

Steps that might be taken by the Commonwealth government in relation to specific R&D programs, in order to better demonstrate to business the benefits of higher private sector investment in R&D

10.1 The material in this chapter is arranged under the following headings which, like the material in the preceding chapter, is derived from consideration of the evidence presented to the committee during its inquiry:

- improving the consistency of R&D programs;
- improving administration of the programs;
- evaluating the R&D programs;
- improving the general (or flat) tax concession;
- adjusting the incremental or 'Premium' tax concession;
- raising awareness of the cash rebate (tax offset) program;
- improving the START program;
- improving the BITS incubator seed fund program;
- improving collaboration between the public and private sectors;
- adjusting the ARC *Linkage* program; and
- reconsidering the definition of R&D.

Improving the consistency of R&D programs

- 10.2 The lack of consistency in the government's R&D programs was criticised by a diverse range of organisations (see chapter 8), with the Chief Scientist bemoaning that:

We do not have a consistent approach to outcomes in our R&D and its commercialisation, particularly in government funded research agencies and universities. You see it in all sorts of ways: the triennial funding for the major research agencies and, for that matter, for the universities in how their research moneys are handed out... [And] the language of outcomes is very varied.¹

- 10.3 The committee considers that it is in the interests of Australian businesses for the government to commit to long-term R&D support programs, thus providing greater certainty about the future of the programs and enabling businesses to properly plan their R&D investments. It also demonstrates the government's long-term commitment to improving the amount of R&D undertaken in Australia. In this regard, the committee commends the present bipartisan support for R&D incentives.

Recommendation 21

- 10.4 **The committee recommends that businesses be provided with greater certainty about the continuity of the Commonwealth government's R&D support programs, by ensuring that the programs are maintained for rolling periods of not less than five years.**

Improving administration of the programs

- 10.5 The anxiety of SMEs at the 'plethora of paperwork' and 'onerous reporting demands' involved in registering for the tax concession and applying for R&D grants and assistance² concerned the committee, which is sympathetic to the observation by the Australian Industry Group that:

When you have a situation where small companies need to call in R&D tax consultants to assist them with filling in their

1 Dr Robin Batterham (Chief Scientist), Transcript, p. 471.

2 Mr Michael Turner, Submission No. 30, pp. 1-2.

grant application forms, it does raise issues such as ways to make it simpler and easier for companies to apply.³

10.6 In addition to the length and complexity of forms, companies also expressed concern at:

- the number of government agencies either requiring or seeking information from companies about their R&D activities, and the similarity in the information that is sought (for example, the duplication of data requirements by AusIndustry and the Australian Taxation Office (ATO) in the administration of the tax concession);
- the variation in reporting cycles across agencies; and
- inconsistency in the definition of terms used in forms relating to R&D across agencies.⁴

10.7 In response to these concerns, the committee notes with approval the steps that have been taken to reduce the administrative burden on companies, such as the reduction in the amount of data required from industry in the 2003 tax concession registration form. The committee also notes that DITR, ATO and the Australian Bureau of Statistics are undertaking further work to streamline and harmonise data collection for the 2004 year, and that the ATO and AusIndustry have recently established an R&D Tax Concession Administration Consultation Group. The Group aims to regularise consultation with stakeholders on administration issues relating to the operation of the tax concession.⁵

10.8 In addition, Deloitte Touche Tohmatsu offered praise for recent initiatives that include the following:

Firstly, there is the holding of regular consultative committees whereby AusIndustry and the ATO representatives meet with interested parties to discuss the R&D tax concession, its administration, its effectiveness and the needs for change. Secondly, there is the preparation of a draft guide to the R&D tax concession which is now available on the AusIndustry web site. I believe this is an excellent initiative... [because it]

3 Mr Tony Pensabene and Ms Heather Ridout (Australian Industry Group), Transcript, p. 126.

4 Mr David Gaul (CEA Technologies), Transcript, p. 589.

5 Australian National Audit Office, *R&D Tax Concession*, Audit Report No. 40, April 2003, pp. 14-16.

seeks to provide tangible examples of what this definition of innovation actually is [in light of] a number of Administrative Appeal Tribunal (AAT) cases... Thirdly, there is the AusIndustry visitation program, under which a commitment has been made by AusIndustry to visit all first-time registrants for the R&D tax concession... The on-going improvements to the AusIndustry web site also need to be commended. The web site is an excellent access point to a range of relevant data and programs.⁶

- 10.9 The committee also notes that AusIndustry assigns a case manager to companies before they are given a copy of the substantial START program application form, thereby helping the company to ascertain if they are eligible for START assistance prior to committing the considerable resources required to complete the application process. The case manager also remains as a point of contact for companies needing further assistance in completing the form.
- 10.10 While the committee is aware of the complexities in consolidating data requirements across government agencies, such as the issues associated with the confidentiality and disclosure of information about applicants, nonetheless the committee believes that every effort should be made to minimise the application and reporting burden placed on companies seeking to register for the tax concession, or to apply for R&D grant assistance.

Recommendation 22

- 10.11 **The committee recommends that the Commonwealth government simplify and minimise the data requirements of companies registering for the tax concession or applying for R&D grant assistance, and specifically:**
- **reduce the number of government agencies requiring information from companies seeking R&D assistance (when possible, to a single contact point), with the agencies utilising enhanced data-sharing;**
 - **minimise the length and complexity of registration and application forms;**
 - **synchronise reporting cycles across agencies; and**

6 Mr Sergio Duchini (Deloitte Touche Tohmatsu), Transcript, p. 185 and p. 195.

- **ensure consistent use of terms and definitions of terms in forms relating to R&D across agencies, including the Australian Bureau of Statistics.**

10.12 The Australian Academy of Science drew attention to the Canadian *Preclaim* Project under which:

People who are in small business can get advice from government officers before they start their R&D [The *Preclaim* Project] was introduced as one means of reducing an important risk associated with undertaking R&D [by SMEs]. The government officers discuss in advance which R&D projects will be eligible for... tax credits... [It] is not an advanced tax ruling... [but simply] an indication of the [potential eligibility of the] work and this is one simple, cost-effective way in which government can help encourage business investment in R&D, especially in small businesses.⁷

10.13 The committee is attracted to such a scheme and considers that the Commonwealth government should assess its potential.

Recommendation 23

10.14 **The committee recommends that the Commonwealth government continue to simplify the various R&D programs and consider the introduction of a version of the Canadian *Preclaim* Scheme whereby businesses can get preliminary advice about their eligibility for the government's R&D schemes.**

Evaluating the R&D programs

10.15 There were many calls for the Commonwealth government to improve its assessment of the various R&D programs, including in relation to whether public expenditure on R&D may sometimes substitute for expenditure that businesses would otherwise do on their own initiative, and also to establish whether the overall benefit of programs like the tax concession outweigh the costs. Some of the organisations calling for such studies were government agencies and others were industry associations, as indicated by the following:

7 Prof. Sue Serjeantson (Australian Academy of Science), Transcript, p. 5.

There is a major need for more up-to-date research on the returns to R&D in Australia.⁸

The performance of Australia's general support measures for R&D should be reviewed within five years... to ensure that there is appropriate general support available for R&D undertaken by Australian industries.⁹

The Commonwealth Government [should] work with States and Territories to develop a national econometric model to estimate the impact of increased R&D expenditure in selected industries.¹⁰

[In relation to the R&D tax concession program,] performance measures primarily focus on inputs and outputs, rather than providing direct assessment of the effect of the concession in increasing investment by eligible companies in defined R&D, a key objective of the program.¹¹

It would be prudent to evaluate the outcome of [the 175% premium deduction] in the near future to ascertain its effectiveness... [There should be] an inquiry to examine the benefits of any tax incentives in generating tax revenue through increase in employment; increase in corporate tax revenue through improvements in competitiveness and cost reduction; [and] increase in consumption tax revenue through greater economic activities.¹²

While it may be too early to determine the effectiveness of the BITS incubator program it does appear that it has enabled small emerging ITC companies to undertake more R&D than would otherwise have been possible. AIIA would encourage the Government to quantify the impact of this program on the level of R&D being undertaken.¹³

8 Commonwealth Department of Education, Science and Training, Submission No. 64, p. 3.

9 Productivity Commission *Review of Automotive Assistance Position Paper*, June 2002 p. 63, quoted in Holden, Submission No. 57, p. 11; and Federal Chamber of Automotive Industries, Submission No. 73, p. 16.

10 Queensland Government, Submission No. 71, p. 18.

11 Australian National Audit Office, *R&D Tax Concession* (performance audit), Audit Report No. 40, 2002-2003, p. 19.

12 Taxation Institute of Australia, Submission No. 67, pp. 3-5.

13 Australian Information Industry Association, Submission No. 74, p. 17.

10.16 The Chief Scientist described efforts to measure the success of R&D as ‘contentious’, both in Australia and overseas. He stated that ‘simple outcomes measures are not yet available’ and that the challenge ‘is to design a system that establishes performance outcomes, rather than the easier to measure inputs’. This requires the identification of ‘some surrogates for productivity’, such as the effect of R&D on sales per employee or value added to the firm.¹⁴

10.17 The Commonwealth Department of Industry, Tourism and Resources cautioned that:

In considering estimates of the response to increased R&D expenditure [it is important] to be aware that such increases can come only at the expense of expenditure on other capital, and that a decrease in other capital may have offsetting negative impacts. The key question is whether additional R&D expenditure will enhance productivity by more than the negative impact of the corresponding fall in expenditure elsewhere.¹⁵

Recommendation 24

10.18 **The committee recommends that the Commonwealth government ensure that regular evaluations of the R&D support programs take place, including assessment of the effect of tax concessions on the R&D outcomes of businesses.**

Recommendation 25

10.19 **The committee recommends that the Commonwealth government encourage the development of measures that can serve as ‘surrogates for productivity’. This would lessen dependence on Business Investment in R&D (BERD), which is a measure and not necessarily a good indicator of productivity, as well as contribute to the clearer identification of the results of government grants and subsidies, and provide fuller information of the success of converting research to innovation.**

14 Dr Robin Batterham (Chief Scientist), Submission No. 25, p. 3.

15 Commonwealth Department of Industry, Tourism and Resources, Submission No. 38, p. 9.

- 10.20 One way to obtain more direct information about the effect of the tax concessions would be to ask companies to complete one further question in the ABS survey of business activity, the question being to estimate the increase in the company's turnover that was generated by the concession. This 'would start the process of finding out how much benefit we are deriving' from the concession.¹⁶

Recommendation 26

- 10.21 **The committee recommends that, in order to better assess the effect of R&D support programs (including the tax concessions), the Australian Bureau of Statistics add a question to its business survey form asking companies to estimate the increased turnover generated by their use of the tax concession and/or other R&D support measures.**

Improving the general (or flat) tax concession

- 10.22 R&D is defined in section 73B(1) of the *Income Tax Assessment Act* as:

- a) Systematic, investigative and experimental activities that involve innovation or high levels of technical risk and are carried on for the purpose of:
 - acquiring new knowledge (whether or not that knowledge will have a specific practical application)
 - creating new or improved materials, products, devices, processes or services
- b) Other activities that are carried on for a purpose directly related to the carrying on of activities of the kind referred to in paragraph (a).

- 10.23 This definition has applied since 26 July 1996. As from 1 July 2002, a further aspect of the definition of R&D is subsection 73B(2BA) which reads:

Activities are not covered by the definition of research and development activities in subsection (1) unless they are carried out in accordance with a plan that complies with any guidelines formulated by the [Industry Research and Development] Board (IRDB) under section 39KA of the *Industry Research and Development Act 1986* that are in force at the time.

16 Mr Graham Carew (Taxation Institute of Australia), Transcript, p. 157.

- 10.24 The requirement for R&D Plans has been introduced:
- ... to reinforce the need for companies to think strategically about their R&D activities as a critical and on-going part of their business; support the successful management of R&D projects...; and clarify the nature of the records necessary to substantiate R&D claims.¹⁷
- 10.25 Companies do not need to submit their R&D Plans to the IRDB but must keep them as part of the company's records.
- 10.26 The Plan guidelines developed by the IRDB were criticised by the Australian Academy of Science because they do not force a firm 'to deal explicitly with the investment risks they will face and how they intend to deal with them'. The Academy stated that, whereas:
- ... large companies are already familiar with the need to carry out formal investment appraisals [involving the identification of] technical risk factors and risk mitigation strategies [this is not the case for smaller companies, especially SMEs].
- 10.27 The Academy considers that identifying the investment risks 'would improve the effectiveness of the tax subsidy and help to limit inappropriate claims for the tax concession'. As well, it would:
- ... provide a more "evidence-based" basis for case law regarding eligibility to receive the R&D tax concession' and hence reduce the current uncertainty which may deter SMEs from even applying for the concession. Such a requirement 'could be facilitated by the IRDB providing an Excel template for carrying out... net present value estimates and associated guidance.¹⁸
- 10.28 The Academy does not consider that net present value (NPV) estimates should be required in all cases but suggests that they be optional. The IRDB, however, could call for NPV estimates if it wished to challenge a request for tax eligibility. An important benefit of this approach was said to be that:

17 *Fact Sheet: A new guideline for R&D Plans 2001*, obtained from the AusIndustry web site: www.ausindustry.gov.au, accessed on 17 July 2002.

18 Australian Academy of Science, Submission No. 45, pp. 3-11.

It would help to limit the extent to which the R&D tax concession simply substitutes public sector investment (in the form of tax revenue foregone) for private sector investment.¹⁹

10.29 The committee concurs with the Academy's view.

Recommendation 27

10.30 The committee recommends that the Industry Research and Development Board (IRDB) review the current guidelines for R&D Plans (required when registering for the tax concession) to provide that the Plans specify the technical risk factors and outline the risk mitigation strategies. To reduce the compliance burden on companies (especially small and medium-sized enterprises), the IRDB should provide a spreadsheet or similar template for carrying out net present value estimates and provide associated guidance.

10.31 The committee was told by science-based bodies that patent applications and IP protection are key steps in the process of commercialising R&D and so should be an allowable R&D deduction:

IP rights are an important factor in protecting the research investment of knowledge-based economies. Currently, IP rights allow exclusive licensing of technology to organisations that take on the development of products requiring further investment; these rights thus act as an incentive to commercialisation of new technology... Australian scientists and technologists must protect their IP via the patent system and by appropriate strategic alliances with industrial partners.²⁰

The same tax incentives should apply to patent applications as to R&D investments.²¹

10.32 The committee appreciates the importance of obtaining a patent in order for a researcher or a company to access venture capital. It would help the commercialisation of R&D if the cost of obtaining the patent could be brought into the R&D tax concession scheme.

19 *ibid.*, p. 11.

20 Federation of Australian Scientific & Technological Societies, Submission No. 51, p. 6.

21 Australian Geoscience Council, Submission No. 20, p. 4.

Recommendation 28

- 10.33 The committee recommends that the Commonwealth government evaluate and consider extending the tax concession to cover the cost of intellectual property protection and patent applications for businesses that have already qualified for the tax concession.**

Adjusting the incremental or 'Premium' tax concession

- 10.34 While some witnesses thought that the 175% incremental tax concession was 'a step in the right direction', the current eligibility criteria were said to 'severely limit the effectiveness of this initiative'.²² These criteria include the exclusion of certain non-labour related R&D expenditure,²³ the requirement for a continuous registration history with AusIndustry,²⁴ and the requirement for R&D expenditure as a proportion of turnover to increase over time.²⁵ The committee agrees that it is timely to review these constraints.

Recommendation 29

- 10.35 The committee recommends that the Commonwealth government review the current eligibility criteria for the incremental tax concession to ensure that they maximise the conduct and take-up of business R&D, in particular, that the government consider the inclusion of essential non-labour R&D expenditure in relation to eligibility for the incremental tax concession.**

22 Deloitte Touche Tohmatsu, Submission No. 59, p. 16.

23 Council for Knowledge, Innovation, Science and Engineering, Victoria, Submission No. 29, Attachment B, p. 6: The concession 'does not apply to additional investment in plant and equipment'; also Deloitte Touche Tohmatsu, Submission No. 59, p. 2: The government should 'remove the exclusion of non-labour related components in the calculation of the 175% incremental premium'.

24 Mr Graham Carew (Taxation Institute of Australia), Transcript, p. 151: 'start-up companies... are severely disadvantaged by the lack of the three-year history'; also Deloitte Touche Tohmatsu, Submission No. 59, p. 2: The government should 'allow companies access to the 175% incremental tax concession immediately on incorporation without the need to wait three years'.

25 Council for Knowledge, Innovation, Science and Engineering, Victoria, Submission No. 29, Attachment B, p. 6: 'So companies that are moving from the R&D phase into production are likely to fail the test' as will companies 'that conduct R&D in a "lumpy" manner that fits industry production cycles, for example, [the] automotive' industry.

10.36 The committee notes the many concerns about the level of the base tax concession (see chapter 8) and the many suggestions for it to be replaced by a graduated tax concession based on one or more of the following criteria:

- the percentage of a firm's sales revenue that is spent on R&D:

You can take the same pool of money [that is currently foregone by the government in the form of tax concessions] and weight it so that if you spend more than 8% [of sales on R&D] you get a 200% deduction, if you spend more than 5% you get 150% deduction, if you spend more than 3% you get 125% deduction and if you spend less than 3% you get nothing because actually that is just background. A company spending 1% or 2% would be doing that whether there is a tax concession or not...

Anybody who is spending 6%, 7% or 10% will probably have the characteristics of the companies that you are trying to encourage... The cost to the purse is the same as it is now and you are not in the business of picking winners. I think it is a really simple re-weighting of the tax concession to deliver everything you need;²⁶

- the percentage of a firm's revenue that is spent on R&D, for example, providing significant tax concessions for 'businesses or institutions investing in R&D intensive start-up companies (say, greater than 50% budget on R&D)';²⁷
- the correlation between a firm's R&D expenditure and the national research priorities (there should be higher tax concessions 'to the R&D priorities that the government is presently identifying'²⁸) or to

26 Dr James Fox (Australian Innovation Australia), Transcript, p. 171. Similarly, FASTS suggested that 'the present R&D tax concession [should] be replaced by a sliding scale. When companies invest a higher proportion of their company turnover in R&D, they should be rewarded with a higher percentage deduction. For R&D intensity greater than an upper level of say 5%, the deductibility should be at least equal to the 175% upper BAA rate to be internationally competitive, while the lowest rate e.g. for less than 1% R&D intensity, could attract less than the current 125% deductibility. Rather than simply rewarding companies in the year of the increased R&D level, the deductibility rate should be determined from the R&D percentage year-by-year' (Federation of Australian Scientific & Technological Societies, Submission No. 51, p. 5).

27 Institute for Molecular Bioscience, Submission No. 69, p. 3.

28 Mr John Boshier (Institution of Engineers, Australia), Transcript, p. 423; also Dr Gerry Biddle, Submission No.32, p. 12, who submitted that the government should 'enhance tax deductibility and provide accelerated depreciation schedules for projects focussed on national priority areas'.

those ‘particular industries’ in which Australia is trying to ‘promote itself as a centre of excellence in certain technologies’;²⁹

- the correlation between a firm’s R&D expenditure and high-growth areas (there should be ‘perhaps some re-balancing to favour the high-growth areas at the expense of the longer-term relatively stable areas’);³⁰
- the correlation between a firm’s R&D expenditure and the level of innovation—a major international corporation (Holden) suggested utilising a base subsidy for research associated with ‘a “like-for-like” vehicle replacement..., an improved assistance rate... for a vehicle of a type not previously made in Australia... and [a high rate for] a vehicle of a type not previously made anywhere in the world’;³¹
- the extent to which the R&D is undertaken by an SME in collaboration with a public sector research agency—the CSIRO suggested that SMEs collaborating with public research agencies could be given:
 - ... a higher level of tax concession for collaborative projects with public sector research agencies and universities... [for example] it might be possible to subject earnings from activities involving such joint R&D to a reduced marginal tax rate or a tax holiday for the first few years;³²
- the extent to which the R&D is conducted by a public sector research body—the Group of Eight suggested that the government should:
 - ... increase the rate of R&D tax concession for R&D conducted by universities and public science agencies [because] where industry-funded research is conducted by universities and public science agencies there is an additional public good benefit through the development of additional expertise and facilities in the universities and research agencies, provision of additional research training

29 Mr Graham Carew (Taxation Institute of Australia), Transcript, p. 159.

30 Dr Robin Batterham (Chief Scientist), Transcript, p. 469.

31 Holden Ltd, Submission No. 57, p. 17.

32 CSIRO, Submission No. 22, p. 29.

opportunities, and closer linkages. These benefits justify a higher rate of tax concession.³³

[The Group of Eight added that the government should] provide tax incentives for industry investment in research infrastructure wholly or partly for use by universities or public science agencies. There would be mutual benefits if industry had greater incentives to invest in research infrastructure that is shared with, or ultimately used solely by, universities or public science agencies. Appropriate incentives could be a cost effective way of increasing private investment in this area.³⁴

- 10.37 There are pluses and minuses in each of these suggestions but their common theme is that *it is useful to have an incremental tax concession* and to have one that *encourages the maximum possible R&D*. The committee considers that the various proposals warrant careful examination by the government. In particular, the committee draws attention to the desirability of encouraging those companies that already do a great deal of R&D and that maintain a high R&D expenditure relative to company turnover. At present, such companies are unable to access the incremental tax concession (see paragraphs 8.67 and 8.68).
- 10.38 The committee notes that ‘the premium that was introduced with *Backing Australia’s Ability* was the first attempt... [to introduce a system in which the government] disproportionately reward[s] greater commitment’ to R&D.³⁵ A member of the Industry Research and Development Board thought that ‘it is going to take a little while to learn how that works, so it is a little hard to say whether another variant on the premium would be better’.³⁶ The committee concurs with this observation.

Recommendation 30

- 10.39 The committee recommends that the Commonwealth government, once the existing R&D programs have been fully evaluated, consider adjusting the present incremental or ‘Premium’ tax concession by:**

33 Group of Eight, Submission No. 34, pp. 5-6.

34 *ibid.*

35 Dr Laurie Hammond, (Industry Research and Development Board), Transcript, p. 500.

36 *ibid.*

- **ensuring that companies already conducting a high R&D expenditure relative to their turnover are eligible for the concession (thus maintaining the incentive to do R&D); and**
- **considering linking the tax concession regime to the national research priorities and/or to the particular industries in which Australia wishes to promote itself as a centre of excellence and/or to the high-growth areas of the economy and/or to whether the business is a small or medium-sized enterprise and/or to whether the R&D is undertaken collaboratively by the private and public sectors.**

Raising awareness of the cash rebate (tax offset) program

10.40 The cash rebate (tax offset) was praised by SMEs³⁷ and industry associations.³⁸ However, some witnesses thought that:

The addition of the R&D tax offset to the R&D tax concession scheme is a great piece of news that has not been sufficiently advertised. As the new scheme has as its centrepiece a cash rebate, which is highly attractive to SMEs, this could have been the subject of a specific marketing campaign to advertise this change.³⁹

10.41 The committee concurs with this view.

Recommendation 31

10.42 The committee recommends that the Commonwealth government enhance its promotion of the cash rebate (tax offset) program, especially to small and medium-sized enterprises, and industry associations.

37 For example, Mrs Roslyn Hughes (Epicorp Ltd), Transcript, p. 579: 'A number of our companies would not be alive today if it were not for the tax rebate scheme.'

38 For example, Mr Rob Durie (Australian Information Industry Association), Transcript, p. 451: 'We have had a lot of very positive feedback about [the rebate approach]; not just about its very nature, but about how seamless the process is. That seems to work very well.'

39 Deloitte Touche Tohmatsu, Submission No. 59, p. 11. In its 2002 Business R&D survey, the Australian Industry Group found that 'more than half (53%) of small companies were not aware of the cash rebate, specifically aimed at encouraging and assisting R&D among smaller firms', Exhibit No. 20, *Research and Development Expenditure and Drivers in Australian Manufacturing, 2002*, p. 11.

- 10.43 Several witnesses criticised the current thresholds for access to the tax offset program which are companies with a group turnover under \$5 million and group expenditure on eligible R&D of up to \$1 million. It was said that these requirements are ‘unduly restrictive and limit the ability of newly created entities emerging from Australia’s universities to fund their R&D activities’⁴⁰—the turnover level is just ‘ridiculous’, said one SME.⁴¹
- 10.44 Deloitte Touche Tohmatsu suggested that the threshold of ownership should be raised ‘to a controlling interest (that is, more than 50%)’ and the eligibility threshold raised to \$5 million.⁴² The latter would recognise the fact that:
- The average R&D spend [in the biotechnology sector] for private and unlisted core biotechnology companies for 2000-01 is estimated to be \$3.3 million and [is] projected to increase to \$4.4 million in 2001-02’.⁴³
- 10.45 The committee considers that there is a case for the government to review the current eligibility thresholds for the tax offset program.

Recommendation 32

- 10.46 The committee recommends that the Commonwealth government evaluate and consider adjusting the eligibility thresholds for access to the tax offset program.**

Improving the START program

- 10.47 The temporary discontinuation of the START program in April 2002 was criticised by many witnesses, and it appears to the committee that government officials should have been quicker to adjust START once the ‘signals’ of higher than anticipated demand came through.⁴⁴

40 Deloitte Touche Tohmatsu, Submission No. 59, p. 17.

41 Dr Meera Verma (BresaGen Ltd), Transcript, p. 519.

42 Deloitte Touche Tohmatsu, Submission No. 59, p. 2; also see Australia-Israel Chamber of Commerce, Exhibit No. 9, *The Economic Benefits of Innovation Policy: Lessons for Australia from Israel’s Experience*, p. 6.

43 Deloitte Touche Tohmatsu, Submission No. 59, p. 19.

44 Ms Catherine Livingstone (Australian Business Foundation), Transcript, p. 295.

But the program itself was praised by SMEs,⁴⁵ the IRDB,⁴⁶ and the IMS.⁴⁷ The committee agrees that:

Demand for this scheme has demonstrated the considerable willingness of SMEs to take advantage of incentives offered by government [thus indicating that] such policies are appropriate.⁴⁸

10.48 However, it was pointed out that the program is designed for small firms rather than large ones, and that:

... only 1,300 companies will be eligible over the five years of the program, meaning that assistance will not be available to a significant proportion of established SMEs.⁴⁹

10.49 A major international corporation suggested that large firms should also be eligible to apply for START funding provided they spent 'at least \$10 million of research' in Australia and 'commit[ted] the funds 'to joint projects with SMEs and the tertiary institutes'.⁵⁰

10.50 In view of the success of the program, it appears to the committee that there is a case for the government to regularly review the total program funding to ensure that more companies can access START.

10.51 In chapter 5 the committee noted that one factor influencing business expenditure on R&D was the general level of economic activity in Australia—if times are good for business and profitability is up, then there is more funding available for activities such as R&D. This fact led one SME to suggest that 'the government could, without additional cost, introduce a counter-cyclical pattern to R&D

45 Dr John Kikkert (Comlabs Systems and Designs Pty Ltd), Transcript, p. 510: 'We are the recipient of a START grant [which will make the difference between us plateauing, which we can now see because the products we have will only take us so far, and us making it to the next level, which will be the international level'; Mr Charlton (Ecosol Pty Ltd), Transcript p. 511: 'We have had very good experiences with the START grants'; Dr Verma (BresaGen Ltd), Transcript, p. 507: 'The START grant scheme is very useful for groups like us. I have to say three cheers for having got that started again, because it really helps you leverage your cash position today'.

46 Prof. Don Nicklin (Industry, Research and Development Board), Transcript, p. 496: START is 'a huge success'.

47 Mr Tony Strasser (Intelligent Manufacturing Systems), Transcript, p. 325.

48 Mr Gerry Biddle, Submission No. 32, p. 12.

49 Council for Knowledge, Innovation, Science and Engineering, Victoria, Submission No. 29, Attachment B, p. 5 and p. 7.

50 Mr Brendan McManus (NEC Australia Pty Ltd), Transcript, p. 625.

subsidies'.⁵¹ The Taxation Institute, however, opposed using tax concessions in this way.⁵² Leaving aside the use of tax concessions, the committee considers that some of the R&D support programs could usefully be adjusted to support innovative activity, especially by SMEs, during a general economic downturn (one example might be an increase in the amount of START and COMET funding).

Recommendation 33

- 10.52 The committee recommends that the Commonwealth government review its ongoing level of funding for the START program, in light of significant demand and the program's great success in assisting the establishment of small and medium-sized enterprises. Increased funding of programs like START and COMET might be particularly appropriate at times when the general profitability of business is constrained by a downturn in economic activity.**
- 10.53 One witness from a government research agency referred to a Netherlands' program whereby:
- ... early-stage ventures are given grants and if the venture is successful, then... the grant has to be paid back. If the venture is unsuccessful, which it is most of the time, then it is considered to have been a grant. The message being, 'We're glad you tried. You learn from your mistakes. Let's move on and try it again.'⁵³
- 10.54 It is possible that a program of this kind might complement the existing START program and assist the government's efforts to demonstrate to businesses the benefits of conducting more R&D.

51 Wave Global, Submission No. 15, supplementary submission.

52 Mr Graham Carew (Taxation Institute of Australia), Transcript, p. 159.

53 Mr Robert Muir (Australian Nuclear Science and Technology Organisation), Transcript pp. 353-354.

Recommendation 34

- 10.55 The committee recommends that the Commonwealth government expand the grants-based START program by introducing a scheme that provides loans to early-stage companies, with the requirement that those loans be paid back if the venture is successful (but which enables the loans to be converted back to grants if the venture is unsuccessful).**

Improving the BITS incubator seed fund program

- 10.56 Though the BITS program was praised by witnesses,⁵⁴ the Australian Information Industry Association (AIIA), which represents the ICT sector (87% of whose firms employ four people or less), drew attention to the fact that ‘the nominal value of their government funding [was] eroded by tax’ and noted that:

Since the BITS program began, venture capital companies have retreated from the high- risk, early-stage seed funding that BITS incubator tenants require, to safer later-stage investments. This has revealed a major shortcoming in the current limit of a maximum investment of \$450,000 in any project by the BITS’ incubator seed funds. Individual projects under the program typically require a \$1.5 to \$2 million initial seed capital investment. Before the market retreat this could be sourced from the venture capital sector, but that is not the case currently. Consideration should be given to changing the investment guidelines to take account of this change in the market.⁵⁵

- 10.57 A pilot evaluation of the BITS Incubator program (dated February 2003) found that it has been successful when measured against international standards, though the ‘demand for incubation continues to exceed the capacity of the BITS incubators to provide assistance’ and, further, that:

54 For example, Federation of Australian Scientific & Technological Societies, Submission No. 51, pp. 7-8.

55 Australian Information Industry Association, Submission No. 74, pp. 16-17: ‘Private sector incubators funded under the BITS program have found the nominal value of their government funding eroded by tax, which has forced some into investment arrangements that are sub-optimal and driven by tax considerations. The tax status of these incubators should be reviewed.’

... the gap between the level of funding that the BITS incubators can provide and minimum venture capital investments has... created problems.⁵⁶

- 10.58 The committee considers that, in view of the demand for incubation and the general downturn in the ICT industry, it is opportune to review the minimum eligibility threshold and the taxation status of the seed funds.

Recommendation 35

- 10.59 **The committee recommends that, in relation to BITS incubator seed funds, the Commonwealth government consider:**

- **increasing the current eligibility threshold of \$450,000; and**
- **review the existing taxation treatment of the seed funds in order to maximise the encouragement of R&D by businesses.**

Improving collaboration between the public and private sectors

- 10.60 The committee notes the many expressions of concern about it being:

... very hard in Australia for a university person to leave the university, preserve their superannuation and various other things, start up a company, fail and then come back to the university. That is not part of our culture and it is not part of the taxation and superannuation systems.⁵⁷

- 10.61 It would be useful if the employment conditions for scientists were made sufficiently flexible to allow them to be seconded into industry and start-up companies, with a guarantee of being able to return to their original positions in public research institutions.⁵⁸ The Chief Scientist stated:

56 The Allen Consulting Group, *BITS Incubator Program—Pilot Evaluation*, prepared for the Commonwealth Department of Communications, Information Technology and the Arts, February 2003, pp. vii-viii.

57 Mr Peter Laver (Council for Knowledge, Innovation, Science & Engineering, Victoria), Transcript, p. 75. The Australian Industry Group also noted that 'only 24% of manufacturing firms undertaking R&D activity had collaborated with a public R&D facility – a university, the CSIRO or a CRC' in 2002, Exhibit No. 20, *op. cit.*, p. 10.

58 The Warren Centre for Advanced Engineering, *op.cit.*, p. 12.

With flexibility in superannuation provisions, researchers will not lose their financial base when they pass through a failure, a step quite common in the process of commercialisation.⁵⁹

Recommendation 36

10.62 The committee recommends that the Commonwealth government encourage universities to implement more flexible arrangements for university superannuation to remove an impediment to the movement of researchers between the public and private sectors.

10.63 Greater mobility and movement between the academic community, the research community and the business community would also be facilitated by sabbatical exchanges,⁶⁰ the placement of 'final-year university business students' in SMEs on R&D projects 'on a no-fee basis',⁶¹ and wider promotion of the Graduate START program whereby students are placed 'into industry to specifically research current issues facing particular companies'.⁶² It also would be facilitated by the FASTS proposal for:

... an extension of the present R&D START Scheme, which would make available 100 postdoctoral positions in industry each year. These positions would be funded in the same way as R&D START Graduates, that is 50/50 by government and industry in open competition, but could be independent of collaborations with universities.⁶³

10.64 The FASTS proposal was estimated to cost \$9 million per annum once the scheme was in full operation.⁶⁴

10.65 In addition, greater movement of personnel between the public and private sectors would be facilitated by the use of 'tax rebates and other incentives to encourage businesses to specifically employ

59 Dr Robin Batterham, Submission No. 25, p. 2.

60 Mr Gerard Biddle (Royal Melbourne Institute of Technology), Transcript, p. 148; also Federation of Australian Scientific and Technological Societies, *Scientists commercialising their research*, by Toss Gascoigne and Jenni Metcalfe, FASTS Occasional Paper Series, No. 2, April 1999, Executive Summary (Exhibit No. 19).

61 Mr David Clark-Murphy, Submission No. 8, p. 1.

62 Institution of Engineers, Australia, Submission No. 72, pp. 4-19.

63 Federation of Australian Scientific & Technological Societies, Submission No. 51, p. 8.

64 Mr Toss Gascoigne (Federation of Australian Scientific & Technological Societies), Transcript, p. 35.

graduates in auditable R&D activities in-house'.⁶⁵ Further, the simple step of holding regular meetings between research bodies (such as the CSIRO) and the companies that are currently doing a large amount of R&D in Australia would encourage greater collaboration⁶⁶ on the basis that 'if you have got a winner, you keep backing them'.⁶⁷

Recommendation 37

10.66 The committee recommends that the Commonwealth government increase the incentives for researchers to work in businesses by:

- **promoting the Graduate START program more widely;**
- **providing within the Graduate START scheme an option whereby up to an additional 100 post-doctoral students could be placed in businesses with the cost shared equally between government and business;**
- **encouraging research bodies such as the CSIRO to regularly meet representatives of the companies that currently conduct a high level of R&D in Australia; and**
- **consider the use of tax rebates to businesses employing new graduates in R&D activities.**

10.67 A major international corporation suggested that the programs to encourage movement of personnel between public and private sectors should go one step further, namely:

Selected PhD or other researchers [should] undertake a scheduled rotation of work with a university or other academic institution, a relevant research-based private company in Australia, a similar organisation overseas and a government body. The learnings from this would result in Australia having ambassadors, or "research brokers", for local research who grasped the entire collaborative process from the academic, research, business and government perspectives.

65 Mr Gerry Biddle, Submission No. 32, p. 3; also Royal Australian Chemical Institute, Submission No. 28, p. 3.

66 Dr James Fox (Australian Innovation Association), Transcript, p. 168.

67 Ms Heather Ridout (Australian Industry Group), Transcript, p. 119.

People who participated in a rotational program like this would be invaluable to Australia. Their knowledge of decision making in relation to the location of research sites would be helpful in attracting additional research resources to Australia. Collaborations could then be brokered both within Australia and also between domestic research and international institutions and companies.⁶⁸

- 10.68 Such “research brokers” (on the academic side) would complement business people with specific skills in managing SMEs and small, fast-growing companies. These ‘incubator resource people’ could ‘act as case managers for technology improvement in existing SME businesses’ as well as in start-ups and spin-off companies.⁶⁹ This is particularly important in the biotechnology/pharmaceutical sector, said a major international corporation.⁷⁰ The Royal Melbourne Institute of Technology (RMIT) utilises two such people (one funded by the state government) but considers that ‘there needs to be far more people providing diffusion coordination roles, that is, individuals who understand the business psyche but also understand how to develop R&D propositions’.⁷¹

Recommendation 38

- 10.69 **The committee recommends that the Commonwealth and state governments take steps to increase the number of “research brokers” and technology diffusion coordinators in universities, industry associations and professional associations.**

- 10.70 Businesses were generally critical of the way in which public sector research institutions ‘try to hold on to IP’. The research bodies were said:

... to have little incentive to do commercial research and remain too cautious in terms of commercialisation of ideas and spinning off new research ventures’.⁷²

68 GlaxoSmithKline, Submission No. 26, pp. 8-9.

69 Prof. Murray Gillin and Mr John Yencken, Submission No. 9, pp. 4-5.

70 Pfizer Pty Ltd, Submission No. 65, p. 6.

71 Mr Peter Woodgate (Royal Melbourne Institute of Technology), Transcript, pp. 135-136.

72 Business Council of Australia, Submission No. 58, p. 2.

- 10.71 It would be useful, stated one large Australian business heavily dependent on R&D, if research funding by the ARC and other bodies specified that 'it is okay to have closed programs'.⁷³ The same business considered that:

Universities talk the talk, but they are not yet really up to walking the walk in dealing with the IP thing and the publishing thing—which is a cultural thing on their side of the fence to get right.⁷⁴

- 10.72 The committee was struck by the fact that the Australian Research Council (ARC) agreed with the substantive part of these criticisms. Like businesses, the ARC too considers that 'university funding arrangements and reward systems... can act as a major cultural barrier to the commercialisation of university research'.⁷⁵ The ARC suggested that:

A model for achieving significant change in the culture in Australia towards the commercialisation of university research could be to ensure in the conditions of award for an ARC grant that the researchers hold the licence to exploit the IP arising from the research. This could stimulate more entrepreneurial behaviour by researchers by motivating them to seek financial rewards.⁷⁶

- 10.73 The ARC also suggested that:

Universities need to have flexibility to offer options to researchers pursuing commercial lines of work. A more decentralised industrial relations environment in universities would allow institutions to tailor terms and conditions of employment and reward structures to suit the particular circumstances and needs of collaborative ventures involving institutions and business partners.⁷⁷

- 10.74 Further, the ARC observed that:

A more far reaching structural option for facilitating collaboration between universities and industry is the introduction in Australia of the American practice at research

73 Dr James Fox (Australian Innovation Association; and Managing Director, Vision Systems Ltd), Transcript, p. 174.

74 *ibid.*, p. 169.

75 Australian Research Council, Submission No. 50, pp. 11-12.

76 *ibid.*

77 *ibid.*

institutions of allowing staff to earn funds above their normal salary for up to three months each year, often through consultancy agreements with industry, establishing a spin-off company or through the conduct of research funded through the National Science Foundation (NSF) or the National Institutes of Health (NIH) or another source.⁷⁸

- 10.75 The committee agrees with a business group that it would be useful if the government developed ‘a set of guidelines that provide for consistency, transparency and fairness in conducting negotiations for public-private R&D collaborative projects’.⁷⁹

Recommendation 39

- 10.76 **The committee recommends that the Commonwealth government, business associations and the universities improve the way that intellectual property is handled by industry and universities by taking the following measures:**
- **developing guidelines for public/private R&D collaborative projects;**
 - **considering the introduction of appropriate revenue-sharing conditions into the award of some Australian Research Council (ARC) grants to enable researchers and universities to hold the licence to exploit their intellectual property; and**
 - **the ARC considering making ‘closed’ R&D programs eligible for ARC grants (if only under certain specified circumstances).**
- 10.77 The governance arrangements of universities were sharply criticised by many witnesses (see chapter 8). The committee notes that the recent Commonwealth Budget contained proposals aimed at addressing some of the governance issues affecting the universities. The Minister for Education, Science, and Training (the Hon Dr Brendan Nelson MP) recently announced a ‘Review of Closer Collaboration between Universities and Major Publicly Funded Research Agencies’. The review will encompass all Australian public universities and the four large Commonwealth research agencies,

⁷⁸ *ibid.*

⁷⁹ Australian Paper Industry Council, Submission No. 44, p. 11.

including the CSIRO.⁸⁰ It would be appropriate for the review to take into account the diverse ways in which these organisations can assist SMEs. The CSIRO stated:

One of the major impediments to business investment in R&D is the financial capacity of firms, including SMEs. CSIRO supports SMEs through its research services (and by providing access to national facilities at marginal cost). However, in many cases the limited ability of SMEs to pay for the work they require has meant that CSIRO has had to subsidise its services. For this reason, and as part of our own business development strategy, we are starting to experiment with more flexible arrangements to help SMEs use our services. For example, we will consider alternative fee arrangements for some of the services we deliver. These might include mechanisms (such as the use of royalty streams, revenue/profit sharing or success bonuses) that share the risk and rewards of the research. These mechanisms are possible given the scale and diversity of our operations and the large portfolio of projects that we manage at any one time. We are able to spread the risk in a way that individual SMEs would find impossible. In effect, these mechanisms transform our relationship with SMEs from one of customer/supplier to a partnership.⁸¹

- 10.78 The committee supports efforts to encourage Commonwealth research agencies to work with businesses in conducting R&D projects. One option for the Commonwealth agencies is to provide equity for these projects. However, as the CSIRO suggests, other options exist. They should all be considered as part of the Review of Closer Collaboration.

Recommendation 40

- 10.79 The committee recommends that the Commonwealth government's 'Review of Closer Collaboration between Universities and Major Publicly Funded Research Organisations' examines how to encourage the research bodies to 'partner' with small and medium-sized enterprises, including the provision of equity.**

80 Dr Brendan Nelson 'Research Collaboration Review Announced', media release dated 26 May 2003

81 CSIRO, Submission No. 22, p. 28.

10.80 The current system of Research Infrastructure Block Grants was criticised because ‘it depends on a competitive and open process’ whereas business prefers to establish ‘stable, strategic alliances based often on commercially sensitive undertakings’. Also, the grants go:

... to the academic entity through the university’s accounts rather than being in any entity that has been created to hold the assets or the interests of a partnership between a university and a private company’—and yet the latter are ‘the way of the future...

[Further] the classic grants system tended to be quite a bureaucratically intensive and paper-based, high-transaction sort of system... We worked out for our own organisation that the traditional grants system of operation was creating some ten man-years of work every year.⁸²

10.81 A better model was said to be one that:

... encourages universities to create entities and partnerships with well-established companies that allow money to go through without the need for there to be an open and public tender where there is a commercially sensitive technology involved.⁸³

10.82 The committee is sympathetic to these observations.

Recommendation 41

10.83 The committee recommends that the Commonwealth government encourage universities to take the following measures to improve their governance arrangements so that they are less averse to commercialisation of their research:

- facilitate the flow of block grants to their associated business entities rather than through the university’s financial system;
- allow for flexible funding arrangements where commercially sensitive technology is involved; and
- permit their staff to earn income above their usual salaries.

82 Mr Morris Lloyd (Grains Research & Development Corporation), Transcript, pp. 402-403.

83 *ibid.*, p. 405.

10.84 The ARC also suggested that it would be useful if it made:

... available to venture capitalists information held by the ARC on research which has been judged as being high quality and which is likely to deliver national benefit. Access to this information could assist venture capitalists to make decisions about whether or not to pursue the owners of intellectual property of research sponsored by the ARC, with a view to investing in the commercialisation of that research. By making this information available through a searchable database, the ARC would be performing, in the national interest, the role of a broker between the performers of the highest-quality basic research in Australia and the users of that research.⁸⁴

10.85 The committee considers that it would be beneficial to the nation if the ARC publicly released the information it holds on high-quality research.

Recommendation 42

10.86 **The committee recommends that the Australian Research Council make publicly available the information it holds on research which has been judged as being of high quality and which is likely to deliver national benefits.**

10.87 While generally CRCs were seen as 'extremely successful',⁸⁵ they were criticised by some witnesses. A major Australian corporation stated that:

They tend to complicate the contractual arrangements we have with external research agencies through their multi-party nature [and so] we tend to prefer bilateral arrangements.⁸⁶

10.88 An international IT company said that CRCs are 'not up with developments in international standards'.⁸⁷ And even a CRC thought

84 *ibid.*, p. 12.

85 Australian & New Zealand Association for the Advancement of Science, Submission No. 37, pp. 2-3; also Prof. Tim Napier-Munn (Australian Mineral Industries Research Association International), Transcript, p. 70: In relation to CRCs, 'by and large... they have been very successful and are a good mechanism for government... to get some good leverage... [by forcing] universities, industry and CSIRO to work together'.

86 Dr Hugh Bradlow (Telstra), Transcript, p. 603.

87 Mr Brendan McManus (NEC Australia Pty Ltd), Transcript, p. 613.

that the CRC program had so far failed to ‘encourage a culture of R&D strategy in business’, which continues to view R&D investment as ‘opportunistic and project-based as opposed to R&D that is strategic and capability-focussed’.⁸⁸ This was also of concern to the CSIRO.⁸⁹ A possible reason, stated Telstra, was that ‘less than 20% of the overall CRC budget’ is sourced from businesses.⁹⁰

- 10.89 The committee agrees that strategic and capability-focussed R&D ‘is where Australia must focus if it is to reap the real benefits of government R&D support through linking with and leveraging strategic business R&D investment’.⁹¹ At the same time, the committee concurs with the observation that:

... the newer CRCs are very much user-driven... where the users are integrated into prioritizing, reviewing and decision making... [and that this] is one of the recent successes of this venture.⁹²

- 10.90 One CRC representative thought that the CRC program would be ‘more business friendly... [if] the current need for long-term commitments to be a full party of a CRC (seven years)’ was reduced, as it is ‘unrealistic in the volatile business environment’⁹³ and is particularly so for SMEs—most of which are unable to take such a long-term perspective. This CRC also observed that, whereas the CRC program began ‘by involving state and territory government agencies as its industry/research user partners’, it is now ‘increasingly engaging with business’, including many SMEs.⁹⁴ The CRC pointed out that the latter:

... can make very valuable non-cash contributions of in-kind resources... in particular, through contributions of expertise and resources for commercialisation and research application.⁹⁵

88 CRC for Sensor Signal and Information Processing, Submission No. 7, pp. 1-2.

89 CSIRO, Submission No. 22, p. 17.

90 Dr Hugh Bradlow, *op cit.*, p. 620.

91 *ibid.*

92 Mr John Yencken, Transcript, p. 90.

93 Cooperative Research Centre for the Conservation & Management of Marsupials, Submission No. 33, p. 2.

94 *ibid.*, p. 1.

95 *ibid.*, p. 2.

- 10.91 The committee is aware that recent Commonwealth government changes to CRC policies go a long way toward meeting the request by some witnesses that the process of assessing bids for CRCs should give ‘some weighting... to those bids that make a particular focus on how they are going to engage SMEs in the on-going CRC process’.⁹⁶

Recommendation 43

- 10.92 **The committee recommends that the Commonwealth government promote the involvement of small and medium-sized enterprises (SMEs) in Cooperative Research Centres, especially by way of non-cash contributions and through associations representing a number of SMEs within an industry.**
- 10.93 A further issue of concern to the committee was that over half of the money expended by CRCs on universities goes to the Group of Eight universities (see paragraph 8.76). It is important that the smaller universities, many of which are regionally based, are encouraged to take part in the CRC program. AusIndustry (the body responsible for administering the CRC program) should keep this matter under review.

Recommendation 44

- 10.94 **The committee recommends that AusIndustry monitor the expenditure by CRCs on projects involving the universities to ensure that the smaller, often regionally-based universities are able to participate fully in the CRC program.**
- 10.95 Government officials noted that the rural Research and Development Corporations (RDCs) are evolving toward a more commercial model involving the creation of spin-off companies.⁹⁷ However, the Executive Manager of the largest RDC considers that RDCs will not continue to do well unless they become more:

... commercially competent [and learn how to] generate revenue through such mechanisms as royalties... assignment of IP and/or hold licences, divestment of intellectual property

⁹⁶ Mr Rob Durie (Australian Information Industry Association), Transcript, pp. 442-443.

⁹⁷ Mr Gavan Cattanach (Commonwealth Department of Agriculture, Fisheries & Forestry), Transcript, pp. 432-436.

that for one reason or another the RDC does not wish to hold, service fees to partners... [and] publications and information products... [This requires managers who do not fear entering] contractual relationships with the private sector [and who are competent in] working with private capital.⁹⁸

10.96 It was suggested that ‘a targeted approach of putting people with those kinds of skills for interface into the private sector in senior and controlling positions of those organisations can achieve a lot’.⁹⁹

Recommendation 45

10.97 **The committee recommends that the Commonwealth government encourage Research and Development Corporations to increase their commercial expertise by:**

- **employing managers with commercial skills;**
- **establishing commercial entities based on their research; and**
- **possibly registering a greater number of entities under the Corporations Law.**

Adjusting the ARC *Linkage* program

10.98 The ARC expressed concern about the existence of a ‘critical gap’ for very early phase commercialisation (such as developing a prototype) of the outcomes of an ARC grant. Despite the government’s recent pre-seed programs, the ARC stated that:

We are still left with the gap for the researchers of the type we fund to develop the prototype or the proof of principle that they can take to the pre-seed funds to develop further.¹⁰⁰

10.99 The ARC considers that if this gap can be addressed, the chance of venture capital coming in would increase substantially. The ARC stated that:

One way of addressing this is to provide almost an extension of our current industry linkage programs that would allow

98 Grains Research and Development Corporation, Submission No. 17, p. 6.

99 Mr Morris Lloyd (Grains Research & Development Corporation), Transcript, p. 403.

100 Prof. Vicki Sara (Australian Research Council), Transcript, pp. 15-16.

the quality researchers we fund to go one step further, which often, in our discussions with researchers, is a matter of \$50,000 or \$100,000.¹⁰¹

10.100 The proposed program would involve the development of:

... an additional stream within the ARC's *Linkage* program... which would enable a university researcher to seek funding to commercialise an outcome from a *Linkage* project, which involves an industry partner. This could be done in situ or by the researcher spending time outside the university working with the industry partner. The ARC believes these initiatives could be implemented for less than \$30 million per year.¹⁰²

10.101 The committee is aware that a prototype can be developed under the existing arrangements applying to a START grant. This can also occur in collaboration with existing agencies (for example, the CSIRO). The committee considers that greater publicity for these avenues of developing a prototype would be useful.

Recommendation 46

10.102 **The committee recommends that the Commonwealth government:**

- **promote the opportunities for very early phase commercialisation by university researchers (such as developing a prototype) under the existing R&D programs; and**
- **encourage the study of commercialisation as part of the relevant undergraduate courses.**

Reconsidering the definition of R&D

10.103 At several points in this report, the committee has noted issues involving the current definition of R&D that is used by the ABS for compiling figures on R&D and by the Australian Taxation Office/IRDB for determining eligibility for the government's R&D programs. Chapter 2 pointed to difficulties in compiling international - and even national - statistics on R&D and also pointed out the limitations on what business expenditure on R&D (BERD) actually

101 *ibid.*

102 Australian Research Council, Submission No. 50, pp. 9-10.

measures. Chapter 6 drew attention in passing to the fact that the definition of R&D used to determine eligibility for the tax concessions differed to that used in the PIIP with respect to the need to retain IP in Australia—and whereas the former hindered investment in Australia by international pharmaceutical companies, the definition used by the PIIP encouraged it. Also, earlier in this chapter, the committee made two recommendations that bore on the definition of R&D. One was that the Commonwealth government develop measures that can serve as ‘surrogates for productivity’ in a better fashion than the current emphasis on BERD. The other was that the Industry Research and Development Board (IRDB) review the current guidelines for R&D Plans (required when registering for the tax concession) to provide that the Plans specify the technical risk factors and outline the risk mitigation strategies.

10.104 There remain some other definitional issues.

10.105 The definition of R&D in the *Income Tax Assessment Act* uses the terms ‘innovation or high levels of technical risk’ and ‘new knowledge’. ‘Innovation’ is defined in Section 73B (2B) of the Tax Act in a negative way: ‘Activities are not taken to involve innovation unless they involve an appreciable element of novelty’. The IRDB’s *Guide to the R&D Tax Concession* states that:

‘Novelty’ is understood to mean “newness” or “something new or different”. Therefore, if the core R&D activity involves something which is either appreciably new or appreciably different to that which existed in that industry at the time that the activities were undertaken, then the “original thinking” within this activity is likely to satisfy the legislative requirement for innovation.

The Board assesses the novelty of claimed R&D activities primarily against technology commonly used in the relevant industry sector in undertaking similar product or process developments... The Board takes into consideration... [whether the new device, product or process is] likely to be considered by experts in the field to be clearly different to the industry standard... The eligibility of each claim needs to take into consideration factors such as the area of technology the claim relates to, the current state of knowledge in the public domain of technology, the commercial and technical

realities of assessing this information and the technological progress made by the claimant company.¹⁰³

10.106 Section 73B(2B) of the Tax Act defines 'high levels of technical risk' as:

- i. The probability of obtaining the technical or scientific outcomes of the activities cannot be known or determined in advance on the basis of current knowledge or experience; and
- ii. The uncertainty of obtaining the outcome can be removed only through a program of systematic, investigative and experimental activities in which scientific method has been applied, in a systematic progression of work (based on principles of physical, biological, chemical, medical, engineering or computer sciences) from hypothesis to experiment, observation and evaluation, followed by logical conclusions.

10.107 The degree of complementarity between 'innovation' and 'high level of technical risk' is acknowledged by the Board which states:

If there is uncertainty of outcome, then it is likely that some original thinking would be required to resolve the uncertainty, and the original thinking would be evidence that the *innovation* test had been met. Conversely, it is unlikely that original thinking would be required if the outcome was already known on the basis of current knowledge or experience.¹⁰⁴

10.108 The Academy of Science considers that the requirement to show that 'the probability of obtaining the technical or scientific outcome of the activities cannot be known or determined in advance on the basis of current knowledge or experience' is 'the root cause of ambiguity over eligibility for the R&D tax concession (and of what does and does not constitute R&D)'.¹⁰⁵

10.109 The Academy observed that the Canadian definition of 'eligible' work in the context of applying for a tax concession 'includes incremental improvements to existing technology'.¹⁰⁶ Under such a definition, it is

103 *Guide to the R&D Tax Concession*, available online at: www.ausindustry.gov.au, accessed on 15 May 2003, p. 53.

104 *ibid.*, p. 54.

105 Australian Academy of Science, Submission No. 45, p. 11.

106 Prof. Sue Serjeantson (Australian Academy of Science), Transcript, p. 14.

likely that clinical trials, or even market research, might be classified as R&D. Both of these activities have given rise to problems in Australia.¹⁰⁷

10.110 The Academy suggests that, 'in the long-run', the current Section 73B(2B) (i) be replaced by a new section along the following lines:

Whilst it may be possible to estimate the probability of obtaining the technical or scientific outcome on the basis of current knowledge and experience this probability is sufficiently low that the investment is unlikely to go ahead without the benefit of a special tax treatment for the investment.¹⁰⁸

10.111 The Academy considers that the revised wording would cover R&D investment that was:

... aimed at achieving some types of incremental technical change in products and processes. Many companies innovate effectively by making a series of small incremental improvements in their products and processes and achieve this precisely because an incremental approach reduces technical risk (and hence their investment risks) when compared to 'big push' projects. This point applies in particular to the ICT area and other technologies that involve highly complex inter-dependent systems in which innovation is best carried out via many small 'evolutionary' steps. It applies also when innovating by adapting existing plant.¹⁰⁹

107 Dr Meera Verma (BresaGen Ltd), Transcript, p. 533: 'Time and time again we get caught in this trap when a clinical trial gets the response: "I'm sorry, that doesn't fit under R&D". But it does, because if it falls over in clinical trials, you do not have a product'; Holden, Submission No. 57, p. 17: The definition of R&D should cover 'the costs of market determination/market research to ensure adequate understanding of the potential opportunities.' Also Dr Graeme King (Nortel Networks Australia Pty Ltd), Transcript, p. 619: 'The more you get towards the "D" end, the more you will be put under the microscope about the suitability of your activities for R&D concession which seems a shame. It seems a shame to have to try and convince someone that what you are doing is taking that product to a real income stream'; Australian Minerals Industries Research Association, Exhibit No. 24, Centre for International Economics, *Minerals: Our Wealth Down Under*, p. 31: R&D 'is becoming more focused on incremental measures that improve market performance' and that there has been a 'worldwide trend towards shorter term applied R&D'; Dr Lehmann, Transcript, p. 558: We are 'developing our products and improving our way of doing things'[and in doing so] 'we really have to be careful about which bits [of R&D] we claim and which bits we do not claim.'

108 Australian Academy of Science, Submission No. 45, p. 11.

109 *ibid.*, p. 4.

- 10.112 The committee agrees that it is in Australia's interests to encourage incremental innovation and, further, that this should not be confined solely to 'high-tech' products or ideas. It should also encompass small businesses in the services sector, for example, small food processing companies that are experimenting with ways to increase the shelf life of their products. Such companies justifiably consider that they are conducting R&D.¹¹⁰
- 10.113 The committee considers that the combination of the change to R&D Plans required by the IRDB (see earlier in this chapter) and the amended definition of 'high levels of technical risk' (as outlined above) would encourage more business investment in R&D.

Recommendation 47

- 10.114 **The committee recommends that, in order to reduce ambiguity about eligibility for the R&D tax concession and to facilitate R&D that involves *small* innovative steps, the Commonwealth government consider amending Section 73B(2B) (i) of the Income Tax Assessment Act broadly along the following lines: 'Whilst it may be possible to estimate the probability of obtaining the technical or scientific outcome on the basis of current knowledge and experience, this probability is sufficiently low that the investment is unlikely to go ahead without the benefit of a special tax treatment for the investment.'**
- 10.115 Finally, the committee turns to the issue of whether a less technology-focussed definition of R&D should be adopted. Many organisations pointed to their focus on services rather technologies—even a major Australian company like Telstra noted that it is essentially 'a service business [whose] role is to assemble complex technology assets and to offer them as systems and services'.¹¹¹
- 10.116 In view of the number of SMEs in Australia, the increasing importance of the service sector and the great amount of innovative activity that is taking place in the economy and which is not technology-based (see chapter 2), there appears to be a case for re-examining the current technology-oriented definition of R&D.

110 Mr Mike Ratcliff (Temptation Bakeries Pty Ltd), Transcript p. 539: 'A major theme of our R&D is increasing shelf life. We have taken the shelf life of one product from one week to a month and increased sales ten-fold'.

111 Dr Hugh Bradlow (Telstra), Transcript, p. 602.

Recommendation 48

- 10.117 **The committee recommends that the Commonwealth government review the current definition of R&D to ensure that its technological orientation continues to be relevant to the type and extent of innovation occurring in Australia and, in particular, that it recognises the importance of R&D in the services sector.**

Gary Nairn MP

Chair