are expenditures properly chargeable to capital account for purposes of section [1016\(a\)\(1\)](#) (relating to adjustments to basis of property).

(2) Time for and scope of election

The election provided by paragraph (1) may be made for any taxable year beginning after December 31, 1953, but only if made not later than the time prescribed by law for filing the return for such taxable year (including extensions thereof). The method so elected, and the period selected by the taxpayer, shall be adhered to in computing taxable income for the taxable year for which the election is made and for all subsequent taxable years unless, with the approval of the Secretary, a change to a different method (or to a different period) is authorized with respect to part or all of such expenditures. The election shall not apply to any expenditure paid or incurred during any taxable year before the taxable year for which the taxpayer makes the election.

(c) Land and other property

This section shall not apply to any expenditure for the acquisition or improvement of land, or for the acquisition or improvement of property to be used in connection with the research or experimentation and of a character which is subject to the allowance under section [167](#) (relating to allowance for depreciation, etc.) or section [611](#) (relating to allowance for depletion); but for purposes of this section allowances under section [167](#), and allowances under section [611](#), shall be considered as expenditures.

(d) Exploration expenditures

This section shall not apply to any expenditure paid or incurred for the purpose of ascertaining the existence, location, extent, or quality of any deposit of ore or other mineral (including oil and gas).

(e) Only reasonable research expenditures eligible

This section shall apply to a research or experimental expenditure only to the extent that the amount thereof is reasonable under the circumstances.

(f) Cross references

(1)For adjustments to basis of property for amounts allowed as deductions as deferred expenses under subsection (b), see section [1016\(a\)\(14\)](#).

(2)For election of 10-year amortization of expenditures allowable as a deduction under subsection (a), see section [59\(e\)](#).

USA: Internal Revenue Code (1986)

U.S. Code › Title 26 › Subtitle A › Chapter 1 › Subchapter A › Part IV › Subpart D › § 41
(Cornell University Law School)

26 U.S. Code § 41 - Credit for increasing research activities

(a) General rule

For purposes of section 38, the research credit determined under this section for the taxable year shall be an amount equal to the sum of—

- (1)** 20 percent of the excess (if any) of—
 - (A)** the qualified research expenses for the taxable year, over
 - (B)** the base amount,
- (2)** 20 percent of the basic research payments determined under subsection (e)(1)(A), and
- (3)** 20 percent of the amounts paid or incurred by the taxpayer in carrying on any trade or business of the taxpayer during the taxable year (including as contributions) to an energy research consortium for energy research.

(b) Qualified research expenses

For purposes of this section—

(1) Qualified research expenses

The term “qualified research expenses” means the sum of the following amounts which are paid or incurred by the taxpayer during the taxable year in carrying on any trade or business of the taxpayer—

- (A)** in-house research expenses, and
- (B)** contract research expenses.

(2) In-house research expenses

(A) In general

The term “in-house research expenses” means—

- (i)** any wages paid or incurred to an employee for qualified services performed by such employee,
- (ii)** any amount paid or incurred for supplies used in the conduct of qualified research, and

(iii) under regulations prescribed by the Secretary, any amount paid or incurred to another person for the right to use computers in the conduct of qualified research.

Clause (iii) shall not apply to any amount to the extent that the taxpayer (or any person with whom the taxpayer must aggregate expenditures under subsection (f)(1)) receives or accrues any amount from any other person for the right to use substantially identical personal property.

(B) Qualified services

The term “qualified services” means services consisting of—

- (i)** engaging in qualified research, or
- (ii)** engaging in the direct supervision or direct support of research activities which constitute qualified research.

If substantially all of the services performed by an individual for the taxpayer during the taxable year consists of services meeting the requirements of clause (i) or (ii), the term “qualified services” means all of the services performed by such individual for the taxpayer during the taxable year.

(C) Supplies

The term “supplies” means any tangible property other than—

- (i)** land or improvements to land, and
- (ii)** property of a character subject to the allowance for depreciation.

(D) Wages

(i) In general

The term “wages” has the meaning given such term by section 3401(a).

(ii) Self-employed individuals and owner-employees

In the case of an employee (within the meaning of section 401(c)(1)), the term “wages” includes the earned income (as defined in section 401(c)(2)) of such employee.

(iii) Exclusion for wages to which work opportunity credit applies

The term “wages” shall not include any amount taken into account in determining the work opportunity credit under section 51(a).

(3) Contract research expenses

(A) In general

The term “contract research expenses” means 65 percent of any amount paid or incurred by the taxpayer to any person (other than an employee of the taxpayer) for qualified research.

(B) Prepaid amounts

If any contract research expenses paid or incurred during any taxable year are attributable to qualified research to be conducted after the close of such taxable year, such amount shall be treated as paid or incurred during the period during which the qualified research is conducted.

(C) Amounts paid to certain research consortia

(i) In general

Subparagraph (A) shall be applied by substituting “75 percent” for “65 percent” with respect to amounts paid or incurred by the taxpayer to a qualified research consortium for qualified research on behalf of the taxpayer and 1 or more unrelated taxpayers. For purposes of the preceding sentence, all persons treated as a single employer under subsection (a) or (b) of section 52 shall be treated as related taxpayers.

(ii) Qualified research consortium

The term “qualified research consortium” means any organization which—

- (I)** is described in section 501(c)(3) or 501(c)(6) and is exempt from tax under section 501(a),
- (II)** is organized and operated primarily to conduct scientific research, and
- (III)** is not a private foundation.

(D) Amounts paid to eligible small businesses, universities, and Federal laboratories

(i) In general

In the case of amounts paid by the taxpayer to—

- (I)** an eligible small business,

- (II) an institution of higher education (as defined in section 3304(f)), or
- (III) an organization which is a Federal laboratory,

for qualified research which is energy research, subparagraph (A) shall be applied by substituting “100 percent” for “65 percent”.

(ii) Eligible small business

For purposes of this subparagraph, the term “eligible small business” means a small business with respect to which the taxpayer does not own (within the meaning of section 318) 50 percent or more of—

- (I) in the case of a corporation, the outstanding stock of the corporation (either by vote or value), and
- (II) in the case of a small business which is not a corporation, the capital and profits interests of the small business.

(iii) Small business

For purposes of this subparagraph—

(I) In general

The term “small business” means, with respect to any calendar year, any person if the annual average number of employees employed by such person during either of the 2 preceding calendar years was 500 or fewer. For purposes of the preceding sentence, a preceding calendar year may be taken into account only if the person was in existence throughout the year.

(II) Startups, controlled groups, and predecessors

Rules similar to the rules of subparagraphs (B) and (D) of section 220(c)(4) shall apply for purposes of this clause.

(iv) Federal laboratory

For purposes of this subparagraph, the term “Federal laboratory” has the meaning given such term by section 4(6) of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3703(6)), as in effect on the date of the enactment of the Energy Tax Incentives Act of 2005.

(4) Trade or business requirement disregarded for in-house research expenses of certain startup ventures

In the case of in-house research expenses, a taxpayer shall be treated as meeting the trade or business requirement of paragraph (1) if, at the time such in-house research expenses are paid or incurred, the principal purpose of the taxpayer in making such expenditures is to use the results of the research in the active conduct of a future trade or business—

(A) of the taxpayer, or

(B) of 1 or more other persons who with the taxpayer are treated as a single taxpayer under subsection (f)(1).

(c) Base amount

(1) In general

The term “base amount” means the product of—

(A) the fixed-base percentage, and

(B) the average annual gross receipts of the taxpayer for the 4 taxable years preceding the taxable year for which the credit is being determined (hereinafter in this subsection referred to as the “credit year”).

(2) Minimum base amount

In no event shall the base amount be less than 50 percent of the qualified research expenses for the credit year.

(3) Fixed-base percentage

(A) In general

Except as otherwise provided in this paragraph, the fixed-base percentage is the percentage which the aggregate qualified research expenses of the taxpayer for taxable years beginning after December 31, 1983, and before January 1, 1989, is of the aggregate gross receipts of the taxpayer for such taxable years.

(B) Start-up companies

(i) Taxpayers to which subparagraph applies

The fixed-base percentage shall be determined under this subparagraph if—

- (I) the first taxable year in which a taxpayer had both gross receipts and qualified research expenses begins after December 31, 1983, or
- (II) there are fewer than 3 taxable years beginning after December 31, 1983, and before January 1, 1989, in which the taxpayer had both gross receipts and qualified research expenses.

(ii) Fixed-base percentage

In a case to which this subparagraph applies, the fixed-base percentage is—

- (I) 3 percent for each of the taxpayer's 1st 5 taxable years beginning after December 31, 1993, for which the taxpayer has qualified research expenses,
- (II) in the case of the taxpayer's 6th such taxable year, $1/6$ of the percentage which the aggregate qualified research expenses of the taxpayer for the 4th and 5th such taxable years is of the aggregate gross receipts of the taxpayer for such years,
- (III) in the case of the taxpayer's 7th such taxable year, $1/3$ of the percentage which the aggregate qualified research expenses of the taxpayer for the 5th and 6th such taxable years is of the aggregate gross receipts of the taxpayer for such years,
- (IV) in the case of the taxpayer's 8th such taxable year, $1/2$ of the percentage which the aggregate qualified research expenses of the taxpayer for the 5th, 6th, and 7th such taxable years is of the aggregate gross receipts of the taxpayer for such years,
- (V) in the case of the taxpayer's 9th such taxable year, $2/3$ of the percentage which the aggregate qualified research expenses of the taxpayer for the 5th, 6th, 7th, and 8th such taxable years is of the aggregate gross receipts of the taxpayer for such years,
- (VI) in the case of the taxpayer's 10th such taxable year, $5/6$ of the percentage which the aggregate qualified research expenses of the taxpayer for the 5th, 6th, 7th, 8th, and 9th such taxable years is of the aggregate gross receipts of the taxpayer for such years, and
- (VII) for taxable years thereafter, the percentage which the aggregate qualified research expenses for any 5 taxable years selected by the

taxpayer from among the 5th through the 10th such taxable years is of the aggregate gross receipts of the taxpayer for such selected years.

(iii) Treatment of de minimis amounts of gross receipts and qualified research expenses

The Secretary may prescribe regulations providing that de minimis amounts of gross receipts and qualified research expenses shall be disregarded under clauses (i) and (ii).

(C) Maximum fixed-base percentage

In no event shall the fixed-base percentage exceed 16 percent.

(D) Rounding

The percentages determined under subparagraphs (A) and (B)(ii) shall be rounded to the nearest 1/100th of 1 percent.

(4) Election of alternative incremental credit

(A) In general

At the election of the taxpayer, the credit determined under subsection (a)(1) shall be equal to the sum of—

- (i)** 3 percent of so much of the qualified research expenses for the taxable year as exceeds 1 percent of the average described in subsection (c)(1)(B) but does not exceed 1.5 percent of such average,
- (ii)** 4 percent of so much of such expenses as exceeds 1.5 percent of such average but does not exceed 2 percent of such average, and
- (iii)** 5 percent of so much of such expenses as exceeds 2 percent of such average.

(B) Election

An election under this paragraph shall apply to the taxable year for which made and all succeeding taxable years unless revoked with the consent of the Secretary.

(5) Election of alternative simplified credit

(A) In general

At the election of the taxpayer, the credit determined under subsection (a)(1) shall be equal to 14 percent (12 percent in the case of taxable years ending

before January 1, 2009) of so much of the qualified research expenses for the taxable year as exceeds 50 percent of the average qualified research expenses for the 3 taxable years preceding the taxable year for which the credit is being determined.

(B) Special rule in case of no qualified research expenses in any of 3 preceding taxable years

(i) Taxpayers to which subparagraph applies

The credit under this paragraph shall be determined under this subparagraph if the taxpayer has no qualified research expenses in any one of the 3 taxable years preceding the taxable year for which the credit is being determined.

(ii) Credit rate

The credit determined under this subparagraph shall be equal to 6 percent of the qualified research expenses for the taxable year.

(C) Election

An election under this paragraph shall apply to the taxable year for which made and all succeeding taxable years unless revoked with the consent of the Secretary. An election under this paragraph may not be made for any taxable year to which an election under paragraph (4) applies.

(6) Consistent treatment of expenses required

(A) In general

Notwithstanding whether the period for filing a claim for credit or refund has expired for any taxable year taken into account in determining the fixed-base percentage, the qualified research expenses taken into account in computing such percentage shall be determined on a basis consistent with the determination of qualified research expenses for the credit year.

(B) Prevention of distortions

The Secretary may prescribe regulations to prevent distortions in calculating a taxpayer's qualified research expenses or gross receipts caused by a change in accounting methods used by such taxpayer between the current year and a year taken into account in computing such taxpayer's fixed-base percentage.

(7) Gross receipts

For purposes of this subsection, gross receipts for any taxable year shall be reduced by returns and allowances made during the taxable year. In the case of a foreign corporation, there shall be taken into account only gross receipts which are effectively connected with the conduct of a trade or business within the United States, the Commonwealth of Puerto Rico, or any possession of the United States.

(d) Qualified research defined

For purposes of this section—

(1) In general

The term “qualified research” means research—

- (A)** with respect to which expenditures may be treated as expenses under section 174,
- (B)** which is undertaken for the purpose of discovering information—
 - (i)** which is technological in nature, and
 - (ii)** the application of which is intended to be useful in the development of a new or improved business component of the taxpayer, and
- (C)** substantially all of the activities of which constitute elements of a process of experimentation for a purpose described in paragraph (3).

Such term does not include any activity described in paragraph (4).

(2) Tests to be applied separately to each business component

For purposes of this subsection—

(A) In general

Paragraph (1) shall be applied separately with respect to each business component of the taxpayer.

(B) Business component defined

The term “business component” means any product, process, computer software, technique, formula, or invention which is to be—

- (i)** held for sale, lease, or license, or
- (ii)** used by the taxpayer in a trade or business of the taxpayer.

(C) Special rule for production processes

Any plant process, machinery, or technique for commercial production of a business component shall be treated as a separate business component (and not as part of the business component being produced).

(3) Purposes for which research may qualify for credit

For purposes of paragraph (1)(C)—

(A) In general

Research shall be treated as conducted for a purpose described in this paragraph if it relates to—

- (i) a new or improved function,
- (ii) performance, or
- (iii) reliability or quality.

(B) Certain purposes not qualified

Research shall in no event be treated as conducted for a purpose described in this paragraph if it relates to style, taste, cosmetic, or seasonal design factors.

(4) Activities for which credit not allowed

The term “qualified research” shall not include any of the following:

(A) Research after commercial production

Any research conducted after the beginning of commercial production of the business component.

(B) Adaptation of existing business components

Any research related to the adaptation of an existing business component to a particular customer's requirement or need.

(C) Duplication of existing business component

Any research related to the reproduction of an existing business component (in whole or in part) from a physical examination of the business component itself or from plans, blueprints, detailed specifications, or publicly available information with respect to such business component.

(D) Surveys, studies, etc.

Any—

- (i) efficiency survey,

- (ii) activity relating to management function or technique,
- (iii) market research, testing, or development (including advertising or promotions),
- (iv) routine data collection, or
- (v) routine or ordinary testing or inspection for quality control.

(E) Computer software

Except to the extent provided in regulations, any research with respect to computer software which is developed by (or for the benefit of) the taxpayer primarily for internal use by the taxpayer, other than for use in—

- (i) an activity which constitutes qualified research (determined with regard to this subparagraph), or
- (ii) a production process with respect to which the requirements of paragraph (1) are met.

(F) Foreign research

Any research conducted outside the United States, the Commonwealth of Puerto Rico, or any possession of the United States.

(G) Social sciences, etc.

Any research in the social sciences, arts, or humanities.

(H) Funded research

Any research to the extent funded by any grant, contract, or otherwise by another person (or governmental entity).

(e) Credit allowable with respect to certain payments to qualified organizations for basic research

For purposes of this section—

(1) In general

In the case of any taxpayer who makes basic research payments for any taxable year—

- (A) the amount of basic research payments taken into account under subsection (a)(2) shall be equal to the excess of—
 - (i) such basic research payments, over
 - (ii) the qualified organization base period amount, and

(B) that portion of such basic research payments which does not exceed the qualified organization base period amount shall be treated as contract research expenses for purposes of subsection (a)(1).

(2) Basic research payments defined

For purposes of this subsection—

(A) In general

The term “basic research payment” means, with respect to any taxable year, any amount paid in cash during such taxable year by a corporation to any qualified organization for basic research but only if—

- (i)** such payment is pursuant to a written agreement between such corporation and such qualified organization, and
- (ii)** such basic research is to be performed by such qualified organization.

(B) Exception to requirement that research be performed by the organization

In the case of a qualified organization described in subparagraph (C) or (D) of paragraph (6), clause (ii) of subparagraph (A) shall not apply.

(3) Qualified organization base period amount

For purposes of this subsection, the term “qualified organization base period amount” means an amount equal to the sum of—

- (A)** the minimum basic research amount, plus
- (B)** the maintenance-of-effort amount.

(4) Minimum basic research amount

For purposes of this subsection—

(A) In general

The term “minimum basic research amount” means an amount equal to the greater of—

- (i)** 1 percent of the average of the sum of amounts paid or incurred during the base period for—
 - (I)** any in-house research expenses, and
 - (II)** any contract research expenses, or
- (ii)** the amounts treated as contract research expenses during the base period by reason of this subsection (as in effect during the base period).

(B) Floor amount

Except in the case of a taxpayer which was in existence during a taxable year (other than a short taxable year) in the base period, the minimum basic research amount for any base period shall not be less than 50 percent of the basic research payments for the taxable year for which a determination is being made under this subsection.

(5) Maintenance-of-effort amount

For purposes of this subsection—

(A) In general

The term “maintenance-of-effort amount” means, with respect to any taxable year, an amount equal to the excess (if any) of—

(i) an amount equal to—

(I) the average of the nondesignated university contributions paid by the taxpayer during the base period, multiplied by

(II) the cost-of-living adjustment for the calendar year in which such taxable year begins, over

(ii) the amount of nondesignated university contributions paid by the taxpayer during such taxable year.

(B) Nondesignated university contributions

For purposes of this paragraph, the term “nondesignated university contribution” means any amount paid by a taxpayer to any qualified organization described in paragraph (6)(A)—

(i) for which a deduction was allowable under section 170, and

(ii) which was not taken into account—

(I) in computing the amount of the credit under this section (as in effect during the base period) during any taxable year in the base period, or

(II) as a basic research payment for purposes of this section.

(C) Cost-of-living adjustment defined

(i) In general

The cost-of-living adjustment for any calendar year is the cost-of-living adjustment for such calendar year determined under section 1(f)(3), by

substituting “calendar year 1987” for “calendar year 1992” in subparagraph (B) thereof.

(ii) Special rule where base period ends in a calendar year other than 1983 or 1984

If the base period of any taxpayer does not end in 1983 or 1984, section 1(f)(3)(B) shall, for purposes of this paragraph, be applied by substituting the calendar year in which such base period ends for 1992. Such substitution shall be in lieu of the substitution under clause (i).

(6) Qualified organization

For purposes of this subsection, the term “qualified organization” means any of the following organizations:

(A) Educational institutions

Any educational organization which—

- (i)** is an institution of higher education (within the meaning of section 3304(f)), and
- (ii)** is described in section 170(b)(1)(A)(ii).

(B) Certain scientific research organizations

Any organization not described in subparagraph (A) which—

- (i)** is described in section 501(c)(3) and is exempt from tax under section 501(a),
- (ii)** is organized and operated primarily to conduct scientific research, and
- (iii)** is not a private foundation.

(C) Scientific tax-exempt organizations

Any organization which—

- (i)** is described in—
 - (I)** section 501(c)(3) (other than a private foundation), or
 - (II)** section 501(c)(6),
- (ii)** is exempt from tax under section 501(a),
- (iii)** is organized and operated primarily to promote scientific research by qualified organizations described in subparagraph (A) pursuant to written research agreements, and
- (iv)** currently expends—

(I) substantially all of its funds, or
(II) substantially all of the basic research payments received by it,
for grants to, or contracts for basic research with, an organization described in
subparagraph (A).

(D) Certain grant organizations

Any organization not described in subparagraph (B) or (C) which—

- (i) is described in section 501(c)(3) and is exempt from tax under section 501(a) (other than a private foundation),
- (ii) is established and maintained by an organization established before July 10, 1981, which meets the requirements of clause (i),
- (iii) is organized and operated exclusively for the purpose of making grants to organizations described in subparagraph (A) pursuant to written research agreements for purposes of basic research, and
- (iv) makes an election, revocable only with the consent of the Secretary, to be treated as a private foundation for purposes of this title (other than section 4940, relating to excise tax based on investment income).

(7) Definitions and special rules

For purposes of this subsection—

(A) Basic research

The term “basic research” means any original investigation for the advancement of scientific knowledge not having a specific commercial objective, except that such term shall not include—

- (i) basic research conducted outside of the United States, and
- (ii) basic research in the social sciences, arts, or humanities.

(B) Base period

The term “base period” means the 3-taxable-year period ending with the taxable year immediately preceding the 1st taxable year of the taxpayer beginning after December 31, 1983.

(C) Exclusion from incremental credit calculation

For purposes of determining the amount of credit allowable under subsection (a)(1) for any taxable year, the amount of the basic research payments taken into account under subsection (a)(2)—

- (i) shall not be treated as qualified research expenses under subsection (a)(1)(A), and
- (ii) shall not be included in the computation of base amount under subsection (a)(1)(B).

(D) Trade or business qualification

For purposes of applying subsection (b)(1) to this subsection, any basic research payments shall be treated as an amount paid in carrying on a trade or business of the taxpayer in the taxable year in which it is paid (without regard to the provisions of subsection (b)(3)(B)).

(E) Certain corporations not eligible

The term “corporation” shall not include—

- (i) an S corporation,
- (ii) a personal holding company (as defined in section 542), or
- (iii) a service organization (as defined in section 414(m)(3)).

(f) Special rules

For purposes of this section—

(1) Aggregation of expenditures

(A) Controlled group of corporations

In determining the amount of the credit under this section—

- (i) all members of the same controlled group of corporations shall be treated as a single taxpayer, and
- (ii) the credit (if any) allowable by this section to each such member shall be its proportionate shares of the qualified research expenses, basic research payments, and amounts paid or incurred to energy research consortiums, giving rise to the credit.

(B) Common control

Under regulations prescribed by the Secretary, in determining the amount of the credit under this section—

- (i) all trades or businesses (whether or not incorporated) which are under common control shall be treated as a single taxpayer, and
- (ii) the credit (if any) allowable by this section to each such person shall be its proportionate shares of the qualified research expenses, basic research

payments, and amounts paid or incurred to energy research consortiums, giving rise to the credit.

The regulations prescribed under this subparagraph shall be based on principles similar to the principles which apply in the case of subparagraph (A).

(2) Allocations

(A) Pass-thru in the case of estates and trusts

Under regulations prescribed by the Secretary, rules similar to the rules of subsection (d) of section 52 shall apply.

(B) Allocation in the case of partnerships

In the case of partnerships, the credit shall be allocated among partners under regulations prescribed by the Secretary.

(3) Adjustments for certain acquisitions, etc.

Under regulations prescribed by the Secretary—

(A) Acquisitions

If, after December 31, 1983, a taxpayer acquires the major portion of a trade or business of another person (hereinafter in this paragraph referred to as the “predecessor”) or the major portion of a separate unit of a trade or business of a predecessor, then, for purposes of applying this section for any taxable year ending after such acquisition, the amount of qualified research expenses paid or incurred by the taxpayer during periods before such acquisition shall be increased by so much of such expenses paid or incurred by the predecessor with respect to the acquired trade or business as is attributable to the portion of such trade or business or separate unit acquired by the taxpayer, and the gross receipts of the taxpayer for such periods shall be increased by so much of the gross receipts of such predecessor with respect to the acquired trade or business as is attributable to such portion.

(B) Dispositions

If, after December 31, 1983—

(i) a taxpayer disposes of the major portion of any trade or business or the major portion of a separate unit of a trade or business in a transaction to which subparagraph (A) applies, and

(ii) the taxpayer furnished the acquiring person such information as is necessary for the application of subparagraph (A), then, for purposes of applying this section for any taxable year ending after such disposition, the amount of qualified research expenses paid or incurred by the taxpayer during periods before such disposition shall be decreased by so much of such expenses as is attributable to the portion of such trade or business or separate unit disposed of by the taxpayer, and the gross receipts of the taxpayer for such periods shall be decreased by so much of the gross receipts as is attributable to such portion.

(C) Certain reimbursements taken into account in determining fixed-base percentage

If during any of the 3 taxable years following the taxable year in which a disposition to which subparagraph (B) applies occurs, the disposing taxpayer (or a person with whom the taxpayer is required to aggregate expenditures under paragraph (1)) reimburses the acquiring person (or a person required to so aggregate expenditures with such person) for research on behalf of the taxpayer, then the amount of qualified research expenses of the taxpayer for the taxable years taken into account in computing the fixed-base percentage shall be increased by the lesser of—

- (i) the amount of the decrease under subparagraph (B) which is allocable to taxable years so taken into account, or
- (ii) the product of the number of taxable years so taken into account, multiplied by the amount of the reimbursement described in this subparagraph.

(4) Short taxable years

In the case of any short taxable year, qualified research expenses and gross receipts shall be annualized in such circumstances and under such methods as the Secretary may prescribe by regulation.

(5) Controlled group of corporations

The term “controlled group of corporations” has the same meaning given to such term by section 1563(a), except that—

- (A) “more than 50 percent” shall be substituted for “at least 80 percent” each place it appears in section 1563(a)(1), and

(B) the determination shall be made without regard to subsections (a)(4) and (e)(3)(C) of section 1563.

(6) Energy research consortium

(A) In general

The term “energy research consortium” means any organization—

(i) which is—

(I) described in section 501(c)(3) and is exempt from tax under section 501(a) and is organized and operated primarily to conduct energy research, or

(II) organized and operated primarily to conduct energy research in the public interest (within the meaning of section 501(c)(3)),

(ii) which is not a private foundation,

(iii) to which at least 5 unrelated persons paid or incurred during the calendar year in which the taxable year of the organization begins amounts (including as contributions) to such organization for energy research, and

(iv) to which no single person paid or incurred (including as contributions) during such calendar year an amount equal to more than 50 percent of the total amounts received by such organization during such calendar year for energy research.

(B) Treatment of persons

All persons treated as a single employer under subsection (a) or (b) of section 52 shall be treated as related persons for purposes of subparagraph (A)(iii) and as a single person for purposes of subparagraph (A)(iv).

(C) Foreign research

For purposes of subsection (a)(3), amounts paid or incurred for any energy research conducted outside the United States, the Commonwealth of Puerto Rico, or any possession of the United States shall not be taken into account.

(D) Denial of double benefit

Any amount taken into account under subsection (a)(3) shall not be taken into account under paragraph (1) or (2) of subsection (a).

(E) Energy research

The term “energy research” does not include any research which is not qualified research.

(g) Special rule for pass-thru of credit

In the case of an individual who—

- (1) owns an interest in an unincorporated trade or business,
- (2) is a partner in a partnership,
- (3) is a beneficiary of an estate or trust, or
- (4) is a shareholder in an S corporation,

the amount determined under subsection (a) for any taxable year shall not exceed an amount (separately computed with respect to such person's interest in such trade or business or entity) equal to the amount of tax attributable to that portion of a person's taxable income which is allocable or apportionable to the person's interest in such trade or business or entity. If the amount determined under subsection (a) for any taxable year exceeds the limitation of the preceding sentence, such amount may be carried to other taxable years under the rules of section 39; except that the limitation of the preceding sentence shall be taken into account in lieu of the limitation of section 38(c) in applying section 39.

(h) Termination

(1) In general

This section shall not apply to any amount paid or incurred—

- (A) after June 30, 1995, and before July 1, 1996, or
- (B) after December 31, 2011.

(2) Termination of alternative incremental credit

No election under subsection (c)(4) shall apply to taxable years beginning after December 31, 2008.

(3) Computation for taxable year in which credit terminates

In the case of any taxable year with respect to which this section applies to a number of days which is less than the total number of days in such taxable year—

(A) the amount determined under subsection (c)(1)(B) with respect to such taxable year shall be the amount which bears the same ratio to such amount (determined without regard to this paragraph) as the number of days in such taxable year to which this section applies bears to the total number of days in such taxable year, and

(B) for purposes of subsection (c)(5), the average qualified research expenses for the preceding 3 taxable years shall be the amount which bears the same ratio to such average qualified research expenses (determined without regard to this paragraph) as the number of days in such taxable year to which this section applies bears to the total number of days in such taxable year.

South Africa: *Income Tax Act 1997* (RSA)

No. 58 of 1962 (SARS, 2014)

11D - Deductions in respect of scientific or technological research and development.

(1) For the purposes of this section “research and development” means—

(a) systematic investigative or systematic experimental activities of which the result is uncertain for the purpose of—

(i) discovering non-obvious scientific or technological knowledge; or

(ii) creating—

(aa) an invention as defined in section 2 of the Patents Act, 1978 (Act No. 57 of 1978);

(bb) a design as defined in section 1 of the Designs Act, 1993 (Act No. 195 of 1993), that qualifies for registration under section 14 of that Act;

(cc) a computer program as defined in section 1 of the Copyright Act, 1978 (Act No. 98 of 1978); or

(dd) knowledge essential to the use of such invention, design or computer program; or

(b) developing or significantly improving any invention, design, computer program or knowledge contemplated in paragraph (a) if that development or improvement relates to any—

(i) new or improved function;

(ii) improvement of performance;

(iii) improvement of reliability; or

(iv) improvement of quality,

of that invention, design, computer program or knowledge.

(2) For the purposes of determining the taxable income of a taxpayer in respect of any year of assessment there shall be allowed as a deduction from the income of that taxpayer an amount equal to so much of any expenditure actually incurred by that taxpayer directly and solely in respect of research and development undertaken in the Republic if that expenditure is incurred—

(a) in the production of income; and

(b) in the carrying on of any trade.

(2A)

(3) In addition to the deduction allowable in terms of subsection (2), a taxpayer that is a company may deduct an amount equal to 50 per cent of the expenditure contemplated in subsection (2) if—

(a) that research and development is approved by the Minister of Science and Technology in terms of subsection (9);

(b) that expenditure is incurred in respect of research and development carried on by that taxpayer; and

(c) that expenditure is incurred on or after the date of receipt of the application by the Department of Science and Technology for approval of that research and development in terms of subsection (9).

(4) In addition to the deduction allowable in terms of subsection (2), where any amount of expenditure is incurred by a taxpayer to fund expenditure of another person carrying on research and development on behalf of that taxpayer, the taxpayer may deduct an amount equal to 50 per cent of the expenditure contemplated in subsection (2)—

(a) if that research and development is approved by the Minister of Science and Technology in terms of subsection (9);

(b) if that expenditure is incurred in respect of research and development carried on by that taxpayer;

(c) to the extent that the other person carrying on the research and development is—

(i)(aa) an institution, board or body that is exempt from normal tax under section 10 (1) (cA); or

(bb) the Council for Scientific and Industrial Research; or

(ii) a company forming part of the same group of companies, as defined in section 41, if the company that carries on the research and development does not claim a deduction under subsection (3); and

(d) if that expenditure is incurred on or after the date of receipt of the application by the Department of Science and Technology for approval of that research and development in terms of subsection (9).

(5) Where a company funds expenditure incurred by another company as contemplated in subsection (4) (c) (ii), any deduction under that subsection by the company that funds the expenditure must be limited to an amount of 50 per cent of the actual expenditure incurred directly and solely in respect of that research and development carried on by the other company that is being funded.

(5A)

(5B)

(6) For the purposes of subsections (3) and (4), a person carries on research and development if that person may determine or alter the methodology of the research.

(7) Where any government grant is received by or accrues to a taxpayer to fund expenditure in respect of any research and development, an amount equal to the amount that is funded must not be taken into account for purposes of the deduction under subsection (3) or (4).

(8) No deduction shall be allowed under this section for expenditure incurred in respect of—

(a) market research, market testing or sales promotion;

(b) administration, financing, compliance or similar expenditure;

(c) routine testing, analysis, collection of information or quality control in the normal course of business;

(d) development of internal business processes unless those internal business processes are mainly intended for sale or for granting the use or right of use or the grant of permission to use thereof;

(e) social science research, including the arts and humanities;

(f) oil and gas or mineral exploration or prospecting, except research and development carried on to develop technology used for that exploration or prospecting;

(g) the creation or development of financial instruments or financial products;

(h) the creation or enhancement of trademarks or goodwill; and

(i) any expenditure contemplated in section 11 (gB) or (gC).

(9) The Minister of Science and Technology must approve any research and development being carried on or funded for the purposes of subsections (3) and (4) having regard to—

(a) the innovative nature of the research and development;

(b) the extent to which carrying on that research and development requires specialised skills; and

(c) such other criteria as the Minister of Science and Technology in consultation with the Minister of Finance may prescribe by regulation.

(10) If research and development is approved under subsection (9) and—

(a) any material fact changes which would have had the effect that approval under subsection (9) would not have been granted had that fact been known to the Minister of Science and Technology at the time of granting approval; or

(b) the taxpayer carrying on that research and development fails to submit a report to the committee as required by subsection (13),

the Minister of Science and Technology may, after taking into account the recommendations of the committee, withdraw the approval granted in respect of that research and development with effect from a date specified by that Minister.

(11) (a) A committee must be appointed for the purposes of approving research and development under subsection (9) consisting of—

(i) three persons employed by the Department of Science and Technology, appointed by the Minister of Science and Technology;

(ii) one person employed by the National Treasury, appointed by the Minister of Finance; and

(iii) three persons from the South African Revenue Service, appointed by the Minister of Finance.

(b) The Minister of Science and Technology or the Minister of Finance may appoint alternative persons to the committee if a person appointed in terms of paragraph (a) is not available to perform any function as a member of the committee.

(12) (a) The committee appointed in terms of subsection (11) must perform its functions impartially and without fear, favour or prejudice.

(b) The committee may—

(i) appoint its own chairperson and determine the procedures for its meetings;

(ii) evaluate any application and make recommendations to the Minister of Science and Technology for purposes of the approval of research and development in terms of subsection (9);

(iii) investigate or cause to be investigated research and development approved under subsection (9);

(iv) monitor all research and development approved under subsection (9)—

(aa) to determine whether the objectives of this section are being achieved; and

(bb) to advise the Minister of Finance and the Minister of Science and Technology on any future proposed amendment or adjustment of this section;

(v) for a specific purpose and on the conditions and for the period as it may determine, obtain the assistance of any person to advise the committee relating to any function assigned to that committee in terms of this section; and

(vi) require any taxpayer applying for approval of research and development in terms of subsection (9), to furnish any information or documents necessary for the Minister of Science and Technology and the committee to perform their functions in terms of this section.

(13) A taxpayer carrying on research and development approved under subsection (9) must report to the committee annually with respect to the progress of that research and development within 12 months after the close of each year of assessment, starting with the year following the year in which approval is granted under subsection (9) in the form and in the manner that the Minister of Science and Technology may prescribe.

(14) Notwithstanding Chapter 6 of the Tax Administration Act, the Commissioner may disclose to the Minister of Science and Technology information in relation to research and development as may be required by that Minister for the purposes of submitting a report to Parliament in terms of subsection (17).

(15) The members of the committee appointed in terms of subsection (11) and any person whose assistance has been obtained by that committee may not—

(a) act in any way that is inconsistent with the provisions of subsection (12) (a) or expose themselves to any situation involving the risk of a conflict between their responsibilities and private interests; or

(b) use their position or any information entrusted to them to enrich themselves or improperly benefit any other person.

(16) The Minister of Science and Technology must—

(a) provide written reasons for any decision to grant or deny any application for approval of any research and development under subsection (9), or for any withdrawal of approval contemplated in subsection (10);

(b) inform the Commissioner of the approval of any research and development under subsection (9), setting out such particulars as are required by the Commissioner to determine the amount of the additional deduction in terms of subsection (3) or (4); and

(c) inform the Commissioner of any withdrawal of approval in terms of subsection (10) and of the date on which that withdrawal takes effect.

(17) The Minister of Science and Technology must annually submit a report to Parliament advising Parliament of the direct benefits of the research and development in terms of economic growth, employment and other broader government objectives and the aggregate expenditure in respect of such activities without disclosing the identity of any person.

(18) Every employee of the Department of Science and Technology, every member of the committee appointed in terms of subsection (11) and any person whose assistance has been obtained by that committee—

(a) must preserve and aid in preserving secrecy with regard to all matters that may come to their knowledge in the performance of their functions in terms of this section; and

(b) and may not communicate any such matter to any person whatsoever other than to the taxpayer concerned or its legal representative, nor allow any such person to have access to any records in the possession or custody of the Department of Science and Technology or committee, except in terms of the law or an order of court.

(19) The Commissioner may, notwithstanding the provisions of sections 99 and 100 of the Tax Administration Act, raise an additional assessment for any year of assessment with respect to a deduction in respect of research and development which has been allowed, where approval has been withdrawn in terms of subsection (10).

Australia: *Income Tax Assessment Act 1997 (Cth)*

No. 38, 1997 as amended

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Division 355—Research and Development

Table of Subdivisions

Guide to Division 355

355-A Object

355-B Meaning of R&D activities and other terms

355-C Entitlement to tax offset

355-D Notional deductions for R&D expenditure

355-E Notional deductions for decline in value of depreciating assets used for R&D activities

355-F Integrity Rules

355-G Clawback of R&D recoupments

355-H Feedstock adjustments

355-I Application to earlier income year R&D expenditure incurred to associates

355-J Application to R&D partnerships

355-K Application to Cooperative Research Centres

355-W Other matters

Guide to Division 355

355-1 What this Division is about

An R&D entity may be entitled to a tax offset for R&D activities. The tax offset may be a refundable tax offset if the R&D entity's aggregated turnover is less than \$20 million. To be entitled to the tax offset, the R&D entity needs one or more notional deductions under this Division.

There are 2 main kinds of notional deductions. One is for expenditure on R&D activities. The other is for the decline in value of tangible depreciating assets used for R&D activities.

Note: All of these notional deductions require the R&D entity to be registered for the R&D activities under Part III of the Industry Research and Development Act 1986.

Subdivision 355-A—Object

Table of sections

355-5 Object

355-5 Object

(1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy.

(2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).

Subdivision 355-B—Meaning of R&D activities and other terms

Table of sections

355-20 R&D activities

355-25 Core R&D activities

355-30 Supporting R&D activities

355-35 R&D entities

355-20 R&D activities

R&D activities are *core R&D activities or *supporting R&D activities.

355-25 Core R&D activities

(1) Core R&D activities are experimental activities:

(a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that:

(i) is based on principles of established science; and

(ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and

(b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).

(2) However, none of the following activities are core R&D activities:

(a) market research, market testing or market development, or sales promotion (including consumer surveys);

(b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:

(i) discovering deposits;

(ii) determining more precisely the location of deposits;

(iii) determining the size or quality of deposits;

(c) management studies or efficiency surveys;

(d) research in social sciences, arts or humanities;

(e) commercial, legal and administrative aspects of patenting, licensing or other activities;

(f) activities associated with complying with statutory requirements or standards, including one or more of the following:

(i) maintaining national standards;

(ii) calibrating secondary standards;

(iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things;

(g) any activity related to the reproduction of a commercial product or process:

(i) by a physical examination of an existing system; or

(ii) from plans, blueprints, detailed specifications or publically available information;

(h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):

(i) the entity (the developer) for which the software is developed, modified or customised;

(ii) an entity *connected with the developer;

(iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.

355-30 Supporting R&D activities

(1) Supporting R&D activities are activities directly related to *core R&D activities.

(2) However, if an activity:

- (a) is an activity referred to in subsection 355-25(2); or
- (b) produces goods or services; or
- (c) is directly related to producing goods or services;

the activity is a supporting R&D activity only if it is undertaken for the dominant purpose of supporting *core R&D activities.

355-35 R&D entities

(1) Each of the following is an R&D entity:

- (a) a body corporate incorporated under an *Australian law;
- (b) a body corporate incorporated under a *foreign law that is an Australian resident.

Note: Each of the above paragraphs extends to a body corporate acting in its capacity as trustee of a public trading trust (see subsection 102T(9) of the Income Tax Assessment Act 1936).

(2) A body corporate incorporated under a *foreign law that:

- (a) is a resident of a foreign country for the purposes of an agreement in force between that country and Australia that:
 - (i) is a double tax agreement (as defined in Part X of the Income Tax Assessment Act 1936); and
 - (ii) includes a definition of permanent establishment; and
- (b) carries on business in Australia through a permanent establishment (within the meaning of that definition) of the body corporate in Australia; is an R&D entity to the extent that it carries on business through that permanent establishment.

(3) However, an *exempt entity cannot be an R&D entity.

Subdivision 355-C—Entitlement to tax offset

Table of sections

355-100 Entitlement to tax offset

355-105 Deductions under this Division are notional only

355-110 Notional deductions include prepaid expenditure

355-100 Entitlement to tax offset

If notional deductions are at least \$20,000

(1) An *R&D entity is entitled to a *tax offset for an income year equal to the percentage, set out in the table, of the total of the amounts (if any) that the entity can deduct for the income year under any or all of the following provisions:

- (a) section 355-205 (R&D expenditure);
- (b) section 355-305 (decline in value of R&D assets);
- (c) section 355-315 (balancing adjustment for R&D assets);
- (d) section 355-480 (earlier year associate R&D expenditure);
- (e) section 355-520 (decline in value of R&D partnership assets);
- (f) section 355-525 (balancing adjustment for R&D partnership assets);
- (g) section 355-580 (CRC contributions).

Rate of R&D tax offset		
Item	In this case:	The percentage is:
1	the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%
2	at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored	40%
3	any other case	40%

Note: The tax offset will be a refundable tax offset if the percentage applicable to the entity is 45% (see section 67-30).

If notional deductions are less than \$20,000

(2) However, if the total of those amounts is less than \$20,000, the *R&D entity is instead entitled to a *tax offset for the income year equal to that percentage of the total of the following kinds of expenditure (if any):

Expenditure not subject to \$20,000 threshold	
Item	Kind of expenditure
1	Expenditure: (a) that the *R&D entity can deduct under section 355-205 (R&D expenditure) for the income year; and (b) that was incurred to a research service provider (within the meaning of the Industry Research and Development Act 1986) that is not an *associate of the R&D entity or of the relevant *R&D partnership (as appropriate); and (c) that was for the provider to provide services, within a research

Expenditure not subject to \$20,000 threshold	
Item	Kind of expenditure
	field for which the provider is registered under Division 4 of Part III of that Act, applicable to one or more of the *R&D activities to which the deduction relates
2	Expenditure that the *R&D entity can deduct under section 355-580 (CRC contributions) for the income year

355-105 Deductions under this Division are notional only

An amount (the notional amount) that an *R&D entity can deduct under this Division is disregarded except for the purposes of:

- (a) working out whether the R&D entity is entitled under section 355-100 to a *tax offset; and
- (b) a provision (of this Act or any other Act) that refers to an entitlement of the R&D entity under section 355-100 to a tax offset; and
- (c) a provision (of this Act or any other Act) that:
 - (i) prevents some or all of the notional amount from being deducted; or
 - (ii) changes the income year for which some or all of the notional amount can be deducted; and

Note: Examples are Divisions 26 and 27 of this Act, Subdivision H of Division 3 of Part III of the Income Tax Assessment Act 1936 and Part IVA of that Act.

- (d) a provision (of this Act or any other Act) that includes an amount in assessable income wholly or partly because of the notional amount; and

Note: An example is Subdivision 20-A, which may include in assessable income a recoupment of a loss or outgoing if the entity can deduct an amount for the loss or outgoing.

- (e) a provision (of this Act or any other Act) that excludes expenditure from:
 - (i) the *cost base or *reduced cost base of a *CGT asset; or
 - (ii) an element of that cost base or reduced cost base.

Note: An example is section 110-45, which may exclude deductible expenditure from elements of the cost base of an asset.

355-110 Notional deductions include prepaid expenditure

For the purposes of this Division, if:

- (a) apart from Subdivision H (prepaid expenditure) of Division 3 of Part III of the Income Tax Assessment Act 1936, an *R&D entity can deduct an amount under

section 355-205 or 355-480 for an income year (the present year) or an earlier income year; and

(b) that Subdivision applies to the calculation of that amount; and

(c) the entity can deduct an amount, as a result of that application of that Subdivision, for the present year; the entity is taken to be able to deduct under section 355-205 or 355-480 (as appropriate) the amount referred to in paragraph (c) for the present year.

Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.

Subdivision 355-D—Notional deductions for R&D expenditure

Table of sections

355-200 What this Subdivision is about

355-205 When notional deductions for R&D expenditure arise

355-210 Conditions for R&D activities

355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate

355-220 R&D activities conducted for a foreign entity

355-225 Expenditure that cannot be notionally deducted

355-200 What this Subdivision is about

An R&D entity can notionally deduct its expenditure on registered R&D activities for which certain conditions are met.

There are special conditions for R&D activities conducted for foreign residents.

355-205 When notional deductions for R&D expenditure arise

(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurs during that year to the extent that the expenditure:

(a) is incurred on one or more *R&D activities:

(i) for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and

(ii) that are activities to which section 355-210 (conditions for R&D activities) applies; and

(b) if the expenditure is incurred to the R&D entity's *associate—is paid to that associate during the present year.

Note 1: If the matters in subparagraphs (a)(i) and (ii) are not satisfied until a later income year, the R&D entity will need to wait until then before it can deduct the expenditure for the present year.

Note 2: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).

Note 3: The entity may also be able to deduct expenditure incurred to an associate in an earlier income year (see section 355-480).

Note 4: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).

355-210 Conditions for R&D activities

(1) An *R&D activity covered by one or more of the following paragraphs is an activity to which this section applies:

(a) the R&D activity is conducted for the *R&D entity solely within Australia or an external Territory;

(b) if the R&D entity is a body corporate carrying on business through a permanent establishment (as described in subsection 355-35(2))—the R&D activity is conducted:

(i) for the body corporate; but

(ii) not for the purposes of that permanent establishment; and the conditions in section 355-215 (activities conducted for a body corporate by its permanent establishment) are met for the R&D activity;

(c) the R&D activity is conducted for one or more foreign residents who are each:

(i) incorporated under a *foreign law; and

(ii) a resident of a foreign country for the purposes of an agreement of a kind described in subsection 355-35(2); and the conditions in section 355-220 (activities conducted for a foreign entity) are met for the R&D activity;

(d) the R&D activity is:

(i) conducted for the R&D entity solely outside Australia and the external Territories; and

(ii) covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986;

(e) the R&D activity consists of several parts, with:

(i) some parts being conducted for the R&D entity solely within Australia or an external Territory; and

(ii) the other parts being conducted for the R&D entity outside Australia and the external Territories while covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986.

Note: An activity can be covered by a finding under paragraph 28C(1)(a) of the Industry Research and Development Act 1986 if the activity cannot be conducted in Australia or the external Territories.

(2) However, an *R&D activity is not an activity to which this section applies if the activity is conducted, to a significant extent, for one or more other entities not covered by any paragraph of subsection (1).

Note: An entity would not be covered by, for example, paragraph (1)(c) if the conditions in section 355-220 were not met for the R&D activity in relation to that entity.

355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate

For the purposes of paragraph 355-210(1)(b), the conditions for an *R&D activity are as follows:

(a) the R&D activity is conducted solely within Australia or an external Territory;

(b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:

(i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and

(ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;

(c) there is written evidence that the R&D activity is conducted for the body corporate but not for the purposes of that permanent establishment.

Note: The body corporate is the R&D entity to the extent that it carries on business through that permanent establishment (see subsection 355-35(2)).

355-220 R&D activities conducted for a foreign entity

(1) For the purposes of paragraph 355-210(1)(c), the conditions for an *R&D activity conducted for one or more foreign residents are as follows:

- (a) the R&D activity is conducted solely within Australia or an external Territory;
- (b) if the R&D activity is a *supporting R&D activity, each corresponding *core R&D activity must be:
 - (i) an activity conducted, or to be conducted, solely within Australia or an external Territory; and
 - (ii) an activity for which the *R&D entity is or has been registered under section 27A of the Industry Research and Development Act 1986, or could be registered for an income year if that core R&D activity were conducted during the income year;
- (c) when the R&D activity is conducted:
 - (i) each foreign resident is *connected with the R&D entity; or
 - (ii) for each foreign resident—either the foreign resident is an *affiliate of the R&D entity or the R&D entity is an affiliate of the foreign resident;
- (d) the R&D activity is conducted:
 - (i) in accordance with a written agreement binding on only the R&D entity and each foreign resident; and
 - (ii) either directly by the R&D entity, or indirectly by another entity under an agreement binding on the R&D entity;
- (e) the R&D activity is not conducted in connection with an agreement covered by subsection (2).

Note: An example of conducting an R&D activity indirectly under a contract is conducting the R&D activity under a subcontract, or one of a chain of subcontracts, under the contract.

(2) An agreement is covered by this subsection if:

- (a) the agreement is binding on the R&D entity (the first entity) and an R&D entity that:
 - (i) is *connected with the first entity; or
 - (ii) has the first entity as an *affiliate, or is an affiliate of the first entity; while the *R&D activity is conducted; and
- (b) the R&D activity is to be conducted under the agreement by the first entity or by an entity:
 - (i) who is not bound by the agreement; and
 - (ii) who is to conduct the R&D activity directly or indirectly under another agreement to which the first entity is, or will become, bound.

Note: One effect of this subsection is that, even if the R&D entity has an agreement with the foreign resident for conducting the R&D activity, the R&D entity cannot deduct expenditure incurred:

- (a) for conducting the R&D activity as a subcontractor under a subcontract with an affiliated R&D entity; or
- (b) if the R&D entity is a subcontractor to an affiliated R&D entity—for further subcontracting the conducting of the R&D activity.

355-225 Expenditure that cannot be notionally deducted

Expenditure on buildings, certain assets and interest

(1) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to the following expenditure:

- (a)** expenditure incurred to acquire or construct:
 - (i)** a building or a part of a building; or
 - (ii)** an extension, alteration or improvement to a building;
- (b)** expenditure included in the *cost of a tangible *depreciating asset for the purposes of Division 40 (as that Division applies as described in section 355-310 or otherwise);
- (c)** expenditure incurred for interest (within the meaning of Division 11A of Part III of the Income Tax Assessment Act 1936) payable to an entity.

Note 1: Expenditure covered by paragraph (a) may be deductible under Division 43 (capital works).

Note 2: The decline in value of an asset covered by paragraph (b) may be notionally deductible under section 355-305.

Note 3: Expenditure covered by paragraph (c) may be deductible under section 8-1.
Expenditure on core technology

(2) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to expenditure incurred in acquiring, or in acquiring the right to use, technology wholly or partly for the purposes of one or more *R&D activities if:

- (a)** a purpose of the R&D activities was or is:
 - (i)** to obtain new knowledge based on that technology; or
 - (ii)** to create new or improved materials, products, devices, processes, techniques or services to be based on that technology; or
- (b)** the R&D activities were or are an extension, continuation, development or completion of the activities that produced that technology.

Subdivision 355-E—Notional deductions for decline in value of depreciating assets used for R&D activities

Table of sections

355-300 What this Subdivision is about

355-305 When notional deductions for decline in value arise

355-310 Notional application of Division 40

355-315 Balancing adjustments—assets only used for R&D activities

355-300 What this Subdivision is about

An R&D entity can notionally deduct the decline in value of a tangible depreciating asset used for R&D activities. If a balancing adjustment event later happens for the asset, the R&D entity may be able to notionally deduct a further amount. Alternatively, an amount may be included in the R&D entity's assessable income.

355-305 When notional deductions for decline in value arise

(1) If:

(a) an *R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year (the present year) for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and

(b) while a tangible *depreciating asset is *held by the R&D entity during the present year, the asset is used for the purpose of conducting one or more of those R&D activities; and

(c) the R&D entity could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and

(d) the R&D entity cannot deduct an amount for the asset for:

(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or

(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied;

the R&D entity can deduct the amount referred to in paragraph (c) for the present year.

(2) This section has effect subject to subsection 355-580(4) (CRC contributions).

355-310 Notional application of Division 40

(1) In addition to its application apart from this section, Division 40 also applies with the changes set out in this section for the purposes of:

- (a) paragraph 355-225(1)(b) (excluded expenditure); and
- (b) paragraph 355-305(1)(c); and
- (c) section 355-315 (balancing adjustments).

(2) Firstly, substitute the following for references to a *taxable purpose in Subdivisions 40-A to 40-D (other than for the purposes of sections 40-100, 40-105 and 40-110):

Replacing references to a taxable purpose		
Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:
1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)
2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate

Note: Sections 40-100, 40-105 and 40-110 are about working out an asset's effective life. Those sections already refer to the use of the asset for R&D activities.

(3) Secondly, assume that Division 40 does not apply to a building, nor to an extension, alteration or improvement to a building, (the building works) for which the *R&D entity:

- (a) can deduct amounts under Division 43 (capital works); or
- (b) could deduct amounts under Division 43:
 - (i) apart from expenditure being incurred, or the building works being started, before a particular day; or
 - (ii) had the R&D entity used the building works for a purpose relevant to those building works under section 43-140 (using an area in a deductible way).

(4) Finally, assume that the following provisions had not been enacted:

- (a) subsection 40-25(7) (meaning of taxable purpose);
- (b) subsection 40-45(2) (assets to which Division 40 does not apply);
- (c) section 40-425 (low-value pools);
- (d) Subdivision 328-D (capital allowances for small business entities).

Note: Subsection (3) and paragraph (4)(b) mean that deductions under section 355-305 may be available for capital works other than building works.

355-315 Balancing adjustments—assets only used for R&D activities

(1) This section applies to an *R&D entity if:

- (a)** a *balancing adjustment event happens in an income year (the event year) for an asset *held by the R&D entity; and
- (b)** the R&D entity cannot deduct an amount under section 40-25, as that section applies apart from:
 - (i)** this Division; and
 - (ii)** former section 73BC of the Income Tax Assessment Act 1936; for the asset for an income year; and
- (c)** the R&D entity is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-305 for the asset; and
- (d)** the entity is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and
- (e)** if Division 40 applied with the changes described in section 355-310:
 - (i)** the entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or
 - (ii)** an amount would be included in the entity's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.

Note 1: This section applies in a modified way if the entity also has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-320 of the Income Tax (Transitional Provisions) Act 1997).

Note 2: Section 40-292 applies if the entity can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.

Notional deduction

(2) If the *R&D entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the R&D entity can deduct that amount for the event year.

Amount to be included in assessable income

(3) If an amount (the section 40-285 amount) would be included in the *R&D entity's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the sum of that amount and

the following amount is included in the R&D entity's assessable income for the event year:

$$\text{Adjusted section 40-285 amount} \times \frac{1}{3}$$

where:

adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.

total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).

Subdivision 355-F—Integrity Rules

Table of sections

355-400 Expenditure incurred while not at arm's length

355-405 Expenditure not at risk

355-410 Disposal of R&D results

355-415 Reducing deductions to reflect mark-ups within groups

355-400 Expenditure incurred while not at arm's length

If:

- (a) an *R&D entity incurs expenditure to another entity on all or part of an *R&D activity; and
- (b) either:
 - (i) when the R&D entity incurs the expenditure, the R&D entity and the other entity do not deal with each other at *arm's length; or
 - (ii) the other entity is the R&D entity's *associate; and
- (c) the expenditure exceeds the *market value of the relevant R&D activity or part (as appropriate); for the purposes of this Division, the R&D entity is treated as if the amount of expenditure it incurred on the relevant R&D activity or part (as appropriate) were equal to that market value.

Note: For the purposes of a deduction under section 355-305 or 355-520 for an asset's decline in value, the arms' length rules in Division 40 apply as part of the notional application of that Division under that section.

355-405 Expenditure not at risk

(1) An *R&D entity cannot deduct expenditure under section 355-205 or 355-480 if:

(a) when it incurs the expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:

- (i) as a direct or indirect result of the expenditure being incurred; and
 - (ii) regardless of the results of the activities on which the expenditure is incurred;
- and

(b) that consideration is equal to or greater than the expenditure.

Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.

(2) If:

(a) when an *R&D entity incurs expenditure, the R&D entity or its *associate had received, or could reasonably be expected to receive, consideration:

- (i) as a direct or indirect result of the expenditure being incurred; and
 - (ii) regardless of the results of the activities on which the expenditure is incurred;
- and

(b) that consideration is less than the expenditure;

the R&D entity cannot deduct under section 355-205 or 355-480 so much of the expenditure as is equal to the consideration.

(3) For the purposes of paragraphs (1)(a) and (2)(a), have regard to:

(a) anything that happened or existed before or at the time the expenditure is incurred; and

(b) anything that is likely to happen or exist after that time.

(4) This section does not apply to expenditure incurred on *R&D activities covered by paragraph 355-210(1)(b) or (c).

Note: Those paragraphs cover R&D activities conducted for foreign residents.

355-410 Disposal of R&D results

(1) This section applies to an *R&D entity if:

(a) the R&D entity is entitled under section 355-100 to a *tax offset because it can:

(i) deduct under section 355-205 or 355-480 expenditure incurred on *R&D activities; or

(ii) deduct under section 355-305 or 355-520 an amount for an asset (the R&D asset) used for the purpose of conducting one or more R&D activities; and

(b) the R&D entity receives or becomes entitled to receive one or more of the following amounts (the results amounts) in an income year (the results year):

- (i) an amount for the results of any of the R&D activities;

- (ii) an amount from granting access to, or the right to use, any of those results;
- (iii) an amount attributable to the R&D entity having incurred the expenditure, including an amount it is entitled to receive regardless of the results of the R&D activities;
- (iv) an amount attributable to the R&D asset being used for the purpose mentioned in subparagraph (a)(ii), including an amount the R&D entity is entitled to receive regardless of the results of the R&D activities;
- (v) an amount from *disposing of a *CGT asset, or from granting a right to occupy or use a CGT asset, where the disposal or grant resulted in another person acquiring a right to access or use any of those results.

Note: This section also applies with changes to the partners of an R&D partnership (see section 355-535).

(2) For each results amount, the following amount is included in the *R&D entity's assessable income for the results year:

- (a) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is a *depreciating asset—an amount equal to the extent (if any) that the results amount exceeds the asset's *cost just before the disposal or grant;
- (b) if the results amount is only a results amount because of subparagraph (1)(b)(v), and the asset referred to in that subparagraph is not a depreciating asset—an amount equal to the extent (if any) that the results amount exceeds the asset's *cost base just before the disposal or grant;
- (c) otherwise—the results amount.

(3) For the purposes of paragraph (2)(a), assume that subsection 40-45(2) did not, except in the case of buildings and extensions, alterations and improvements to buildings, prevent Division 40 from applying to certain capital works.

355-415 Reducing deductions to reflect mark-ups within groups

(1) This section applies to an *R&D entity if:

- (a) the R&D entity can deduct an amount under section 355-205 or 355-480 for an income year for one or more *R&D activities; and
- (b) one or more other entities (the grouped entities) incurred expenditure during the income year, or an earlier income year, on one or more of those *R&D activities; and
- (c) when each grouped entity incurred the expenditure:
 - (i) the grouped entity was *connected with the R&D entity; or

(ii) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.

Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.

(2) Reducing deductions by group mark-ups The amount the *R&D entity can deduct, apart from this section, under section 355-205 or 355-480 for the income year is reduced by the amount (the reduction amount) worked out as follows:

Method statement

Step 1. For each grouped entity, work out the sum of the amounts derived during the income year, or an earlier income year, by the grouped entity for goods or services relating to one or more of the *R&D activities while:

- (a) the grouped entity was *connected with the *R&D entity; or
- (b) the grouped entity was an *affiliate of the R&D entity or the R&D entity was an affiliate of the grouped entity.

Step 2. From the sum of those amounts, subtract the actual cost to each grouped entity of providing the goods or services that correspond to those amounts.

(3) If R&D entity has deductions for both R&D expenditure and earlier year associate R&D expenditure. However, if the *R&D entity can deduct amounts under both sections 355-205 and 355-480 for the income year, those amounts are reduced as follows:

- (a) apply the reduction amount to reduce the amount otherwise deductible under section 355-205 (but not below zero); and
- (b) then apply any remainder of the reduction amount to reduce the amount otherwise deductible under section 355-480 (but not below zero).

(4) Disregard mark-ups already taken into account For the purposes of step 1 of the method statement in subsection (2), disregard any of the amounts from that step that have already been taken into account under this section for the *R&D entity and the *R&D activities for an earlier income year.

Subdivision 355-G—Clawback of R&D recoupments

Table of sections

355-430 What this Subdivision is about

355-435 When extra income tax is payable

355-440 Entity receives government recoupment

355-445 Recoupment could relate to R&D activities

355-450 Amount on which extra income tax is payable

355-430 What this Subdivision is about

An entity must pay extra income tax on its recoupments from government of expenditure on R&D activities for which it has obtained tax offsets under this Division.

355-435 When extra income tax is payable

An entity must pay extra income tax on a *recoupment if the conditions in sections 355-440 and 355-445 are met for the recoupment.

Note 1: Section 355-450 sets out how much of the recoupment is subject to extra income tax.

Note 2: A recoupment includes a grant (see subsection 20-25(1)).

355-440 Entity receives government recoupment

The condition in this section is met if the entity receives or becomes entitled to receive the *recoupment from:

- (a) an *Australian government agency; or
- (b) an STB (within the meaning of Division 1AB of Part III of the Income Tax Assessment Act 1936); otherwise than under the *CRC program.

355-445 Recoupment could relate to R&D activities

The condition in this section is met if:

- (a) the *recoupment is received, or the entitlement to receive the recoupment arises, during an income year (the trigger year); and
- (b) either:
 - (i) the recoupment is of expenditure incurred on or in relation to certain activities; or
 - (ii) the recoupment requires expenditure (the project expenditure) to have been incurred, or to be incurred, on certain activities.

Note: Paragraph (b) includes expenditure incurred in purchasing a tangible depreciating asset to be used when conducting R&D activities.

355-450 Amount on which extra income tax is payable

Amount on which extra income tax is payable

(1) The extra income tax is payable for the trigger year on an amount (the R&D expenditure) equal to the sum of:

(a) so much of the expenditure referred to in section 355-445 that is deducted under this Division; and

(b) for each asset (if any) for which expenditure referred to in section 355-445 is included in the asset's *cost—each amount (if any) equal to the asset's decline in value that is deducted under this Division; in working out *tax offsets under section 355-100 obtained by the entity (the recipient), or an entity mentioned in subsection (4), for one or more income years.

Note 1: Section 12B or 31 of the Income Tax Rates Act 1986 sets the rate at which the entity must pay extra income tax on this amount.

Note 2: Paragraphs (a) and (b) of this subsection refer to amounts notionally deducted under this Division (see section 355-105).

Amount is reduced by any repayments of the recoupment

(2) For the purposes of subsection (1), reduce the expenditure referred to in subparagraph 355-445(b)(i) by any repayments of the *recoupment during an income year.

Cap on extra income tax if recoupment relates to a project

(3) Despite subsection (1), if the *recoupment is covered by subparagraph 355-445(b)(ii), the amount of extra income tax payable for the trigger year on the recoupment cannot exceed the following amount:

$$\text{Net amount of the recoupment} \times \frac{\text{R\&D expenditure}}{\text{Project expenditure}}$$

where:

net amount of the recoupment means the total amount of the *recoupment, less any repayments of the recoupment during an income year.

Related entities

(4) The other entities for the purposes of subsection (1) are as follows:

(a) an entity *connected with the recipient;

(b) an *affiliate of the recipient or an entity of which the recipient is an affiliate.

Subdivision 355-H—Feedstock adjustments

Table of sections

355-460 What this Subdivision is about

355-465 Feedstock adjustment to assessable income

355-470 Feedstock revenue

355-475 Application to connected entities and affiliates

355-460 What this Subdivision is about

An amount is included in an R&D entity's assessable income if it can deduct under this Division expenditure on goods, materials or energy used during R&D activities to produce:

- (a) marketable products; or
- (b) products applied to the R&D entity's own use.

355-465 Feedstock adjustment to assessable income

(1) This section applies to an *R&D entity for an income year (the present year) if:

(a) it incurs expenditure in one or more income years in acquiring or producing goods, or materials, (the feedstock inputs) transformed or processed during *R&D activities in producing one or more tangible products (the feedstock outputs); and

(b) it obtains under section 355-100 *tax offsets for one or more income years for deductions under this Division:

(i) for the expenditure; or

(ii) for expenditure it incurs on any energy input directly into the transformation or processing; or

(iii) for the decline in value of assets used in acquiring or producing the feedstock inputs; and

(c) during the present year, a feedstock output, or a transformed feedstock output, (the marketable product) is:

(i) *supplied by the R&D entity to another entity; or

(ii) applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.

(2) The *R&D entity's assessable income for the present year includes an amount equal to 1/3 of the lesser of:

(a) the *feedstock revenue for the feedstock output; and

(b) so much of the total of the amounts deducted as described in paragraph (1)(b) that is reasonably attributable to the production of the feedstock output.

Note: This subsection applies separately for each of the feedstock outputs.

(3) Subsection (2) does not apply to the feedstock output if:

(a) it becomes, or is transformed into, a feedstock input; or

(b) that subsection already applies to the feedstock output because of the application of paragraph (1)(c) to:

(i) an earlier time during the present year; or

(ii) an earlier income year.

355-470 Feedstock revenue

The feedstock revenue, for the feedstock output, is worked out as follows:

$$\frac{\text{*Market value of the marketable product}}{\text{Cost of producing the marketable product}} \times \frac{\text{Cost of producing the feedstock output}}{\text{Cost of producing the marketable product}}$$

where:

market value of the marketable product means the marketable product's *market value at the time it is:

(a) *supplied by the *R&D entity to the other entity; or

(b) first applied by the R&D entity to the R&D entity's own use, other than use for the purpose of transforming that product for supply.

355-475 Application to connected entities and affiliates

This Subdivision applies to a *supply or use of the marketable product by:

(a) an entity *connected with the *R&D entity; or

(b) an *affiliate of the R&D entity or an entity of which the R&D entity is an affiliate; as if it were by the R&D entity.

Subdivision 355-I—Application to earlier income year R&D expenditure incurred to associates

Table of sections

355-480 Notional deductions for expenditure incurred to associate in earlier income years

355-480 Notional deductions for expenditure incurred to associate in earlier income years

Notional deductions for earlier year associate expenditure

(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurred to its *associate during an earlier income year to the extent that:

- (a)** the expenditure was incurred on one or more *R&D activities:
 - (i)** for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and
 - (ii)** that are activities to which section 355-210 (conditions for R&D activities) applies; and
- (b)** the expenditure is paid to that associate during the present year; and
- (c)** subsection (2) applies to the expenditure.

Note 1: This section applies in a modified way to R&D partnership expenditure (see sections 355-510 and 355-515).

Note 2: Expenditure paid in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) Expenditure cannot have been otherwise deducted etc. This subsection applies to the expenditure if:

- (a)** the *R&D entity can deduct the expenditure, or is entitled to a *tax offset for the expenditure, under any other Division of this Act for an earlier income year; and
- (b)** by the time of lodging its *income tax return for the most recent income year before the present year, the R&D entity had neither:

- (i)** deducted the expenditure; nor
- (ii)** obtained a tax offset for the expenditure;

as described in paragraph (a).

(3) The entitlement to the deduction, or *tax offset, described in paragraph (2)(a) ceases to the extent that subsection (2) applies to the expenditure.

Example: If, by the time mentioned in paragraph (2)(b), an R&D entity chose to deduct only a third of the expenditure it could have deducted under another Division, then the remaining 2 thirds of that expenditure:

- (a)** can be deducted under this section; but
- (b)** can no longer be deducted under the other Division.

(4) Notional deduction is subject to integrity rules etc. This section has effect subject to section 355-225 (excluded expenditure), Subdivision 355-F (integrity rules) and subsection 355-580(3) (CRC contributions).

Subdivision 355-J—Application to R&D partnerships

Table of sections

355-500 What this Subdivision is about

355-505 Meaning of R&D partnership and partner's proportion

355-510 R&D partnership expenditure on R&D activities

355-515 R&D activities conducted by or for an R&D partnership

355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships

355-525 Balancing adjustments for R&D partnership assets only used for R&D activities

355-530 Implications for partner's aggregated turnover

355-535 Disposal of R&D results—assets of R&D partnerships

355-540 Application of recoupment rules

355-545 Relevance for net income, and losses, of the R&D partnership

355-500 What this Subdivision is about

This Subdivision modifies the rules in this Division for partners of R&D partnerships.

In particular, the rules about deducting R&D expenditure are modified to allow a partner to deduct the partner's proportion of the R&D partnership's expenditure on R&D activities. A partner of an R&D partnership may also be able to deduct under this Subdivision the decline in value of partnership assets used for R&D activities.

355-505 Meaning of R&D partnership and partner's proportion

(1) A partnership is an R&D partnership at a particular time if, at that time, each of the partners is an *R&D entity.

(2) For an amount attributable to an *R&D partnership for an income year, each partner of the R&D partnership is taken to bear or be entitled to (as appropriate) this proportion (the partner's proportion) of the amount:

(a) the proportion the partners agreed the partner should bear or be entitled to (as appropriate); or

(b) if there is no such agreement—the proportion of the partner's interest in the *net income or *partnership loss of the R&D partnership for the income year.

355-510 R&D partnership expenditure on R&D activities

If an *R&D partnership incurs expenditure on one or more R&D activities during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:

- (a) the partner incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and
- (b) neither the R&D partnership, nor any other partner of the R&D partnership, incurred expenditure during the income year on the R&D activities; and
- (c) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.

Note: This section and section 355-515 may result in:

- (a) the partner being able to deduct the partner's proportion of the partnership expenditure under section 355-205 (R&D expenditure) or 355-480 (earlier year associate R&D expenditure) for the R&D activities; and
- (b) the partner being affected by the integrity rules in Subdivisions 355-F, 355-G and 355-H.

355-515 R&D activities conducted by or for an R&D partnership

If one or more *R&D activities are conducted by or for an *R&D partnership during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:

- (a) the R&D activities were conducted by or for the partner in a corresponding way to the way the R&D activities were conducted by or for the R&D partnership; and
- (b) the partner had relationships with other entities in relation to the R&D activities that corresponded to the relationships the R&D partnership had with those other entities in relation to the R&D activities; and
- (c) a thing done by, or in relation to, the R&D partnership in relation to the R&D activities were a thing done by, or in relation to, the partner; and
- (d) the R&D activities were neither:
 - (i) conducted by or for the R&D partnership; nor
 - (ii) conducted by or for any other partner of the R&D partnership; and
- (e) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.

Note 1: For the purposes of this Division, entities that are associates or affiliates of, or connected with, the R&D partnership are taken to be associates or affiliates of, or connected with, the partner (see paragraph (b)).

Note 2: For the purposes of this Division, payments and agreements made by the R&D partnership for the R&D activities are taken to be made by the partner (see paragraph (c)).

355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships

(1) When notional deductions arise If:

(a) an *R&D entity is a partner of an *R&D partnership at some time during an income year (the present year); and

(b) the partner is registered under section 27A of the Industry Research and Development Act 1986 for the present year for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and

Note: Section 355-210 applies with changes for this paragraph (see section 355-515).

(c) while a tangible *depreciating asset is *held by the R&D partnership during the present year, the asset is used for the purpose of conducting one or more of those R&D activities; and

(d) the R&D partnership could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and

Note: Section 355-310 applies with changes for this paragraph (see subsection (2) of this section).

(e) the R&D partnership cannot deduct an amount for the asset for:

(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or

(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied; the partner can deduct the partner's proportion of the amount referred to in paragraph (d) for the present year.

(2) Changed application of Division 40 for this Subdivision For the purposes of this Subdivision, section 355-310 applies as if the following changes were made:

Changes to be made		
Item	For a reference in section 355-310 to...	substitute a reference to...
1	paragraph 355-305(1)(c)	paragraph 355-520(1)(d)
2	section 355-315	section 355-525
3	paragraph 355-305(1)(b)	paragraph 355-520(1)(c)
4	*R&D entity	*R&D partnership

(3) Disregard certain assets held because of CRC contributions This section has effect subject to subsection 355-580(4) (CRC contributions).

355-525 Balancing adjustments for R&D partnership assets only used for R&D activities

(1) This section applies to an *R&D entity (the partner) if:

(a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by an *R&D partnership; and

(b) the R&D partnership cannot deduct an amount under section 40-25, as that section applies apart from:

(i) this Division; and

(ii) former section 73BC of the Income Tax Assessment Act 1936;

for the asset for an income year; and

(c) the partner is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-520 for the asset; and

(d) the partner is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and

(e) if Division 40 applied with the changes described in section 355-310 (as affected by subsection 355-520(2)):

(i) the R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or

(ii) an amount would be included in the R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.

Note 1: This section applies in a modified way if the partner has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-325 of the Income Tax (Transitional Provisions) Act 1997).

Note 2: Section 40-293 applies if the R&D partnership can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.

(2) Notional deduction If the *R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner can deduct the partner's proportion of that amount for the event year.

(3) Amount to be included in assessable income If an amount (the section 40-285 amount) would be included in the *R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner's proportion of the sum of:

- (a) that amount; and
- (b) the following amount;

is included in the partner's assessable income for the event year:

$$\text{Adjusted section 40-285 amount} \times \frac{1}{3}$$

where:

adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.

total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).

355-530 Implications for partner's aggregated turnover

For the purposes of sections 40-292 (balancing adjustments for decline in value) and 355-100 (tax offsets for R&D), if:

- (a) an *R&D entity is a partner of an *R&D partnership at some time during an income year; and
- (b) the partner's *aggregated turnover for the income year does not include the R&D partnership's *annual turnover for the income year; the partner's aggregated turnover for the income year includes the *partner's proportion of the R&D partnership's annual turnover for the income year.

355-535 Disposal of R&D results for R&D partnerships

In addition to its application apart from this section, section 355-410 (disposal of R&D results) also applies to each partner of an *R&D partnership with such changes as are appropriate having regard to:

(a) amounts (the results amounts) of a kind set out in subparagraphs 355-410(1)(b)(i) to (v) that the R&D partnership receives or becomes entitled to receive in an income year; and

(b) the principle that any amount to be included in the partner's assessable income for the income year for a results amount should be the partner's proportion of the amount arising under subsection 355-410(2) for the results amount.

Note: The ordinary application of section 355-410 will apply to any of the partner's deductions under this Division that do not relate to the R&D partnership.

355-540 Application of recoupment rules

(1) If:

(a) an *R&D partnership incurs expenditure (the partnership expenditure) on *R&D activities; and

(b) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-205 or 355-480, deduct some or all of that expenditure; and

(c) the R&D partnership receives an amount as a *recoupment of any or all of the partnership expenditure;

the partner is taken, for the purposes of Subdivisions 20-A and 355-G:

(d) to have incurred the partner's proportion of the partnership expenditure when the R&D partnership incurred that expenditure; and

(e) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.

(2) If:

(a) an *R&D entity (the partner) is entitled under section 355-100 to a *tax offset because it can, under section 355-520, deduct an amount for an income year for an asset; and

(b) the applicable *R&D partnership receives an amount as a *recoupment of any or all of the R&D partnership's expenditure included in the *cost of the asset for the purposes of the application of Division 40 as described in paragraph 355-520(1)(d); the partner is taken, for the purposes of Subdivisions 20-A and 355-G:

(c) to have incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and

(d) to have received the partner's proportion of the recoupment when the R&D partnership received the recoupment.

355-545 Relevance for net income, and losses, of the R&D partnership

For an *R&D entity that is a partner of an *R&D partnership, none of the following:

- (a) any expenditure the R&D entity is taken to have incurred because of this Subdivision;
- (b) any amount the R&D entity can deduct under this Subdivision;
- (c) any *recoupment the R&D entity is taken to have received because of this Subdivision; are to be taken into account in determining the *net income of the R&D partnership, or any *partnership loss of the R&D partnership, for an income year.

Subdivision 355-K—Application to Cooperative Research Centres

Table of sections

355-580 When notional deductions for CRC contributions arise

355-580 When notional deductions for CRC contributions arise

(1) Monetary contributions are deductible. An *R&D entity can deduct for an income year expenditure it incurs during that year to the extent that:

- (a) the expenditure is in the form of monetary contributions under the *CRC program; and
- (b) the contributions have been or will be spent under the CRC program on one or more *R&D activities for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year.

Note 1: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).

Note 2: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) Subsection (1) does not apply to expenditure to the extent that it is incurred out of Commonwealth funding.

(3) No other deductions arise for monetary contributions etc. Neither:

- (a) a contribution an *R&D entity can deduct under subsection (1); nor

(b) expenditure incurred under the *CRC program, to the extent that the expenditure is incurred out of:

- (i) a contribution an R&D entity can deduct under subsection (1); or
- (ii) Commonwealth funding;

can be deducted by any R&D entity under any other provision of this Division for any income year.

(4) If an asset's *cost includes expenditure incurred under the *CRC program out of:

- (a) a contribution an *R&D entity can deduct under subsection (1); or
- (b) Commonwealth funding;

an amount equal to the asset's decline in value cannot be deducted under this Division by any R&D entity for any income year.

Subdivision 355-W—Other matters

Table of sections

355-705 Effect of findings by Innovation Australia

355-710 Amendment of assessments

355-715 Implications for other deductions and tax offsets

355-705 Effect of findings by Innovation Australia

(1) Findings about registration or core technology If:

(a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out:

- (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or
- (ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or
- (iii) a finding under section 28E of that Act about an R&D entity and one or more *R&D activities conducted or to be conducted during one or more income years; and

(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year or years (as appropriate).

Note: Section 28E of the Industry Research and Development Act 1986 deals with findings that technology is core technology for particular R&D activities. Expenditure

incurred in acquiring such technology is not deductible under this Division (see subsection 355-225(2)).

(2) Advance findings about activities yet to be completed If:

- (a) an activity is being conducted, or is yet to be conducted, in an income year; and
- (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and
- (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year and the next 2 income years.

(3) Advance findings about completed activities. However, if:

- (a) an activity is completed during an income year; and
- (b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and
- (c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year.

355-710 Amendment of assessments

(1) Dealing with findings of Innovation Australia. If:

(a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out:

- (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or
 - (ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or
 - (iii) a finding under section 28A or 28C of that Act made on application by an R&D entity during an income year; or
 - (iv) a finding under section 28E of that Act about an R&D entity and one or more R&D activities conducted or to be conducted during one or more income years; and
- (b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);

despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the finding at any time for the purposes of giving effect to the finding.

(2) However, the Commissioner may only do so within 2 years after the Commissioner is given the certificate if giving effect to the finding would increase the R&D entity's liability.

(3) Dealing with key decisions of Innovation Australia and others If:

(a) an internal review decision (the key decision) under subsection 30D(2) of the Industry Research and Development Act 1986 relates to an *R&D entity; or

(b) a decision (also the key decision) under the Administrative Appeals Tribunal Act 1975:

(i) varies a decision covered by paragraph (a); or

(ii) sets aside a decision covered by paragraph (a), whether or not that key decision also includes a decision made in substitution for the decision covered by paragraph (a); or

(c) a decision (also the key decision) of a court is about:

(i) a decision under Part III of the Industry Research and Development Act 1986 relating to an R&D entity; or

(ii) a decision covered by paragraph (b);

despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the key decision at any time for the purposes of giving effect to that decision.

355-715 Implications for other deductions and tax offsets

(1) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for expenditure it can deduct under section 355-205, 355-480 or 355-580, that expenditure:

(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act for any income year; and

(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year.

Note: Section 355-205 is about R&D expenditure, section 355-480 is about earlier year associate R&D expenditure, and section 355-580 is about CRC contributions.

(2) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for a deduction under section 355-305, 355-315, 355-520 or 355-525 of an amount equal to the decline in value of an asset, that decline in value:

(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act (other than section 40-292 or 40-293) for any income year; and

(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year; to the extent that the decline in value is attributable to the use of the asset for the purpose of conducting one or more of the *R&D activities to which the deduction relates.

Note 1: A deduction may be available under section 40-25 to the extent that the asset's decline in value is attributable to another purpose. If so, that deduction under section 40-25 will not take into account the asset's decline in value to the extent that it is attributable to the R&D activities (see also subsection 40-25(2)).

Note 2: Section 355-305 is about the decline in value of R&D assets, section 355-315 is about balancing adjustments for R&D assets, section 355-520 is about the decline in value of R&D partnership assets, and section 355-525 is about balancing adjustments for R&D partnership assets.

Note 3: Sections 40-292 and 40-293 deal with balancing adjustments when deductions have been available for the asset's decline in value both under this Division and section 40-25.

Appendix C

Australian Model Research and Development Tax Incentive

Australia: *Income Tax Assessment Act 1997* (Cth)

Division 355—Research and Development

Table of Subdivisions

Guide to Division 355

355-A Object

355-B Meaning of R&D activities and other terms

355-C Entitlement to tax offset

355-D Notional deductions for R&D expenditure

355-E Notional deductions for decline in value of depreciating assets used for R&D activities

355-I Application to earlier income year R&D expenditure incurred to associates

355-J Application to R&D partnerships

355-K Application to Cooperative Research Centres

355-W Other matters

Guide to Division 355

355-1 What this Division is about

An R&D entity may be entitled to a tax offset for R&D activities. The tax offset may be a refundable tax offset if the R&D entity's aggregated turnover is less than \$20 million. To be entitled to the tax offset, the R&D entity needs one or more notional deductions under this Division.

There are 2 main kinds of notional deductions. One is for expenditure on R&D activities. The other is for the decline in value of tangible depreciating assets used for R&D activities.

Note: All of these notional deductions require the R&D entity to be registered for the R&D activities under Part III of the Industry Research and Development Act 1986.

Subdivision 355-A—Object

Table of sections

355-5 Object

355-5 Object

- (1) The object of this Division is to encourage industry to conduct research and development activities that might otherwise not be conducted because of an uncertain return from the activities, in cases where the knowledge gained is likely to benefit the wider Australian economy.
- (2) This object is to be achieved by providing a tax incentive for industry to conduct, in a scientific way, experimental activities for the purpose of generating new knowledge or information in either a general or applied form (including new knowledge in the form of new or improved materials, products, devices, processes or services).

Subdivision 355-B—Meaning of R&D activities and other terms

Table of sections

355-25 Core R&D activities

355-35 R&D entities

355-25 R&D activities

- (1) R&D activities are experimental activities:
- (a) whose outcome cannot be known or determined in advance on the basis of current knowledge, information or experience, but can only be determined by applying a systematic progression of work that:
 - (i) is based on principles of established science; and
 - (ii) proceeds from hypothesis to experiment, observation and evaluation, and leads to logical conclusions; and
 - (b) that are conducted for the purpose of generating new knowledge (including new knowledge in the form of new or improved materials, products, devices, processes or services).
 - (c) and any other activity listed in Subdivision 61-H of the Income Tax Assessment Regulations 1997

Note: R&D activities include supporting activities.

- (2) However, none of the following activities are core R&D activities:

- (a) market research, market testing or market development, or sales promotion (including consumer surveys);
- (b) prospecting, exploring or drilling for minerals or *petroleum for the purposes of one or more of the following:
 - (i) discovering deposits;
 - (ii) determining more precisely the location of deposits;
 - (iii) determining the size or quality of deposits;
- (c) efficiency surveys;
- (d) research in arts or humanities;
- (e) administrative aspects of patenting, licensing or other activities;
- (f) activities associated with complying with statutory requirements or standards, including one or more of the following:
 - (i) maintaining national standards;
 - (ii) calibrating secondary standards;
 - (iii) routine testing and analysis of materials, components, products, processes, soils, atmospheres and other things;
- (g) any activity related to the reproduction of a commercial product or process:
 - (i) by a physical examination of an existing system; or
 - (ii) from plans, blueprints, detailed specifications or publically available information;
- (h) developing, modifying or customising computer software for the dominant purpose of use by any of the following entities for their internal administration (including the internal administration of their business functions):
 - (i) the entity (the developer) for which the software is developed, modified or customised;
 - (ii) an entity *connected with the developer;
 - (iii) an *affiliate of the developer, or an entity of which the developer is an affiliate.

355-35 R&D entities

- (1) Each of the following is an R&D entity:
 - (a) a body corporate incorporated under an *Australian law;
 - (b) a body corporate incorporated under a *foreign law that is an Australian resident.

Note: Each of the above paragraphs extends to a body corporate acting in its capacity as trustee of a public trading trust (see subsection 102T(9) of the Income Tax Assessment Act 1936).

(2) A body corporate incorporated under a *foreign law that:

(a) is a resident of a foreign country for the purposes of an agreement in force between that country and Australia that:

(i) is a double tax agreement (as defined in Part X of the Income Tax Assessment Act 1936); and

(ii) includes a definition of permanent establishment; and

(b) carries on business in Australia through a permanent establishment (within the meaning of that definition) of the body corporate in Australia; is an R&D entity to the extent that it carries on business through that permanent establishment.

(3) However, an *exempt entity cannot be an R&D entity.

Subdivision 355-C—Entitlement to tax offset

Table of sections

355-100 Entitlement to tax offset

355-105 Deductions under this Division are notional only

355-110 Notional deductions include prepaid expenditure

355-100 Entitlement to tax offset

(1) An *R&D entity is entitled to a *tax offset for an income year equal to the percentage, set out in the table, of the total of the amounts (if any) that the entity can deduct for the income year under any or all of the following provisions:

(a) section 355-205 (R&D expenditure);

(b) section 355-305 (decline in value of R&D assets);

(c) section 355-315 (balancing adjustment for R&D assets);

(d) section 355-480 (earlier year associate R&D expenditure);

(e) section 355-520 (decline in value of R&D partnership assets);

(f) section 355-525 (balancing adjustment for R&D partnership assets);

(g) section 355-580 (CRC contributions).

Rate of R&D tax offset				
Item	In this case:	The basic percentage is:	Regulation approved percentage is:	Tax offset refundable
1	the *R&D entity's *aggregated turnover for the income year is less than \$20 million (and item 2 of this table does not apply)	45%	60%	Yes see section 67-30
2	at any time during the income year an *exempt entity, or combination of exempt entities, would control the *R&D entity in a way described in section 328-125 (connected entities) if: (a) references in section 328-125 to 40% were references to 50%; and (b) subsection 328-125(6) were ignored	40%	50%	No
3	any other case	40%	50%	No

Note: Regulation approved R&D activities are contained in Subdivision 61-H of the Income Tax Assessment Regulations 1997.

355-105 Deductions under this Division are notional only

An amount (the notional amount) that an *R&D entity can deduct under this Division is disregarded except for the purposes of:

- (a) working out whether the R&D entity is entitled under section 355-100 to a *tax offset; and
- (b) a provision (of this Act or any other Act) that refers to an entitlement of the R&D entity under section 355-100 to a tax offset; and
- (c) a provision (of this Act or any other Act) that:
 - (i) prevents some or all of the notional amount from being deducted; or
 - (ii) changes the income year for which some or all of the notional amount can be deducted; and

Note: Examples are Divisions 26 and 27 of this Act, Subdivision H of Division 3 of Part III of the Income Tax Assessment Act 1936 and Part IVA of that Act.

- (d) a provision (of this Act or any other Act) that includes an amount in assessable income wholly or partly because of the notional amount; and

Note: An example is Subdivision 20-A, which may include in assessable income a recoupment of a loss or outgoing if the entity can deduct an amount for the loss or outgoing.

- (e) a provision (of this Act or any other Act) that excludes expenditure from:
 - (i) the *cost base or *reduced cost base of a *CGT asset; or
 - (ii) an element of that cost base or reduced cost base.

Note: An example is section 110-45, which may exclude deductible expenditure from elements of the cost base of an asset.

355-110 Notional deductions include prepaid expenditure

For the purposes of this Division, if:

- (a) apart from Subdivision H (prepaid expenditure) of Division 3 of Part III of the Income Tax Assessment Act 1936, an *R&D entity can deduct an amount under section 355-205 or 355-480 for an income year (the present year) or an earlier income year; and
- (b) that Subdivision applies to the calculation of that amount; and
- (c) the entity can deduct an amount, as a result of that application of that Subdivision, for the present year; the entity is taken to be able to deduct under section 355-205 or 355-480 (as appropriate) the amount referred to in paragraph (c) for the present year.

Note: Section 355-205 is about deductions for R&D expenditure. Section 355-480 is about deductions for earlier year associate R&D expenditure.

Subdivision 355-D—Notional deductions for R&D expenditure

Table of sections

355-200 What this Subdivision is about

355-205 When notional deductions for R&D expenditure arise

355-210 Conditions for R&D activities

355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate

355-220 R&D activities conducted for a foreign entity

355-225 Expenditure that cannot be notionally deducted

355-200 What this Subdivision is about

An R&D entity can notionally deduct its expenditure on registered R&D activities for which certain conditions are met.

There are special conditions for R&D activities conducted for foreign residents.

355-205 When notional deductions for R&D expenditure arise

(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurs during that year to the extent that the expenditure:

- (a)** is incurred on one or more *R&D activities:
 - (i)** for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and
 - (ii)** that are activities to which section 355-210 (conditions for R&D activities) applies; and
- (b)** if the expenditure is incurred to the R&D entity's *associate—is paid to that associate during the present year.

Note 1: If the matters in subparagraphs (a)(i) and (ii) are not satisfied until a later income year, the R&D entity will need to wait until then before it can deduct the expenditure for the present year.

Note 2: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).

Note 3: The entity may also be able to deduct expenditure incurred to an associate in an earlier income year (see section 355-480).

Note 4: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) This section has effect subject to section 355-225 (excluded expenditure) and subsection 355-580(3) (CRC contributions).

355-210 Conditions for R&D activities

(1) An *R&D activity covered by one or more of the following paragraphs is an activity to which this section applies:

- (a)** the R&D activity is conducted for the *R&D entity solely within Australia or an external Territory;
- (b)** if the R&D entity is a body corporate carrying on business through a permanent establishment (as described in subsection 355-35(2))—the R&D activity is conducted:
 - (i)** for the body corporate; but

- (ii) not for the purposes of that permanent establishment; and the conditions in section 355-215 (activities conducted for a body corporate by its permanent establishment) are met for the R&D activity;
- (c) the R&D activity is conducted for one or more foreign residents who are each:
 - (i) incorporated under a *foreign law; and
 - (ii) a resident of a foreign country for the purposes of an agreement of a kind described in subsection 355-35(2); and the conditions in section 355-220 (activities conducted for a foreign entity) are met for the R&D activity;
- (d) the R&D activity is:
 - (i) conducted for the R&D entity solely outside Australia and the external Territories; and
 - (ii) covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986;
- (e) the R&D activity consists of several parts, with:
 - (i) some parts being conducted for the R&D entity solely within Australia or an external Territory; and
 - (ii) the other parts being conducted for the R&D entity outside Australia and the external Territories while covered by a finding in force under paragraph 28C(1)(a) of the Industry Research and Development Act 1986.

Note: An activity can be covered by a finding under paragraph 28C(1)(a) of the Industry Research and Development Act 1986 if the activity cannot be conducted in Australia or the external Territories.

(2) However, an *R&D activity is not an activity to which this section applies if the activity is conducted, to a significant extent, for one or more other entities not covered by any paragraph of subsection (1).

Note: An entity would not be covered by, for example, paragraph (1)(c) if the conditions in section 355-220 were not met for the R&D activity in relation to that entity.

355-215 R&D activities conducted by a permanent establishment for other parts of the body corporate

For the purposes of paragraph 355-210(1)(b), the conditions for an *R&D activity are as follows:

- (a) the R&D activity is conducted solely within Australia or an external Territory;

- (b) there is written evidence that the R&D activity is conducted for the body corporate but not for the purposes of that permanent establishment.

Note: The body corporate is the R&D entity to the extent that it carries on business through that permanent establishment (see subsection 355-35(2)).

355-220 R&D activities conducted for a foreign entity

(1) For the purposes of paragraph 355-210(1)(c), the conditions for an *R&D activity conducted for one or more foreign residents are as follows:

- (a) the R&D activity is conducted solely within Australia or an external Territory;
- (b) when the R&D activity is conducted:
 - (i) each foreign resident is *connected with the R&D entity; or
 - (ii) for each foreign resident—either the foreign resident is an *affiliate of the R&D entity or the R&D entity is an affiliate of the foreign resident;
- (c) the R&D activity is conducted:
 - (i) in accordance with a written agreement binding on only the R&D entity and each foreign resident; and
 - (ii) either directly by the R&D entity, or indirectly by another entity under an agreement binding on the R&D entity;
- (d) the R&D activity is not conducted in connection with an agreement covered by subsection (2).

Note: An example of conducting an R&D activity indirectly under a contract is conducting the R&D activity under a subcontract, or one of a chain of subcontracts, under the contract.

(2) An agreement is covered by this subsection if:

- (a) the agreement is binding on the R&D entity (the first entity) and an R&D entity that:
 - (i) is *connected with the first entity; or
 - (ii) has the first entity as an *affiliate, or is an affiliate of the first entity; while the *R&D activity is conducted; and
- (b) the R&D activity is to be conducted under the agreement by the first entity or by an entity:
 - (i) who is not bound by the agreement; and
 - (ii) who is to conduct the R&D activity directly or indirectly under another agreement to which the first entity is, or will become, bound.

Note: One effect of this subsection is that, even if the R&D entity has an agreement with the foreign resident for conducting the R&D activity, the R&D entity cannot deduct expenditure incurred:

- (a) for conducting the R&D activity as a subcontractor under a subcontract with an affiliated R&D entity; or
- (b) if the R&D entity is a subcontractor to an affiliated R&D entity—for further subcontracting the conducting of the R&D activity.

355-225 Expenditure that cannot be notionally deducted

Expenditure on buildings, certain assets and interest

(1) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to the following expenditure:

- (a)** expenditure incurred to acquire or construct:
 - (i)** a building or a part of a building; or
 - (ii)** an extension, alteration or improvement to a building;
- (b)** expenditure included in the *cost of a tangible *depreciating asset for the purposes of Division 40 (as that Division applies as described in section 355-310 or otherwise);
- (c)** expenditure incurred for interest (within the meaning of Division 11A of Part III of the Income Tax Assessment Act 1936) payable to an entity.

Note 1: Expenditure covered by paragraph (a) may be deductible under Division 43 (capital works).

Note 2: The decline in value of an asset covered by paragraph (b) may be notionally deductible under section 355-305.

Note 3: Expenditure covered by paragraph (c) may be deductible under section 8-1.

Expenditure on core technology

(2) Sections 355-205 (deductions for R&D expenditure) and 355-480 (deductions for earlier year associate R&D expenditure) do not apply to expenditure incurred in acquiring, or in acquiring the right to use, technology wholly or partly for the purposes of one or more *R&D activities if:

- (a)** a purpose of the R&D activities was or is:
 - (i)** to obtain new knowledge based on that technology; or
 - (ii)** to create new or improved materials, products, devices, processes, techniques or services to be based on that technology; or

(b) the R&D activities were or are an extension, continuation, development or completion of the activities that produced that technology.

Subdivision 355-E—Notional deductions for decline in value of depreciating assets used for R&D activities

Table of sections

355-300 What this Subdivision is about

355-305 When notional deductions for decline in value arise

355-310 Notional application of Division 40

355-315 Balancing adjustments—assets only used for R&D activities

355-300 What this Subdivision is about

An R&D entity can notionally deduct the decline in value of a tangible depreciating asset used for R&D activities. If a balancing adjustment event later happens for the asset, the R&D entity may be able to notionally deduct a further amount. Alternatively, an amount may be included in the R&D entity's assessable income.

355-305 When notional deductions for decline in value arise

(1) If:

(a) an *R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year (the present year) for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and

(b) while a tangible *depreciating asset is *held by the R&D entity during the present year, the asset is used for the purpose of conducting one or more of those R&D activities; and

(c) the R&D entity could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and

(d) the R&D entity cannot deduct an amount for the asset for:

(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or

(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied;

the R&D entity can deduct the amount referred to in paragraph (c) for the present year.

(2) This section has effect subject to subsection 355-580(4) (CRC contributions).

355-310 Notional application of Division 40

(1) In addition to its application apart from this section, Division 40 also applies with the changes set out in this section for the purposes of:

- (a) paragraph 355-225(1)(b) (excluded expenditure); and
- (b) paragraph 355-305(1)(c); and
- (c) section 355-315 (balancing adjustments).

(2) Firstly, substitute the following for references to a *taxable purpose in Subdivisions 40-A to 40-D (other than for the purposes of sections 40-100, 40-105 and 40-110):

Replacing references to a taxable purpose		
Item	If this application of Division 40 is for the purposes of:	Substitute a reference to:
1	paragraph 355-225(1)(b) or 355-305(1)(c)	the purpose of conducting one or more of the *R&D activities covered by paragraph 355-305(1)(b)
2	section 355-315	the purpose of conducting one or more of the *R&D activities to which the R&D deductions (within the meaning of that section) relate

Note: Sections 40-100, 40-105 and 40-110 are about working out an asset's effective life. Those sections already refer to the use of the asset for R&D activities.

(3) Secondly, assume that Division 40 does not apply to a building, nor to an extension, alteration or improvement to a building, (the building works) for which the *R&D entity:

- (a) can deduct amounts under Division 43 (capital works); or
- (b) could deduct amounts under Division 43:
 - (i) apart from expenditure being incurred, or the building works being started, before a particular day; or
 - (ii) had the R&D entity used the building works for a purpose relevant to those building works under section 43-140 (using an area in a deductible way).

(4) Finally, assume that the following provisions had not been enacted:

- (a) subsection 40-25(7) (meaning of taxable purpose);
- (b) subsection 40-45(2) (assets to which Division 40 does not apply);
- (c) section 40-425 (low-value pools);
- (d) Subdivision 328-D (capital allowances for small business entities).

Note: Subsection (3) and paragraph (4)(b) mean that deductions under section 355-305 may be available for capital works other than building works.

355-315 Balancing adjustments—assets only used for R&D activities

(1) This section applies to an *R&D entity if:

- (a)** a *balancing adjustment event happens in an income year (the event year) for an asset *held by the R&D entity; and
- (b)** the R&D entity cannot deduct an amount under section 40-25, as that section applies apart from:
 - (i)** this Division; and
 - (ii)** former section 73BC of the Income Tax Assessment Act 1936; for the asset for an income year; and
- (c)** the R&D entity is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-305 for the asset; and
- (d)** the entity is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and
- (e)** if Division 40 applied with the changes described in section 355-310:
 - (i)** the entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or
 - (ii)** an amount would be included in the entity's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.

Note 1: This section applies in a modified way if the entity also has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-320 of the Income Tax (Transitional Provisions) Act 1997).

Note 2: Section 40-292 applies if the entity can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.

Notional deduction

(2) If the *R&D entity could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the R&D entity can deduct that amount for the event year.

Amount to be included in assessable income

(3) If an amount (the section 40-285 amount) would be included in the *R&D entity's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the sum of that amount and

the following amount is included in the R&D entity's assessable income for the event year:

$$\text{Adjusted section 40-285 amount} \times \frac{1}{3}$$

where:

adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.

total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).

Subdivision 355-I—Application to earlier income year R&D expenditure incurred to associates

Table of sections

355-480 Notional deductions for expenditure incurred to associate in earlier income years

355-480 Notional deductions for expenditure incurred to associate in earlier income years

Notional deductions for earlier year associate expenditure

(1) An *R&D entity can deduct for an income year (the present year) expenditure it incurred to its *associate during an earlier income year to the extent that:

- (a)** the expenditure was incurred on one or more *R&D activities:
 - (i)** for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year; and
 - (ii)** that are activities to which section 355-210 (conditions for R&D activities) applies; and
- (b)** the expenditure is paid to that associate during the present year; and
- (c)** subsection (2) applies to the expenditure.

Note 1: This section applies in a modified way to R&D partnership expenditure (see sections 355-510 and 355-515).

Note 2: Expenditure paid in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) Expenditure cannot have been otherwise deducted etc. This subsection applies to the expenditure if:

- (a)** the *R&D entity can deduct the expenditure, or is entitled to a *tax offset for the expenditure, under any other Division of this Act for an earlier income year; and
- (b)** by the time of lodging its *income tax return for the most recent income year before the present year, the R&D entity had neither:
 - (i)** deducted the expenditure; nor
 - (ii)** obtained a tax offset for the expenditure;

as described in paragraph (a).

(3) The entitlement to the deduction, or *tax offset, described in paragraph (2)(a) ceases to the extent that subsection (2) applies to the expenditure.

Example: If, by the time mentioned in paragraph (2)(b), an R&D entity chose to deduct only a third of the expenditure it could have deducted under another Division, then the remaining 2 thirds of that expenditure:

- (a)** can be deducted under this section; but
- (b)** can no longer be deducted under the other Division.

(4) Notional deduction is subject to integrity rules etc. This section has effect subject to section 355-225 (excluded expenditure) and subsection 355-580(3) (CRC contributions).

Subdivision 355-J—Application to R&D partnerships

Table of sections

355-500 What this Subdivision is about

355-505 Meaning of R&D partnership and partner's proportion

355-510 R&D partnership expenditure on R&D activities

355-515 R&D activities conducted by or for an R&D partnership

355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships

355-525 Balancing adjustments for R&D partnership assets only used for R&D activities

355-530 Implications for partner's aggregated turnover

355-535 Disposal of R&D results—assets of R&D partnerships

355-540 Application of recoupment rules

355-545 Relevance for net income, and losses, of the R&D partnership

355-500 What this Subdivision is about

This Subdivision modifies the rules in this Division for partners of R&D partnerships. In particular, the rules about deducting R&D expenditure are modified to allow a partner to deduct the partner's proportion of the R&D partnership's expenditure on R&D activities. A partner of an R&D partnership may also be able to deduct under this Subdivision the decline in value of partnership assets used for R&D activities.

355-505 Meaning of R&D partnership and partner's proportion

- (1)** A partnership is an R&D partnership at a particular time if, at that time, each of the partners is an *R&D entity.
- (2)** For an amount attributable to an *R&D partnership for an income year, each partner of the R&D partnership is taken to bear or be entitled to (as appropriate) this proportion (the partner's proportion) of the amount:
 - (a)** the proportion the partners agreed the partner should bear or be entitled to (as appropriate); or
 - (b)** if there is no such agreement—the proportion of the partner's interest in the *net income or *partnership loss of the R&D partnership for the income year.

355-510 R&D partnership expenditure on R&D activities

If an *R&D partnership incurs expenditure on one or more R&D activities during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:

- (a)** the partner incurred the partner's proportion of that expenditure when the R&D partnership incurred that expenditure; and
- (b)** neither the R&D partnership, nor any other partner of the R&D partnership, incurred expenditure during the income year on the R&D activities; and
- (c)** such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.

Note: This section and section 355-515 may result in:

- (a)** the partner being able to deduct the partner's proportion of the partnership expenditure under section 355-205 (R&D expenditure) or 355-480 (earlier year associate R&D expenditure) for the R&D activities; and

355-515 R&D activities conducted by or for an R&D partnership

If one or more *R&D activities are conducted by or for an *R&D partnership during an income year, this Division applies in relation to each *R&D entity that is a partner of the R&D partnership at some time during the income year as if:

- (a) the R&D activities were conducted by or for the partner in a corresponding way to the way the R&D activities were conducted by or for the R&D partnership; and
- (b) the partner had relationships with other entities in relation to the R&D activities that corresponded to the relationships the R&D partnership had with those other entities in relation to the R&D activities; and
- (c) a thing done by, or in relation to, the R&D partnership in relation to the R&D activities were a thing done by, or in relation to, the partner; and
- (d) the R&D activities were neither:
 - (i) conducted by or for the R&D partnership; nor
 - (ii) conducted by or for any other partner of the R&D partnership; and
- (e) such other changes were made to this Division as are appropriate having regard to that partner's proportion of amounts attributable to the R&D partnership.

Note 1: For the purposes of this Division, entities that are associates or affiliates of, or connected with, the R&D partnership are taken to be associates or affiliates of, or connected with, the partner (see paragraph (b)).

Note 2: For the purposes of this Division, payments and agreements made by the R&D partnership for the R&D activities are taken to be made by the partner (see paragraph (c)).

355-520 When notional deductions arise for decline in value of depreciating assets of R&D partnerships

(1) When notional deductions arise If:

- (a) an *R&D entity is a partner of an *R&D partnership at some time during an income year (the present year); and
- (b) the partner is registered under section 27A of the Industry Research and Development Act 1986 for the present year for one or more *R&D activities that are activities to which section 355-210 (conditions for R&D activities) applies; and

Note: Section 355-210 applies with changes for this paragraph (see section 355-515).

(c) while a tangible *depreciating asset is *held by the R&D partnership during the present year, the asset is used for the purpose of conducting one or more of those R&D activities; and

(d) the R&D partnership could deduct an amount under section 40-25 for the asset for the present year if Division 40 applied with the changes described in section 355-310; and

Note: Section 355-310 applies with changes for this paragraph (see subsection (2) of this section).

(e) the R&D partnership cannot deduct an amount for the asset for:

(i) an earlier income year under Subdivision 328-D (capital allowances for small business entities); or

(ii) an earlier income year under Division 40 (as that Division applies apart from this Division), in a case where section 40-440 (low-value pools) applied; the partner can deduct the partner's proportion of the amount referred to in paragraph (d) for the present year.

(2) Changed application of Division 40 for this Subdivision For the purposes of this Subdivision, section 355-310 applies as if the following changes were made:

Changes to be made		
Item	For a reference in section 355-310	substitute a reference to...
1	paragraph 355-305(1)(c)	paragraph 355-520(1)(d)
2	section 355-315	section 355-525
3	paragraph 355-305(1)(b)	paragraph 355-520(1)(c)
4	*R&D entity	*R&D partnership

(3) Disregard certain assets held because of CRC contributions This section has effect subject to subsection 355-580(4) (CRC contributions).

355-525 Balancing adjustments for R&D partnership assets only used for R&D activities

(1) This section applies to an *R&D entity (the partner) if:

(a) a *balancing adjustment event happens in an income year (the event year) for an asset *held by an *R&D partnership; and

(b) the R&D partnership cannot deduct an amount under section 40-25, as that section applies apart from:

(i) this Division; and

(ii) former section 73BC of the Income Tax Assessment Act 1936;

for the asset for an income year; and

(c) the partner is entitled under section 355-100 to *tax offsets for one or more income years for deductions (the R&D deductions) under section 355-520 for the asset; and

(d) the partner is registered under section 27A of the Industry Research and Development Act 1986 for one or more *R&D activities for the event year; and

(e) if Division 40 applied with the changes described in section 355-310 (as affected by subsection 355-520(2)):

(i) the R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the balancing adjustment event; or

(ii) an amount would be included in the R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the balancing adjustment event.

Note 1: This section applies in a modified way if the partner has deductions for the asset under former section 73BA or 73BH of the Income Tax Assessment Act 1936 (see section 355-325 of the Income Tax (Transitional Provisions) Act 1997).

Note 2: Section 40-293 applies if the R&D partnership can deduct an amount under section 40-25, as that section applies apart from this Division and former section 73BC of the Income Tax Assessment Act 1936.

(2) Notional deduction If the *R&D partnership could deduct for the event year an amount under subsection 40-285(2) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner can deduct the partner's proportion of that amount for the event year.

(3) Amount to be included in assessable income If an amount (the section 40-285 amount) would be included in the *R&D partnership's assessable income for the event year under subsection 40-285(1) for the asset and the event if Division 40 applied as described in paragraph (1)(e), the partner's proportion of the sum of:

(a) that amount; and

(b) the following amount;

is included in the partner's assessable income for the event year:

$$\text{Adjusted section 40-285 amount} \times \frac{1}{3}$$

where:

adjusted section 40-285 amount means so much of the section 40-285 amount as does not exceed the total decline in value.

total decline in value means the asset's *cost, less its *adjustable value, worked out under Division 40 as it applies as described in paragraph (1)(e).

355-530 Implications for partner's aggregated turnover

For the purposes of sections 40-292 (balancing adjustments for decline in value) and 355-100 (tax offsets for R&D), if:

- (a) an *R&D entity is a partner of an *R&D partnership at some time during an income year; and
- (b) the partner's *aggregated turnover for the income year does not include the R&D partnership's *annual turnover for the income year; the partner's aggregated turnover for the income year includes the *partner's proportion of the R&D partnership's annual turnover for the income year.

355-545 Relevance for net income, and losses, of the R&D partnership

For an *R&D entity that is a partner of an *R&D partnership, none of the following:

- (a) any expenditure the R&D entity is taken to have incurred because of this Subdivision;
- (b) any amount the R&D entity can deduct under this Subdivision;

Subdivision 355-K—Application to Cooperative Research Centres

Table of sections

355-580 When notional deductions for CRC contributions arise

355-580 When notional deductions for CRC contributions arise

(1) Monetary contributions are deductible. An *R&D entity can deduct for an income year expenditure it incurs during that year to the extent that:

- (a) the expenditure is in the form of monetary contributions under the *CRC program; and
- (b) the contributions have been or will be spent under the CRC program on one or more *R&D activities for which the R&D entity is registered under section 27A of the Industry Research and Development Act 1986 for an income year.

Note 1: The R&D activities will need to be conducted during the income year the R&D entity is registered for those activities (see sections 27A and 27J of the Industry Research and Development Act 1986).

Note 2: Expenditure incurred in income years starting on or after 1 July 2011 may be deductible for activities registered for income years starting before 1 July 2011 (see section 355-200 of the Income Tax (Transitional Provisions) Act 1997).

(2) Subsection (1) does not apply to expenditure to the extent that it is incurred out of Commonwealth funding.

(3) No other deductions arise for monetary contributions etc. Neither:

(a) a contribution an *R&D entity can deduct under subsection (1); nor

(b) expenditure incurred under the *CRC program, to the extent that the expenditure is incurred out of:

(i) a contribution an R&D entity can deduct under subsection (1); or

(ii) Commonwealth funding;

can be deducted by any R&D entity under any other provision of this Division for any income year.

(4) If an asset's *cost includes expenditure incurred under the *CRC program out of:

(a) a contribution an *R&D entity can deduct under subsection (1); or

(b) Commonwealth funding;

an amount equal to the asset's decline in value cannot be deducted under this Division by any R&D entity for any income year.

Subdivision 355-W—Other matters

Table of sections

355-705 Effect of findings by Innovation Australia

355-710 Amendment of assessments

355-715 Implications for other deductions and tax offsets

355-705 Effect of findings by Innovation Australia

(1) Findings about registration or core technology If:

(a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out:

(i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or

(ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or

(iii) a finding under section 28E of that Act about an R&D entity and one or more *R&D activities conducted or to be conducted during one or more income years; and

(b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year or years (as appropriate).

Note: Section 28E of the Industry Research and Development Act 1986 deals with findings that technology is core technology for particular R&D activities. Expenditure incurred in acquiring such technology is not deductible under this Division (see subsection 355-225(2)).

(2) Advance findings about activities yet to be completed If:

(a) an activity is being conducted, or is yet to be conducted, in an income year; and

(b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and

(c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year and the next 2 income years.

(3) Advance findings about completed activities. However, if:

(a) an activity is completed during an income year; and

(b) an *R&D entity applies in the income year for a finding under section 28A of the Industry Research and Development Act 1986 about the activity; and

(c) Innovation Australia makes the finding and gives the Commissioner a certificate under that Act setting out the finding;

the finding binds the Commissioner for the purposes of assessments of the R&D entity for the income year.

355-710 Amendment of assessments

(1) Dealing with findings of Innovation Australia. If:

(a) a certificate given to the Commissioner under the Industry Research and Development Act 1986 sets out:

- (i) a finding under section 27B of that Act about an *R&D entity's application for registration under section 27A of that Act for an income year; or
- (ii) a finding under section 27J of that Act about an R&D entity's registration under section 27A of that Act for an income year; or
- (iii) a finding under section 28A or 28C of that Act made on application by an R&D entity during an income year; or
- (iv) a finding under section 28E of that Act about an R&D entity and one or more R&D activities conducted or to be conducted during one or more income years; and
- (b) the finding was made within 4 years after the end of the income year or the last of the income years (as appropriate);

despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the finding at any time for the purposes of giving effect to the finding.

(2) However, the Commissioner may only do so within 2 years after the Commissioner is given the certificate if giving effect to the finding would increase the R&D entity's liability.

(3) Dealing with key decisions of Innovation Australia and others If:

- (a) an internal review decision (the key decision) under subsection 30D(2) of the Industry Research and Development Act 1986 relates to an *R&D entity; or
- (b) a decision (also the key decision) under the Administrative Appeals Tribunal Act 1975:
 - (i) varies a decision covered by paragraph (a); or
 - (ii) sets aside a decision covered by paragraph (a), whether or not that key decision also includes a decision made in substitution for the decision covered by paragraph (a); or
- (c) a decision (also the key decision) of a court is about:
 - (i) a decision under Part III of the Industry Research and Development Act 1986 relating to an R&D entity; or
 - (ii) a decision covered by paragraph (b);

despite section 170 of the Income Tax Assessment Act 1936, the Commissioner may amend the R&D entity's assessment for an income year affected by the key decision at any time for the purposes of giving effect to that decision.

355-715 Implications for other deductions and tax offsets

(1) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for expenditure it can deduct under section 355-205, 355-480 or 355-580, that expenditure:

(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act for any income year; and

(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year.

Note: Section 355-205 is about R&D expenditure, section 355-480 is about earlier year associate R&D expenditure, and section 355-580 is about CRC contributions.

(2) If an *R&D entity is entitled under section 355-100 to a *tax offset for an income year for a deduction under section 355-305, 355-315, 355-520 or 355-525 of an amount equal to the decline in value of an asset, that decline in value:

(a) cannot be taken into account by any entity in working out a deduction under any other Division of this Act (other than section 40-292 or 40-293) for any income year; and

(b) cannot be taken into account by any entity in working out a tax offset under any other Division of this Act for any income year;

to the extent that the decline in value is attributable to the use of the asset for the purpose of conducting one or more of the *R&D activities to which the deduction relates.

Note 1: A deduction may be available under section 40-25 to the extent that the asset's decline in value is attributable to another purpose. If so, that deduction under section 40-25 will not take into account the asset's decline in value to the extent that it is attributable to the R&D activities (see also subsection 40-25(2)).

Note 2: Section 355-305 is about the decline in value of R&D assets, section 355-315 is about balancing adjustments for R&D assets, section 355-520 is about the decline in value of R&D partnership assets, and section 355-525 is about balancing adjustments for R&D partnership assets.

Note 3: Sections 40-292 and 40-293 deal with balancing adjustments when deductions have been available for the asset's decline in value both under this Division and section 40-25.

Regulations

Australia: Income Tax Assessment Regulations 1997 (Cth)

Part 2 – Liability rules of general application

Division 61 – Generally applicable tax offsets

Subdivision 61-H – Research and development tax offset complementary to Part III Division 1 of the *Industry Research and Development Act 1986*

REGULATION 61-320.01

61-320.01 Research and development tax incentive additional offset

For the purposes of section 355-25 of the *Income Tax Assessment Act 1997* the approved national research and development priorities are set out in Part 2 of Schedule 1.

Australia: Income Tax Assessment Regulations 1997 (Cth)

SCHEDULE 1

(regulation 61-320.01)

PART 2 – NATIONAL RESEARCH AND DEVELOPMENT PRIORITIES

Item	National Research and Development Priority*	Commencing 1 July ending 30 June
1	Living in a changing environment: Research outcomes will identify strategies to develop resilient natural (ecosystems) and human environments (people, communities and their utilities and industry) that can all thrive in a changing environment.	2015 to 2025
2	Promoting population health and wellbeing: Research outcomes will help to build resilient communities and achieve a state of physical, mental and social wellbeing, and not merely the absence of disease, or infirmity, for all Australians in whichever part of Australia they live.	2015 to 2025
3	Managing our food and water assets: Research outcomes will identify new food production practices and systems that can accommodate competing demands for soil and water while ensuring the long-term sustainability of these assets.	2015 to 2025
4	Securing Australia's place in a changing world: Research outcomes will identify ways to improve Australia's capacity to deliver national security and identify the means by which personal security in Australia will be safeguarded. This challenge should be considered in the context of global uncertainty and changes in the Asia Pacific region.	2015 to 2025
5	Lifting productivity and economic growth: Research outcomes will identify the challenges and opportunities in a changing world economy, particularly in the context of the economic rise of Asia, and help to build a resilient new economy so that Australia can thrive, while also identifying the means to enhance the wellbeing of all Australians.	2015 to 2025

Note: The item number is not an indication of priority preference.

* These national priorities are taken from the Strategic Research Priorities (Department of Industry Australian Government, 2013).