

Business
Council of
Australia



Business Council of Australia

**Submission to the
Review of the National Innovation System**

2008

Executive Summary

Innovation by Australia's businesses, governments and research institutions has delivered many economic and social achievements. But we need to continually improve and adapt to a fast changing global environment.

Businesses that operate in open and competitive markets are the key to achieving the most substantial economic and social returns from effective innovation over the medium to long term. For this reason, policies aimed at improving the nation's innovation system need to have a particular focus on providing the right environment for business innovation in both global and domestic markets. This objective will also require innovation within the public sector.

The Business Council of Australia (BCA) welcomes this review of Australia's innovation system, its consideration of the gaps and weaknesses in the system and the opportunity to develop proposals to address them. This task will require a thorough assessment of how the innovation system operates presently and a critical assessment of current policy settings. Those policies that are working well should be continued and strengthened. Those that are not need to be altered or abandoned. And new measures will need to be introduced where gaps exist or where there is an opportunity to improve the operation of the system as a whole.

The BCA has made a number of contributions to the innovation policy debate over the past 20 years including surveys of innovating activity by our Members. This submission draws and builds upon that work.

The BCA supports a broad and contemporary concept of innovation as an activity that occurs right across the economy and one which applies knowledge to the development of improvements in products and processes and to finding solutions to public policy issues of national significance. The innovation system is made up of a number of key actors. These include the customers of innovation, and the organisations and individuals that conduct or support innovation (businesses,

government, research institutions and finance and venture capital organisations) and the relationships that exist between them.

A review of the national innovation system is timely, given the recent declining trend in multi-factor productivity. Government policy in the 1980s and 1990s contributed to improved economic efficiency by reforming product and labour markets. Multi-factor productivity grew by between 1 and 2 per cent over this period reflecting benefits accrued from a more productive allocation of capital and labour inputs throughout the economy. However, with the dividends from those reforms now declining as a source of growth, it is time to turn our focus to the technological and non-technological drivers of growth that flow from the generation and application of knowledge through investment in, and better use of, physical and human capital.

Role of the government sector in the innovation system

The Expert Panel has been tasked with considering a set of principles to underpin the role and participation of the public sector in the innovation system.

An effective innovation system operates where the ‘producers’ of innovation – businesses, research institutions and government – are highly responsive to customer-driven demand for new and improved products and solutions. Because innovation performance is dependent on collaboration and coordination, the role of government is critical in creating environments that remove regulatory barriers to collaboration and promote strategic policy objectives and initiatives that facilitate the linkages needed to bring innovation to the marketplace. Government can also play a role by developing key elements of the innovation system for example by investing in skills training and knowledge infrastructure.

The BCA considers that Australia needs a national body with the authority and the capacity to develop and implement national innovation policy and drive outcomes. We recommend the establishment of an Australian Innovation Council within the federal government, with the cooperation and involvement of all state and territory governments. The Council would be linked to an advisory committee of business leaders, university leaders, researchers and other stakeholders, such as the Prime Minister’s Science, Engineering and Innovation Council.

The objectives of the Australian Innovation Council would include providing whole-of-government policy coordination within and between governments, business and the education and research sectors. Innovation policy should also be placed on the agenda of the Council of Australian Governments (COAG) in order to identify national priorities and improve intergovernmental collaboration.

Government can also play an important role by embracing innovation in the way it organises itself and carries out its functions, particularly in the delivery of services. By doing so, government can demonstrate leadership while also raising the quality of government services and creating opportunities to partner with other participants in the innovation system on important national issues.

Other participants in the innovation system – education and research institutions, business and financiers and venture capitalists – also play key roles and have responsibility for the effective operation of the system. Each group has a distinct role to play however it will be the effective collaboration between these groups that will ultimately determine the success of the innovation system.

A national set of innovation priorities

The review team has also been tasked with considering a set of national innovation priorities for strengthening Australia's national innovation system.

As with national research priorities, national innovation priorities can demonstrate government leadership by signalling a strong level of support for innovation and help to bring innovation systems participants together on matters that are in the national interest.

Rather than make specific recommendations as to what the priorities should be, we urge that in setting innovation policy priorities, governments ensure that they are consistent with the wider economic and policy context. That means that the innovation priorities should be consistent with other economic and social policy settings, should grow Australia's links to the international innovation system, should be demand-driven (such as to meet a specific customer need or a significant national policy objective) and should draw and build upon Australia's comparative economic, environmental and social advantages.

BCA recommendations for strengthening Australia's innovation system

The BCA's submission has as its main objective the creation of the most supportive environment in which to enable innovation. It considers the roles played by participants in the system and considers ways to strengthen the interaction between system participants and their capacity to innovate. It presents a comprehensive, whole-of-government consideration of innovation policy that calls for the Government to strengthen the innovation system in four key ways:

- First, by providing national innovation policy leadership and coordination across governments;
- Secondly, by supporting mechanisms which underpin demand for innovation;
- Thirdly, by building the responsiveness and capacity of system participants to innovate; and
- Fourthly by setting a supportive business environment in which value-creating innovation can be appropriately rewarded.

The submission makes a number of recommendations under each of these headings as laid out below. However we would like to highlight three priorities in particular that would have a significant impact:

1. Building Australia's university teaching and research capabilities, and our vocational education and training capabilities. One of the requirements for this objective is to lift the quality of teaching in Australia's school system.
2. The importance of encouraging students/young children to become interested to develop skills in science, maths and technology so that they have the choice to pursue advanced studies in these disciplines in senior secondary school, in vocational education and training and at university.

3. Developing public policy settings that support and improve collaboration, in particular collaboration aimed at increasing the level and effectiveness of the commercialisation of research and development.

The full set of the BCA's recommendations are listed below.

Provide national leadership and policy coordination

- Recognise innovation as a critical national priority and align efforts by governments and business to boost innovation.
- Establish an Australian Innovation Council (AIC) within the federal government, with the cooperation of all state and territory governments, and drawing on existing resources and expertise. The Council would be linked to an advisory committee of business leaders, university leaders, researchers and other stakeholders, such as PMSEIC. The AIC should have responsibility for establishing national agreement on a metric or metrics for innovation, measuring performance on a regular basis and reporting on progress.
- Federal and state governments should set innovation as a new federal reform priority for COAG

Support demand for innovation

- Maintain open, competitive and seamless national markets
- Strengthen government sector demand for innovative products and solutions by committing to raising the level of innovation in public service delivery
- Set national innovation priorities that help to provide direction to innovation system participants on major national issues. Priority setting should take into account Australia's links to the international innovation system and the government's wider economic and social policy settings and should support a demand-driven approach to innovation that draws and builds upon Australia's core economic, environmental and social advantages.

Build Australia's innovation capacity

- Build Australia's innovation capabilities through investment in education and training
 - improving the quality of teaching in school and post-school education and training;
 - encouraging more young people to be interested in studying maths, science and technology subjects in order to increase the number of Australians pursuing careers in engineering, science and technology fields;
 - improving the performance of Australia's education and training system in teaching children and adults the skills that contribute to innovation, including team work, leadership and critical thinking; and
 - continuing to strategically target key skills in demand under the skilled migration program.
 - strengthen organisational leadership and management capabilities by:
 - improving the skills and wider professional development opportunities for Australian managers in business and public sector agencies; and
 - assisting employees to update or upgrade skills that contribute to innovation, including information and communications technology, business and communication skills.
- Build Australia's innovation capabilities through investment in knowledge infrastructure
 - investing in world class broadband;
 - investing in new technologies that enable business development across different sectors, including information and communications technology; and
 - strategic investment in infrastructure to support innovation, including transport and energy.
- Strengthen Australia's research institutions and networks

- strengthening Australian research institutions and building their global engagement capabilities;
 - providing an environment which encourages further increases in business investment in research and development;
 - implementing measures to attract the best and brightest people into research, and to facilitate improved engagement and exchange initiatives with industry;
 - strengthening Australia's development and commercialisation capabilities; and
 - improve research and development in the services sector.
- Strengthen collaboration
 - prioritising the development of closer collaboration between business and the research and education sectors;
 - providing information aimed at improving collaboration capabilities; and
 - simplifying the requirements placed on organisations that participate or seek to participate in collaboration initiatives such as the Cooperative Research Centre (CRC) program.

Strengthen the environment for innovation

- Reform the tax system so that it ensures appropriate returns for innovation
 - in reviewing the taxation system, the Federal Government should consider how the taxation system can appropriately support innovation, risk-taking and entrepreneurship.
- Remove regulatory impediments to innovation
 - improving regulatory settings to encourage innovation, such as reforming different regulatory regimes in Australia to create a 'seamless economy';
 - consider the effects of corporate governance on innovation; and

- improve regulatory responsiveness for new technologies and products
- Undertake research into the extent of and reasons for private sector under-funding of certain innovative activities in order to set policies to support commercialisation which achieve the best outcomes

This is a broad and extensive agenda and many of these recommendations overlap with a number of policy portfolios at the federal, state and territory levels of government. We recognise that the review terms of reference may not extend to include all of these policy areas and where that might be the case, we would hope that they could be considered in other fora, including within the context of other federal policy reviews underway. For example, we consider an important consideration for the tax system review presently underway to be encourage and support innovation that promotes increasing productivity and economic growth.

Innovation policy – summary of recommendations

Provide national leadership and policy coordination	Support demand for innovation	Build Australia's innovation capacity	Strengthen the environment for innovation
<ul style="list-style-type: none"> Set innovation as a policy priority, with clearly defined objectives 	<ul style="list-style-type: none"> Maintain open, competitive and national markets 	<ul style="list-style-type: none"> Improve education and training capabilities, especially science and technology skills 	<ul style="list-style-type: none"> Appropriately support innovation, risk-taking and entrepreneurship via the tax system
<ul style="list-style-type: none"> Establish an Australian Innovation Council in the Department of Prime Minister and Cabinet 	<ul style="list-style-type: none"> Strengthen government sector demand for innovative products and solutions 	<ul style="list-style-type: none"> Improve Australia's knowledge infrastructure 	<ul style="list-style-type: none"> Remove regulatory impediments to innovation
<ul style="list-style-type: none"> Co-ordinate policy across all Australian Governments (via COAG) 	<ul style="list-style-type: none"> Set national research and innovation priorities 	<ul style="list-style-type: none"> Make our research institutions world class 	<ul style="list-style-type: none"> Set policies to support commercialisation
		<ul style="list-style-type: none"> Strengthen collaboration between the private and public sectors (in Australia and overseas) 	

Declaration of interest

The Business Council of Australia (BCA) represents the Chief Executives of 100 of Australia's leading companies. The BCA's objective is to develop and advocate, on behalf of its Members, public policy reform that positions Australia as a strong and vibrant economy and society. The companies that our Members lead are responsible for a significant share of Australia's domestic and overseas business activity. They therefore have a significant interest in government policy, including innovation policy, the direction and scope of economic and other policy reform and Australia's future prosperity.

Introduction and overview

Innovation is critical to the achievement of national economic and social objectives. By developing new and better products, services, solutions and processes, innovation is a fundamental driver of productivity, business competitiveness and public sector improvement.

The BCA supports a broad and contemporary concept of innovation, one that recognises that innovation occurs in all sectors of the economy and which has three main elements – technological, organisational and institutional. We also recognise that innovation results from both the local generation and use of knowledge and also the application of knowledge generated in other parts of the innovation system and, importantly, generated in other parts of the world.

This submission makes recommendations for strengthening our innovation system through more effective policy leadership and coordination, supporting demand for innovation, investing in and improving workforce skills, knowledge infrastructure and system linkages and by improving the business environment.

A national innovation system that supports innovation in its many productive forms and which is seamlessly linked with global innovation systems is essential for growing economic prosperity and improving the quality of life for all Australians.

Innovation as a driver of productivity

Fundamentally, innovation policy supports economic growth by raising productivity. Multi-factor productivity (MFP) is defined by the OECD as the change in GDP “from more efficient use of labour and capital inputs”. See Box 1.

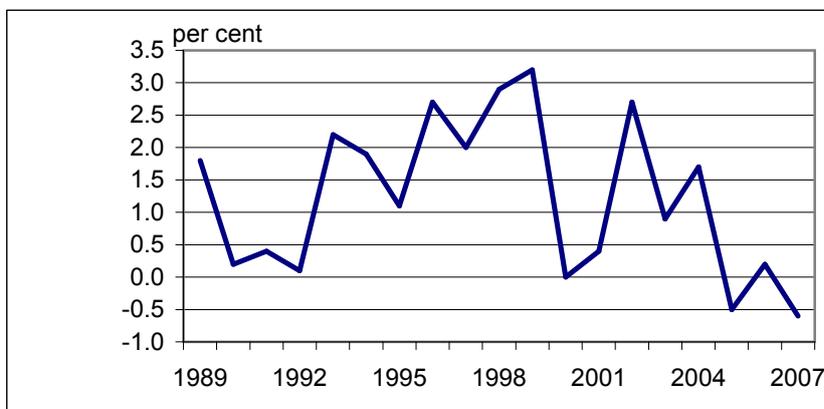
Box 1: OECD definition of multi-factor productivity:

“MFP is the change in GDP that cannot be explained by changes in the quantities of capital and labour that are made available to generate GDP. MFP is sometimes described as disembodied technological progress, because it is the increase in GDP that is not embodied in the amounts of either labour or capital. MFP growth comes from more efficient use of labour and capital inputs, for example through improvements in the management of production processes, organisational change or more generally, innovation. Growth in MFP is a significant factor in explaining the long-term growth in real GDP.”

Source: OECD Compendium of Productivity Indicators 2008

MFP in the market sector in Australia has declined in recent years after a long run of growth (see Figure 1). MFP declined by 0.6 per cent in 2006-07 – according to the ABS this reflected a 3.1 per cent increase in market sector GDP compared to growth in capital services and labour inputs growth of 3.8 per cent.

Figure 1: Annual growth in multi-factor productivity in the market sector



Source: ABS 5204.0 2006-07 p12

Generally speaking, the better we are at innovation, the higher will be the level of multi-factor productivity. We had strong productivity growth in the 1990s when we averaged about 1.7 per cent growth each year. We have slowed since the year 2000 to about 0.6 per cent a year and have recorded negative growth in recent years.

The performance of the 1990s is a benchmark we should aspire to repeat. Government policy in the 1980s and 1990s contributed to improved economic efficiency by reforming product and labour markets. Multi-factor productivity grew by between 1 and 2 per cent over this period reflecting benefits accrued from a more productive allocation of capital and labour inputs throughout the economy. However with the dividends from those reforms now declining as a source of growth, it is time to turn our focus to the technological drivers of growth that flow from the generation and application of knowledge through investment in, and better use of, physical and human capital.

Roles and responsibilities of innovation system participants

The innovation system is made up of many participants, including the customers and beneficiaries of innovation and the organisations and individuals which conduct or support innovation (government, businesses, research institutions and finance and venture capital organisations) and the relationships that exist between them.

An effective innovation system operates where those 'producers' of innovation – businesses, research institutions and government – are highly responsive to the demands of customers for new and improved products and solutions. Open and competitive markets are therefore critical to driving that response. Because improving innovation performance is dependent on collaboration and coordination, the role of government is critical in creating environments that remove bureaucratic barriers to collaboration and promote strategic policy objectives and initiatives that facilitate the linkages needed to bring innovation to the marketplace.

Government should also take responsibility for leading the development of key elements of the innovation system for example through its investments in skills training and knowledge infrastructure which raise innovation capacity.

Government can also play an important role by embracing innovation in the way it organises itself and carries out its functions, particularly in the delivery of services. By doing so, government can demonstrate leadership while also raising the quality of government services and creating further opportunities to partner with other participants in the innovation system on important national issues.

While this submission is, in accordance with the terms of reference for the inquiry, concerned with the role of government, it should be mentioned that other participants in the innovation system also play key roles and have responsibility for the effective operation of the system.

Education and research institutions must prepare students for a labour market that values knowledge and the ability and skills to apply it. It is also expected that research organisations will aim to, where practicable, link research with potential commercial applications and join innovation partnerships.

Education and research bodies have an important collaboration role, at an intellectual, technological and cultural level.

Ultimately, private enterprises are the most effective agents of innovation in response to market conditions. Business must develop innovation capabilities internally and in collaborative networks and clusters, so that knowledge may be deployed as a source of competitive advantage, and create workplaces that enable people to contribute to innovation and to fulfil their potential.

Finance and venture capital is vital for innovation success in Australia. Both the government and the private sector play a role in ensuring sufficient access to capital resources for innovative activities. We need to address issues and determine appropriate roles for both sectors in areas where there is currently a lack of investment in innovative activity.

Each group has a distinct role to play, however, it will be the effective collaboration between these groups that will ultimately determine the success of the innovation system.

Innovation – a business perspective

“For businesses, innovation matters because it is central to the competitive process.”

Keith Smith and Jonathan West

The BCA has been a significant contributor to the innovation debate on innovation policy in Australia over the past 20 years. This submission draws upon the findings and recommendations from those earlier reports and sets out the BCA’s policy priorities for innovation policy in Australia.

In 1993 the BCA released *Managing the Innovating Enterprise*, a landmark publication on business innovation in Australia. The report aimed to promote acceptance of the concept of innovation as a practical business issue for Australian business.

The Council undertook the report because it was concerned at the time that there was a general lack of understanding outside business circles of what it meant to be innovative in business, about the processes of innovation in businesses and about the factors that determined business innovation success.

In the time since the release of *Managing the Innovating Enterprise*, it has become widely accepted that successful innovative businesses are essential to a nation’s economic prosperity.

The BCA has since undertaken further research on business innovation to support a greater understanding of innovation from a business perspective.

The BCA report *Research and Development Investment by Australia’s Leading Businesses*, released in December 2004, attempted to shed light on the factors that guide large companies’ investment in R&D. In addition to information on the amount and type of R&D expenditure being undertaken by BCA Member companies, the report analysed issues such as the processes around the determination of R&D budgets, drivers and inhibitors of R&D spending, factors surrounding decisions to internationalise R&D activities and the extent of R&D collaboration and commercialisation by Members.

The report showed the significant R&D efforts of Australia's largest companies. Moreover, the report found that surveyed businesses invested in R&D in a way that provided the greatest innovation benefits.

In response to our concern about the need for a more comprehensive and strategic innovation policy framework, in 2006 the BCA released the report, *New Concepts in Innovation: The Keys to a Growing Australia*. Attached to the report was *Changing Paradigms: Rethinking Innovation Policies, Practices and Programs* undertaken by consultants Howard Partners for the BCA in 2006.

New Concepts in Innovation presents the findings of a series of interviews conducted with 19 BCA Member Companies concerning innovation within their businesses. The aim of the case studies was to examine the nature of innovation approaches within BCA Member Companies and to assess the various public policy frameworks which influence business innovation.

The key findings of the report highlight that innovation is a complex non-linear process. Innovative activity encompasses a wide range of activities which can be technological or non-technological in nature, can focus on the products, processes or organisational aspects of innovators, and can involve breakthrough ideas or continuous improvements to current operations.

The report found that businesses in Australia are undertaking innovation through a variety of different means, which are highly dependant on the characteristics of their markets and industries.

In particular, the case studies indicate that:

- innovative activity extends across all parts of a business – it is not confined to research work;
- the imperative to deliver customer value drives the need for, and nature of, innovation; and
- business innovation relies importantly on the human capital of its employees and how their skills and capabilities are applied.

The BCA's most recent release on innovation in 2006, in collaboration with the Society for Knowledge Economics, was titled *Pathways to Prosperity*. The report recommended a new National Innovation Framework built upon a clarification of roles and responsibilities, strong collaboration and strategic action between government, the research sector, business and our schools and universities.

Business expenditure on research & development (BERD)

One significant way in which Australian business undertakes innovation is through investing in research and development. ABS data shows that there has been a dramatic increase in business expenditure on research and development (BERD) in Australia in recent years. Over the period from 2001-02 to 2005-06, BERD:

- grew from \$6.2 billion to \$10.1 billion;
- grew in real terms by an average 8.9 per cent per annum; and
- grew from 0.84 per cent of GDP to 1.04 per cent of GDP.

The largest contributors to BERD in 2005-06 were manufacturing, property and business services and mining.¹

The BCA recognises that while R&D itself is not a measure of innovation, it certainly provides a strong basis for innovation in three key ways:

- as source of new ideas, products and services;
- by building capabilities, knowledge and skills, facilities and equipment; and
- by contributing to collaboration – both in Australia and overseas.

At just over 1 per cent of GDP, BERD is still below the OECD average, which is just over 1.5 per cent of GDP. If Australia is going to be a truly innovative nation into the

¹ Australia's low level of BERD intensity compared to other countries may be partly explained by Australia's industry structure. It does not necessarily mean that Australian businesses are less innovative, as will be discussed later.

future an important contribution will come from growing the level and effectiveness of BERD. The recent increase in BERD is a positive development toward this aim. Research conducted today becomes the foundation for future innovation and recent increases in BERD will be important for the future.

BCA research has found that the key drivers of R&D activity are to gain or maintain market share or to maximise benefits from new technologies and processes. This suggests R&D efforts are strongly linked to competitiveness.

Figure 1: Relative importance of R&D drivers identified by respondents

R&D driver	Per cent
Gain/maintain market share	57
Maximising benefits from new technologies/processes	37
Current company profitability	35
Need to find new markets	27
Need to develop new/improved products/services	9
International attractiveness of Australia for R&D activities	8
Improve efficiency/reduce costs	8
Government policy environment	7

Our research also shows that businesses will predominantly invest in R&D in those areas in which they consider to be their core strengths, but will buy in and adapt that knowledge which is more effectively generated by others. In our 2004 survey, 78 per cent of respondents said that their organisation invested over 80 per cent of R&D expenditure in their main research area. This point may be largely self-evident, but it underlines the importance of supporting R&D in Australia that builds upon our core economic strengths.

One of the key determinants of whether larger businesses invest in R&D is the strength of the business case for conducting research in Australia. This needs to be considered against the location of research facilities and researchers throughout the world and the research currently being conducted by others, if this can be determined. Other factors influencing R&D decisions include proximity to markets and key productive inputs. The R&D tax concession can make a contribution to improving the business case for companies to invest in R&D. But it is important that

measures such as the R&D tax concession result in a net positive economic benefit by supporting R&D activity that has positive spill-over benefits and which would not have occurred otherwise. These are issues that should be carefully considered in the current review of Australia's tax system.

For the BCA Members who responded to the 2004 survey, resource availability, cost considerations and access to internal finance featured at the top of the list of potential inhibitors to R&D.

Figure 2: Important inhibitors of business R&D expenditure – per cent of respondents who nominated as ‘critical’ or ‘highly relevant’

Inhibiting factor	Per cent
Cost of research relative to benefit	52
Access to internal finance	52
Lack of resource availability	36
Lack of market opportunities	24
Lack of technological opportunities	20
Government policy environment	16
Access to external finance	0

It is perhaps unsurprising that R&D costs (relative to benefits) are a significant factor – as Smith and West note, innovation can consume some of a business's highest quality resources in the interest of realising future gains and does so at the expense of allocating those resources towards more immediate production.²

Business organisational innovation

Research shows that business organisational innovation occurs across the entire economy. It also highlights that the proportion of businesses undertaking operational process change and organisational innovation is higher than the proportion of businesses undertaking product innovation in all industries except manufacturing and wholesale trade.

² Smith and West (2007), p12

Value chain alignment has become a vital form of innovation activity for companies competing in global markets. Professor Alan Hughes of Cambridge University has referred to research by Nobel laureate Robert Solow that shows three sectors in the United States accounted for most of the productivity growth over the last five years of the 1990s – wholesale, retail and security and commodity broking.³

Significantly, a recent ABS-DITR (2006) survey, *Patterns of Innovation in Australian Businesses*, found that non-R&D spending accounted for over two-thirds of total business expenditure on innovation. While most innovating firms reported changes which were ‘new to the business’ rather than ‘new to the world’, research suggests that organisational innovation can result in substantially improved performance through structural flexibility and agility, high performance workplaces and good practices associated with new product and service development, quality and supply chain management. The organisational challenge, identified in the innovation management literature, is how to do two things at once: how to be ‘ambidextrous’ – to explore and exploit, to be fluid and organic and structured and systematic.

There is support for this approach in IBM’s 2006 global CEO survey, *Expanding the Innovation Horizon*. While CEOs continue to place more emphasis on technological innovation, according to the survey, they now focus 30 per cent of their efforts on organisational innovation, particularly changes in their business models. Further, ‘companies that have grown their operating margins faster than their competitors were putting twice as much emphasis on business model innovation as underperformers’. In this context, CEOs identified ‘organisation structure changes’ and ‘major strategic partnerships’ as key features of business model innovation.

³ Andy Cosh and Alan Hughes, *Innovation Benchmarking Study: New Findings on University Industry Relations and a UK Cambridge Policy Perspective*, presentation to the 1st International Conference on Local Innovation Systems, 13 December 2005.

Business innovation through collaboration and other system linkages

Lifting innovation in Australia will also depend on effective collaboration and other system linkages, particularly between business and universities and with public research institutions like the CSIRO.

Innovating firms benefit from structured collaboration, technology spillovers, networking and knowledge diffusion, where the boundaries of the extended enterprise become less easy to draw. Recent research has highlighted the emergence of 'open systems' approaches to innovation, including increasing engagement with the innovative feedback loop generated by customer engagement. In Australia, a recent DITR (2006) analysis, *Collaboration and Other Factors Influencing Innovation Novelty in Australian Businesses*, found that firms which collaborated for innovation had a much greater chance of achieving a 'new to the world' degree of novelty, especially in technology intensive sectors.⁴

Internationally, a Frost & Sullivan (2006) research program, Meetings Around the World: *The Impact of Collaboration on Business Performance*, supported by Verizon Business and Microsoft found that 'collaboration works in conjunction with strategic orientation and opportunities inherent in the market environment... to improve business performance', and that collaboration was more than twice as significant for performance than these other factors.

Successful and emerging knowledge-based economies are typified by sets of institutions which support not only the internal capabilities of firms and organisations but also the inter-relationships which allow them to realise their full productive potential. International comparative studies by Michael Porter and others have demonstrated that national innovation capacity – including research, education and

⁴ Department of Industry, Tourism and Resources (2006), *Collaboration and other factors influencing innovation in Australian businesses – an econometric analysis*, Canberra, p2

networking infrastructure – is as important as internal technological capabilities in driving competitiveness.⁵

These observations are applicable not only to linkages within the national system but also to those that links with participants outside Australia. Some of the ways that we might encourage greater international collaboration may be to relax Australia's taxation rules to allow a higher international component in R&D activities, and to consider whether we can we improve cooperation with other countries on tax and investment arrangements for R&D and reward international collaboration.

Knowledge adaptation

Supporting innovation from knowledge adaptation will involve strategies that include building our capabilities in accessing and using international research and other available knowledge and learning. It takes knowledge and expertise to locate the best research and know how from overseas and clearly communicate its potential value to the business community and others.

What has been critical has been the take up and application of new technology, particularly new ICT, in sectors such as retail. Therefore businesses need people with the knowledge and skills to adapt technology and existing products to suit different purposes.

Businesses also need access to world class infrastructure – broadband is critical, as are energy and transportation services.

⁵ See for example Porter, M. and Stern, S. (2001), *National Innovative Capacity*, The Global Competitiveness Report 2001-2002, New York: Oxford University Press, 2001.

Policy settings to encourage innovation and global engagement

1. Provide national leadership and policy coordination

The objective of innovation policy should be to create the best environment for innovation to occur.

Innovation policy needs to be recognised as a key national priority, one which fits within the government's overarching policy framework and which is consistent with other economic and social policy settings. The government should therefore give consideration to setting innovation policies that:

- recognise that innovation policy is part of an overarching policy framework where its role is to drive productivity growth and solve national policy problems;
- ensure that innovation policy settings are consistent with other economic and social policy settings;
- place a strong emphasis on building links between Australia's innovation system and international innovation systems; and
- support innovation that is demand-driven (such as to meet a specific customer need or a significant national policy objective) and which draws and builds upon Australia's comparative economic and social advantages.

Australia needs a national body with the authority and the capacity to develop and implement national innovation policy and drive outcomes. This could involve establishing an Australian Innovation Council within the federal government, with the involvement and support of all state and territory governments, and drawing on existing resources and expertise. The Council would be linked to an advisory committee of business leaders, university leaders, researchers and other stakeholders, such as PMSEIC.

It will be important that innovation policy is coordinated through a whole of government approach to policy development, involving the federal government and all the states and territories. The best way to do this will be by placing innovation on

the agenda of the Council of Australian Governments (COAG) in order to identify national priorities and improve intergovernmental collaboration.

A key task should be to review the policy landscape across all levels of government to ensure consistency, where appropriate, and to remove complexity. In doing so it should seek to remove overlapping innovation policy which is confusing and costly for business, research institutions and other participants in the innovation system.

The new body should be tasked with designing a nationally agreed metric or set of metrics for innovation, measuring performance on a regular basis and reporting on progress. We need innovation metrics that all parties agree: that accurately reflect current performance, contribute to productivity growth, can be globally benchmarked, and will assist us in determining what is working and what is not working.

The *Innovation Scorecard* might form the basis of a comprehensive set of measures, with two possible areas of improvement being:

- making sure it measures, wherever possible, outputs.
- and focussing on how Australia compares to the top five OECD nations in key measures. For many of the measures it is questionable whether performing at or around the OECD average is sufficient.

Recommendations

- *Recognise innovation as a critical national priority and align efforts by governments and business to boost innovation.*
- *Establish an Australian Innovation Council within the federal government, together with the involvement of state and territory governments. In establishing the Council, it is anticipated that governments would utilise existing resources. The Council would be linked to an advisory committee of business leaders, university leaders, researchers and other stakeholders, such as PMSEIC. Task the AIC with designing a metric for innovation, measuring performance regularly and reporting on progress.*

- *Federal and state governments should set innovation as a new federal reform priority for COAG.*

2. Support demand for innovation

Innovation is most effective when it is undertaken in response to a customer demand or defined purpose. Open and competitive markets are critical for ensuring that the suppliers of products to consumers are responsive to changes in customer demand and are rewarded for engaging in continuous improvement. The OECD has identified that the reduction of anti-competitive product regulations is important for strengthening the incentive to innovate and also that low levels of restrictions on foreign direct investment can improve cross-border knowledge transfers⁶.

As a major producer of services, a commitment to innovation by governments in the way they carry out their functions can raise productivity in the public sector and improve the quality of public services. It also creates opportunities to partner with business to develop new or improved products which in turn can lead to further commercial opportunities.⁷

The review terms of reference seek input on setting national innovation priorities for strengthening Australia's national innovation system. By setting innovation priorities the government can underpin support for innovation by helping to set a direction for system participants and encouraging collaboration on major national issues. In setting the innovation priorities, the government should take into account the wider policy framework and objectives, Australia's links with international innovation systems and how the priorities draw and build upon Australia's core economic and social strengths.

⁶ OECD (2007), *Innovation and growth, rationale for an innovation strategy*. OECD, Paris.

⁷ The UK think tank 'Demos' released 'Unlocking Innovation' in 2007 which explored some of the themes around how public services could be improved by putting the user at the centre of innovation in service delivery.

Recommendations:

- *Maintain open and competitive national markets supported by effective governance.*
- *Strengthen government sector demand for innovative products and solutions by committing to raising the level of innovation in public service delivery.*
- *Set national innovation priorities that help to provide direction to innovation system participants on major national issues. Priority setting should take into account Australia's links to the international innovation system and the government's wider economic and social policy settings and should support a demand-driven approach to innovation that draws and builds upon Australia's core economic and social advantages.*

3. Build Australia's innovation capacity*Education and training, organisational leadership and management capabilities*

The knowledge and capabilities of people and the application of their skills is vital to all aspects of the innovation process. This places education and training systems firmly at the centre of the development of an effective innovation policy framework for Australia's future. At an organisational level, improved leadership and management would also lift Australia's innovation performance.

Increasing the nation's innovation capabilities will require effective learning and the development of appropriate skills in our people. Of particular value are skills for creating new knowledge, both technological and non-technological, skills for recognising opportunities in using new knowledge and re-combining old knowledge, and skills for practically applying such knowledge to achieve real value.

Skilled migration is also a critical policy for ensuring that Australian businesses are able to access skills in high demand but in short supply in Australia. The BCA welcomes steps taken by the federal government to improve the temporary skilled visa process to lift the level of permanent skilled migration.

Australian university offers to science and engineering undergraduates, in combination, have more or less marked time over the past five years. These skills are currently in short supply and the skilled migration program cannot be relied upon to take up all of the unmet demand. It is important that more secondary students enter undergraduate courses in these disciplines in future.

Table 1: Undergraduate offers to science and engineering students

	2004	2005	2006	2007	2008	5 year change (%)
Science	16,684	16,519	16,538	16,061	15,089	-10
Engineering	10,525	10,933	11,438	12,177	12,989	23
Total courses	165,085	178,854	184,869	185,898	183,161	11

Source: Department of Education, Employment and Workplace Relations

Knowledge infrastructure

International comparative studies by Michael Porter and others have demonstrated that 'national innovation capacity' – including research, education and networking infrastructure – is as important as internal technological capabilities in driving competitiveness.

Networking infrastructure investment requires a clear view of the productivity and innovation advantages available from higher broadband speeds, a view of the competitive framework for access, and a statement on implementation timing. As the world moves to higher penetration levels of very high speed broadband, Australia must quickly examine the benefits of doing this as well.

Research institutions

Research and development makes a very important contribution to Australia's innovation performance. Investment in research also builds the capabilities Australia requires to effectively identify and utilise research and new knowledge generated globally.

Australia's universities perform well in league tables against institutions from all around the world. League tables are by no means a perfect measurement of performance but they provide an indication of what might be required to lift more of our universities into the very top tiers.

Table 1: Times – QS world university rankings 2007

Rank	University
1	Harvard University (US)
16	Australian National University
27	University of Melbourne
31	University of Sydney
33=	University of Queensland
43	Monash University
44	University of New South Wales

Source: Times Higher Education, UK available at www.timeshighereducation.co.uk

In February 2009 the government will implement a new framework for allocating research funding to universities, known as the Excellence in Research for Australia (ERA) initiative. The BCA supports a focus on research quality under the ERA. We would also like to see consideration given to how research is used. It is desirable that the new approach encourage research to be used for beneficial purposes, whether these relate to industrial, environmental, social or cultural uses.

Collaboration

Collaboration is a major national issue for Australia. It is compounded by our distance from global markets – as the Committee for the Economic Development of Australia (CEDA) highlighted in important research last year. We must turn Australia into a world leader in effective collaboration.

Only 2.3 per cent of Australia's innovating businesses collaborate with universities or other higher education institutions.⁸ This activity needs to be increased and enhanced if Australia is going to be globally competitive when it comes to business research and development. We need have a strategy which supports Australia continuing to lift its collaborative business research and development performance.

Collaboration is more than networking. Networking is very worthwhile and an important skill. But collaboration goes much further. Collaboration is a discipline which should involve planning with key objectives. It involves individuals or organisations working together in an effective way. It must aim to add real value.

We need to consider providing more support and potentially incentives for effective collaboration in research and also in the rapid utilisation of new knowledge or ideas.

Innovation policy should support 'innovation partnerships' between business and the research and education sectors, particularly through ensuring that publicly funded research is informed by the needs and opportunities identified by industry, or so-called 'third stream' funding. This would include examining the benefits for extending the requirement for researchers in universities and research organisations to have a partner or partners outside their organisation when making an application for various research funding mechanisms (possibly using ARC Linkage Grants as a model).

We should also explore how to improve knowledge and skills of collaboration in Australia. This would involve undertaking research into collaboration and disseminating information about effective collaboration practices.

Recommendations

- *Build Australia's innovation capabilities through investment in education and training:*

⁸ ABS Cat. 8158.0

- *improving the quality of teaching in school and post-school education and training;*
 - *encouraging more young people to be interested in studying maths, science and technology subjects in order to increase the number of Australians who have a choice when it comes to pursuing careers in engineering, science and technology fields;*
 - *improving the performance of Australia's education and training system in teaching children and adults the skills that contribute to innovation, including team work, leadership and critical thinking;*
 - *continuing to strategically target key skills in demand under the skilled migration program; and*
 - *strengthen organisational leadership and management capabilities by:*
 - *improving the skills and wider professional development opportunities for Australian managers in business and public sector agencies; and*
 - *assisting employees to update or upgrade skills that contribute to innovation, including information and communications technology, business and communication skills.*
 - *Build Australia's innovation capabilities through investment in knowledge infrastructure:*
 - *investing in world class broadband;*
 - *investing in new technologies that enable business development across different sectors, including information and communications technology; and*
 - *strategic investment in infrastructure to support innovation, including transport and energy.*
 - *Strengthen Australia's research institutions and networks:*
 - *strengthening Australian research institutions and building their global engagement capabilities;*
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- *providing an environment which encourages further increases in business investment in research and development;*
 - *implementing measures to attract the best and brightest people into research, and to facilitate improved engagement and exchange initiatives with industry;*
 - *strengthening Australia's development and commercialisation capabilities; and*
 - *improve research and development in the services sector.*
- *Strengthen collaboration:*
 - *prioritising the development of closer collaboration between business and the research and education sectors;*
 - *providing information aimed at improving collaboration capabilities; and*
 - *simplifying the requirements placed on organisations that participate or seek to participate in collaboration initiatives such as the Cooperative Research Centre (CRC) program.*

4. Strengthen the environment for innovation

Government policy should support a business environment that appropriately rewards innovative activity, including risk-taking and entrepreneurship.

Taxation

It is essential to pursue comprehensive taxation reform that aims to ensure personal income tax rates and taxes that impact on businesses investors in Australia are internationally competitive. We need to attract and maintain business investment and highly capable people if we are to be an innovative nation, and the competitiveness of our taxation system is vital to achieving this.

Tax measures can be an effective policy tool for encouraging productive innovative activity. As mentioned earlier, the R&D tax concession can play a role in

strengthening the business case for conducting research in Australia for larger businesses. It is important, however, that measures such as the R&D tax concession should produce a net positive economic benefit by supporting R&D activity that has positive spill-over benefits and which would not have occurred otherwise. These are issues that should be carefully considered in the current review of Australia's tax system.

Regulation

In our earlier work we have argued that Australian companies' efforts to successfully meet higher performance standards are not advanced by additions to the existing stock of prescriptive and often dysfunctional regulation. Firms have expressed increasing concern that the overall regulatory environment in Australia is working against entrepreneurial risk taking and business transformation.

The BCA's recent report '*Towards a Seamless Economy*' called for less overlapping and duplicate regulation in Australia which is raising the costs of doing business and deterring innovation. In the paper we reported on a recent IMF working paper attributed much of Australia's recent productivity growth to greater product and labour market flexibility since the 1990s. This deregulation enabled the diffusion of technology through the economy at a scale greater than that experienced in other OECD countries.

The amount and the quality of business regulation therefore has a significant impact on the innovation system.

It is critical that the regulatory environment adapt to changes in products and processes in a timely and effective way to provide a regulatory framework that is supportive of innovation.

Regular review is important for ensuring regulation remains relevant and does not hinder innovation. The BCA's *Business Regulation Action Plan* (2005) stated that "even where regulation is justified and produces a better outcome than not regulating, it cannot be assumed that today's solution will be right in the future... the faster paced the industry, and the more complex its products and services, the

greater is the risk that regulation will quickly date and its costs come to outweigh its benefits... regulation quickly becomes an inhibitor of legitimate competition and business innovation". The BCA recommended mandatory sunset clauses for all regulation and for regulators to consider their review processes when making regulation.

The Banks Review of Regulation, *Rethinking Regulation* (2006), highlighted the issues around the need for regulation to be responsive to changes in market, technological and environmental circumstances. The review recommended regular reviews of legislation including systematic post-implementation reviews, and noted that this has been advocated by the OECD.

The BCA's 2004 report *New Concepts in Innovation* found concern within business that the overall regulatory environment in Australia, in particular the corporate governance framework, is becoming focused on compliance, engendering risk aversion amongst companies and working against a culture of innovation and entrepreneurship. Many companies also noted that regulations were restricting their ability to transform their businesses and innovate by using assets in new ways.

Commercialisation

Assistance for the commercialisation process should be focused on getting the best outcomes. The BCA recommends that further research be conducted on the extent of and reasons for private sector under-funding of certain innovative activities. We also recommend examining what further arrangements could be introduced to improve funding for innovative activities such as early-stage venture development and activities that involve the creation or use of intangible assets.

Recommendations

- *Set a tax system that ensures appropriate returns for innovation:*
 - *in reviewing the taxation system, the federal government should consider how the taxation system can appropriately support innovation, risk-taking and entrepreneurship.*

- *Remove regulatory impediments to innovation:*
 - *improving regulatory settings to encourage innovation, such as reforming different regulatory regimes in Australia to create a 'seamless economy';*
 - *consider the effects of corporate governance on innovation; and*
 - *improve regulatory responsiveness for new technologies and products*
- *Undertake research into the extent of and reasons for private sector under-funding of certain innovative activities in order to set policies to support commercialisation which achieve the best outcomes*

Further information

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