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Inquiry into raising the productivity growth rate in the Australian economy

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House Standing Committee on Economics

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Foreword

One of the key determinants of Australia's long-term economic prosperity is robust productivity growth. This is because productivity growth is strongly associated with high living standards.

Australia experienced a significant productivity growth surge in the 1993-94 to 1998-99 productivity cycle, averaging 2.3 per cent. This surge moved Australia to an internationally high level of productivity which it still enjoys. However, since the surge in the 1990s, productivity growth has declined, with an estimated decline of around 0.4 per cent in multifactor productivity in the incomplete cycle from 2003-04 to present. Ironically, much of this decline can be attributed to burgeoning growth in the mining sector which has brought unprecedented increases in Australian living standards since the start of the productivity cycle.

Income and productivity growth will occur in firms that embrace technological change and achieve technical efficiency. However, increases in the prices of outputs will not necessarily lead to increases in income or productivity. The high levels of income per capita that Australians currently enjoy are a result of favourable commodity prices and thus strong terms of trade. Therefore, in order to secure long-term economic growth Australia will need to focus on improvements in the technical efficiency of firms and their utilisation of technological advances.

The challenges presented by a larger and ageing population, climate change, and the current constrained fiscal environment, make strong productivity growth essential to Australia's economic future. Productivity growth is one way of generating the economic growth required to provide the goods and services the Australian community expects.

The Australian Government cannot directly drive productivity growth within firms. It can, however, facilitate aggregate productivity growth by maintaining a stable economic environment which fosters competition between firms and flexibility within workplaces. Australian governments also have an important role

in capability building by providing firms with access to appropriate public infrastructure and investing in the quality of Australia's workforce, our 'human capital', to facilitate more productive behaviour by firms. In addition, firms which have access to technological advances, employ innovative production processes, and have robust management and organisational capabilities enjoy higher levels of technical efficiency, that is, they are more productive.

Productivity growth is important; however it is not an end in itself. Productivity growth is desirable to maintain or achieve higher living standards. This means we need to be cognisant of the importance of sectors of the economy within which productivity growth is static. Some areas of the economy, which, by their very nature have low productivity growth, are vitally important to producing quality outputs that feed into the inputs of production. An example is education and skills training.

It should also be noted that productivity growth alone is not a good measure for evaluating public policy because productivity is not the sole determinant of community wellbeing. Notwithstanding this, nations with high living standards are more likely to display higher levels of community wellbeing.

However, the fact that productivity growth is not the ultimate goal does not mean Australia can be complacent about its recent decline.

The committee also recognises the difficulty in accurately measuring productivity growth in many industries in the services sector where outputs are not necessarily expressed in increasing volumes but may be seen in improved quality.

During the course of the inquiry, the committee received evidence on a range of issues, including measurement of productivity, productivity growth trends in Australia, challenges associated with raising the rate of productivity growth, and how governments can promote productivity growth in the economy. The committee has recommended that:

- the government introduce a national aggregate productivity growth target for the medium-term to 2030;
- a national productivity forum including governments, business, unions and non-government organisations be convened;
- the Council of Australian Governments adopt a specific national productivity agenda;
- the Productivity Commission undertake modelling on the effect of human capital investment on Australian productivity growth;
- the Australian Bureau of Statistics investigate alternate ways of measuring multifactor productivity in the services sector;

- cost-benefit analysis be mandatory for all policies aimed at increasing aggregate productivity growth; and
- any national productivity agenda should include public sector service provision.

On behalf of the committee I would like to thank all of the organisations and individuals that participated in this inquiry, particularly those who have written submissions or given evidence at public hearings.

Mr Craig Thomson MP
Chair



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Membership of the committee

Chair	Mr Craig Thomson MP	
Deputy Chair	The Hon Kevin Andrews MP (to 3/2/10) Mr Jamie Briggs MP (from 11/2/2010)	
Members	Mr David Bradbury MP The Hon Joel Fitzgibbon MP Ms Sharryn Jackson MP Ms Julie Owens MP Mr Jim Turnour MP	The Hon Bruce Billson MP (from 3/2/2010) Mr Luke Hartsuyker MP (from 3/2/2010) The Hon Sussan Ley MP (from 3/2/2010) Mr Scott Morrison MP (to 3/2/10)

Committee secretariat

Secretary	Mr Stephen Boyd
Inquiry Secretary	Ms Sharon Bryant
Research Officers	Mr Chris Kane
Administrative Officers	Mrs Renee Burton



Terms of reference

Increased economic productivity has been responsible for much of the improvement in Australia's living standards over the last 25 years. However, Australia's productivity has declined since the 1990's.

The factors responsible for Australia's current lower rate of productivity growth should be examined, with the objective of identifying key 'levers' which will assist in returning the Australian economy to a trajectory of robust growth in productivity.

The Committee will inquire into, and report on, the key factors influencing Australia's productivity growth rate, focusing on, but not limited to:

- a) trends in Australia's productivity growth rate during the past 20 years and reasons for the recent trending decline
- b) trends in productivity growth rates against other OECD countries;
- c) the adequacy of productivity growth measures;
- d) the contribution made by microeconomic reform to the permanent improvement in the growth rate of productivity and the continuing effectiveness of the microeconomic reform agenda;
- e) the willingness and ability of small and medium enterprise to adopt best practice technology;
- f) the adequacy of the level of investment in physical capital;
- g) the adequacy of the level of investment in public infrastructure;
- h) the level of resources devoted to research and development;
- i) the adequacy of resources devoted to training and development of the labour force; and

- j) the key reforms and measures that can be undertaken to lift Australia's permanent rate of productivity growth.

In conducting the inquiry the committee should focus on how relevant factors contribute generally to the productivity growth rate. The committee should not undertake detailed assessments of individual industry sectors or specific industry assistance measures.



List of abbreviations

ICT	Information and Communications Technology
COAG	Council of Australian Governments
ABS	Australian Bureau of Statistics
PFP	Partial Factor Productivity
TFP	Total Factor Productivity
MFP	Multifactor productivity
PC	Productivity Commission
GDP	Gross domestic product
ANZSIC06	Australia and New Zealand Standard Industrial Classification 2006
ACCI	Australian Chamber of Commerce and Industry
NCP	National Competition Policy
RBA	Reserve Bank of Australia
CLE	Centre for Law and Economics
IMF	International Monetary Fund
ABARE	Australian Bureau of Agricultural and Resource Economics
GST	Goods and services tax

EGW	Electricity, gas and water services
SSDS	Singapore Skills Development System
GFC	Global Financial Crisis
GVA	Gross value added
R&D	Research and development
DEEWR	Department of Education, Employment and Workplace Relations
NBN	National Broadband Network
DBCDE	Department of Broadband, Communications and the Digital Economy
HMR	Health and medical research
DIISR	Department of Innovation, Science and Research
AMTA	Australian Mobile Telecommunications Association
NPA	National Partnership Agreement
PM&C	Department of the Prime Minister and Cabinet
OH&S	Occupational health and safety
CRC	COAG Reform Council



List of recommendations

5 Australia's future productivity growth rate—the challenge

Estimating multifactor productivity (MFP) for the services sector is very difficult as it requires carefully assessing the quality of services – quality is more likely to change in this sector than quantity of input or outputs. Capturing quality changes in data is challenging. The committee believes the Australian Bureau of Statistics should undertake work to consider alternative ways of estimating the economic contribution of industries which do not have neatly quantifiable outputs.

Recommendation 1 (paragraph 5.108)

That the Australian Bureau of Statistics (ABS) investigate alternative ways of measuring the optimal available use of economic resources used in services industries in the economy, either by:

- *Excluding those services sectors which do not have straight-forward quantifiable input and output data from the aggregate MFP estimates and instead developing a separate services sector index which is not necessarily based on traditional productivity constructs; or*
- *Investigating ways to develop robust services sector MFP estimates for all services industry categories for inclusion in the aggregate MFP estimates.*

The government should ensure that the ABS is funded appropriately to conduct the study.

Achieving MFP growth rates above Australia's long-term average of 1.1 per cent is a critical long-term national goal. The committee supports the adoption of a national productivity growth target for the market-sector. This will ensure productivity remains a key consideration in relevant policy development.

Recommendation 2 (paragraph 5.115)

That the Australian Government introduces a national aggregate productivity growth target for the medium-term to 2030; and that modelling is undertaken by the Productivity Commission to assess the appropriate level for the target.

7 Promoting future productivity growth

The committee believes that public policy to boost the aggregate productivity growth rate should be primarily directed at maintaining competition in the economy and allowing firms flexibility in their workplace arrangements. In addition to policies which improve the macroeconomic and microeconomic environment that firms operate in, the Australian government's role in supporting productivity growth should be through assisting to strengthen firm capabilities. Key aggregate capabilities include Australia's human capital stock and enabling firms to utilise evolving technology by ensuring there is appropriate infrastructure for these new platforms. Access to evolving technology will stimulate innovation.

The committee notes that significant investment in information technology and communications, infrastructure and R&D will contribute to future productivity growth. The committee also recognises that measures to increase workforce participation are also essential for future economic growth.

Improving Australia's productivity growth rate is a broad nationwide challenge which should involve all levels of government. The committee therefore believes a summit represented by all levels of Australian government, together with relevant business and union and non-government organisation representation, be convened by the federal government to discuss and lead the establishment of a specific and integrated productivity growth agenda.

Recommendation 3 (paragraph 7.127)

That at the commencement of the 43rd parliament the federal government convenes a national forum represented by all levels of government, business, unions and non-government organisations to discuss the key ingredients of a national productivity growth agenda.

The committee supports the development of a specific national productivity agenda to be agreed by COAG which incorporates aspects of the current COAG reform agenda but which extends upon this.

Recommendation 4 (paragraph 7.129)

That COAG adopts a specific national productivity agenda. This agenda should be guided by the outcomes of the national forum outlined in Recommendation 3.

The committee believes investment in an ambitious long-term human capital agenda is not only important to boost Australia's capabilities but that it will automatically feed into the inputs of all firms in all sectors. The committee recognises that prioritising a long-term broad human capital agenda over other public policy investments has opportunity costs. The committee therefore believes more accurate modelling of potential human capital investments, and likely returns, should be undertaken to ensure Australia's investment in its aggregate capabilities is optimised.

Recommendation 5 (paragraph 7.136)

That in the next eighteen months the Productivity Commission undertakes modelling on various aspects of human capital investment on productivity outcomes in the Australian economy and the likely time-line for returns.

8 Beyond official productivity statistics

The main aim of economic policy is to improve community wellbeing, with improved living standards central to this. Productivity growth is one way of achieving improved living standards however using productivity as the sole policy evaluation criteria is limited because it is only one determinant of community wellbeing. The potential for policies aimed at improving productivity to have a positive or negative impact on other government objectives highlights the need for a policy evaluation framework that will consider all of the impacts of a policy aimed at improving productivity.

Recommendation 6 (paragraph 8.27)

The Australian Government mandates cost benefit analysis for all policies aimed at improving aggregate productivity growth.

The official market sector productivity estimates do not include government services, yet the quality and efficiency of government services can have a significant impact on aggregate productivity growth. Additionally, government services are an input into the production processes of businesses and the quality of

these services can affect the productivity of these businesses, which will be captured in the official productivity estimates.

Recommendation 7 (paragraph 8.40)

Given the size and importance of government service provision in its own right and as an input into the production processes of other businesses it is important that any national productivity agenda includes public sector service provision.

Introduction

Background

- 1.1 Australia has performed well in the fall-out from the Global Financial Crisis, being one of the few developed countries to avoid a technical recession. It continues to be a country prospering on resources income, albeit experiencing measurable negative impacts of the global downturn. However, the relative buoyancy of the economy has masked an underlying trend – that of a declining productivity growth rate in the face of ongoing real GDP growth.
- 1.2 The average real incomes (adjusted for inflation) of Australians have been rising for several decades and on this basis living standards in Australia have also been rising. This significant increase in living standards was observed recently at the Reserve Bank of Australia's 50th Anniversary Symposium:

...the past half century has witnessed the greatest economic success in human history for any comparable period in bringing living standards and the quality of life to levels heretofore not dreamt of.¹
- 1.3 Improvements in and maintenance of living standards are unambiguously good for today's Australians and for future generations.

1 Reserve Bank of Australia, 50th Anniversary Symposium, Sydney 9 February 2010, "Increased Understanding of Supply Side Economics", Anne O Krueger, Professor of International Economics, John Hopkins University, Ritch Professor Emeritus, Stanford University, p. 3.

- 1.4 There are a variety of reasons for the significant improvement in the living standards of Australians over the last three decades.
- 1.5 One of the main factors attributed to this increase is that productivity growth surged in the economy during the 1990s, going from an average of 0.95 per cent in the 1980s to an average of 1.65 per cent in the next decade – with five years of this growth at a massive 2.3 per cent growth.² In the simplest terms this meant the economy was operating in a very efficient way, optimising the use of inputs for any given output in the production process. At the peak of the country's measured growth rate, it performed 2nd only to Finland in a set of 18 OECD countries.³
- 1.6 Australia's average annual productivity growth has performed relatively well in OECD comparisons since 1985, approximating the OECD average, and ranking 12th, one below the US, the country considered to be at the 'productivity frontier'.⁴
- 1.7 The productivity growth rate has, however, been in decline since the 2003-2004 productivity cycle, with growth rates averaging -0.2 per cent per year.⁵ This has been widely reported as the 'productivity paradox' due to the continued growth in real GDP.⁶
- 1.8 Given the decline in the productivity growth rate, and the fact that robust productivity growth has been strongly associated with increasing living standards, the Treasurer, the Hon Wayne Swan MP asked the House of Representatives Standing Committee on Economics to inquire into, and report on, the factors responsible for Australia's declining productivity growth and to identify key levers to return Australia to robust productivity growth.

2 Australian Bureau of Statistics (ABS), *Australian System of National Accounts*, Cat 5204.0, 2007-08, p. 43.

3 Productivity Commission (PC), *Submission no. 20*, p. 15, Figure 2.5.

4 B Dolman, D Parham, S Zheng, *Can Australia Match US Productivity Performance?*, PC Staff Working Paper, March 2007, p. x and p. 3. Despite the US ranking 11th in the OECD growth tables it is considered the most meaningful productivity leader because some European countries are only exhibiting high productivity growth due to industry mix and policy and institutional distortions in labour markets.

5 PC, *Submission no. 20*, p. ix. From 2003-04 to 2006-07.

6 Albeit declining GDP growth in the 2008-09 financial year from 3.7 per cent in 2007-08 to 1.2 per cent in 2008-09.

Objectives and scope

Scope of the inquiry

- 1.9 The impact of productivity on economic growth has been frequently analysed and much debated. Even where economists agree on the theory and the appropriate measurement of national productivity there is divergence in the views about policies which stimulate productivity growth.
- 1.10 It is also an area where few countries have undertaken rigorous cause and effect modelling of public policies designed to boost productivity growth.
- 1.11 For these reasons, coupled with the nature and resources available for a parliamentary inquiry, a detailed economic analysis of all the probable factors of productivity growth is beyond the scope of this inquiry. Similarly, the committee will not be modelling the link between specific public policies directed at increasing national productivity growth and productivity growth outcomes.
- 1.12 This report provides a high-level overview of the recent status of productivity growth in Australia and the probable mechanisms that could be used to improve the current flagging growth rate.

Key factors influencing Australia's productivity growth rate

From the 1970s to the end of the century

- 1.13 Australian productivity growth started to wane in the 1970s compared to other OECD nations. This relative decline in the 1970s led the federal Government in the early 1980s to focus on lifting productivity growth through a series of microeconomic reforms, targeted at the activities of producers at the firm level and opening up the economy to global trade.
- 1.14 The thrust of the reforms was to promote improved competition between firms and increase flexibility in firm working arrangements. It was very much focused at assisting the efficient operating environment of firms in Australia.
- 1.15 In tandem with the flow-on effects of microeconomic reforms which commenced in the 1980s, Australia, like most western countries, was also exposed to rapid technological change in the 1990s. Australian firms were rapid adopters of advanced Information and Communications Technology (ICT) produced by other countries. The multifactor productivity growth

rate in the period 1993-94 to 1998-99 was 2.3 per cent – outranking that of the US, a producer of ICT products, by a considerable margin.

- 1.16 There are conflicting views as to the main impetus for the elevated productivity growth rate in the 1990s. The prevailing view is that extensive microeconomic reforms which commenced in the 1980s led the productivity growth climb. Another is that this was the era of rapid technological change and that ICT capital deepening and/or technological adoption realised these productivity gains.
- 1.17 Another proposition is that there were measurement distortions at play which inflated the growth rate. Measurement of official national productivity has its limitations, and these will be discussed further in Chapters 2 and 8, however this particular theory also included the proposition that inputs to the productivity equation were underestimated.
- 1.18 Irrespective of what was at play leading to the boost in the average national productivity growth rate in the 1990s, it is clear there has been a significant shift in the productivity growth story since the turn of the century.

Declining growth since the 2003-04 productivity cycle

- 1.19 There are fewer diverging theories on what has caused the declining productivity growth rate since the last full productivity cycle than there are for the surge of the 1990s.
- 1.20 The recent productivity growth decline seems to be more a story of exogenous sectoral impacts in the economy. Declining mining productivity is at the forefront of this explanation, along with impacts of the drought on the agriculture and utilities sectors coupled with climate change mitigation in the latter. Other views are that the impact of the reforms of the 1980s and 1990s, and/or the significant technological advances embraced by Australian firms in the 1990s delivered a once-in-a-generation boost to productivity.
- 1.21 The important challenge for Australia now is not so much what caused the decline between the last two decades, but what strategies should be engaged to get productivity growth back on an increasing trajectory.
- 1.22 Although national productivity has a cyclical nature, improving Australia's productivity growth rate involves a long-term strategy. There are no overnight solutions to improving this measure which makes focussing on productivity growth even more compelling.

Public policy backdrop

1980s 'first wave' reforms

- 1.23 The reforms instituted in the 1980s started with the opening up of the domestic economy to the global market, with the focus on increasing firm-level efficiency in the face of increased competition.

1990s 'second wave' reforms

- 1.24 Measures to improve firm-level competition within the domestic economy followed, through corporatising and privatising nationally owned businesses and infrastructure and implementing National Competition Policy.
- 1.25 Microeconomic reforms targeting improving firm efficiency included policies to reduce burdensome red-tape and regulatory duplication borne by firms at various levels of government. Stock-takes of regulations impacting businesses were undertaken and reviews of these followed. Systems of analysing the impacts on business of proposed new regulations were also introduced at national and state levels.
- 1.26 In tandem with these reforms the Australian workplace environment changed from an industry specific focus to a firm-level focus, with the introduction of enterprise bargaining.
- 1.27 These reforms strengthened firm-level efficiency and flexibility.

The 'third wave' of reforms

- 1.28 There is an ongoing agenda to complete some of the reforms which commenced in the 1980s and 1990s that focus on firm-level efficiency, competition and market openness.
- 1.29 The Council of Australian Governments (COAG) National Reform Agenda, agreed to in February 2006, and strengthened in 2008 with the introduction of the COAG Reform Agenda, continues to focus on competition related reforms and regulatory reforms. In addition, it also includes reforms designed to improve Australia's 'human capital'.
- 1.30 Government policies and approaches by firms which target the improvement in the quality of labour inputs are referred to as 'human capital' reforms. These reforms are designed to improve the efficiency of labour inputs and as such they rely heavily on investment in appropriate education and skills development and in maintaining a healthy workforce.

- 1.31 Human capital reforms are considered the 'third wave of reforms' (opening up the economy was the first wave and domestic microeconomic reforms the second). The third wave reforms target firm-level capabilities rather than capacity – market competition and firm-level flexibility as part of previous reforms improved firm capacity.
- 1.32 Capability reforms are considered more difficult to achieve. They centre on life-time learning and preventative health outcomes and are thus long-term measures.
- 1.33 The added difficulty with introducing and tracking the success of these reforms is that they result in outcomes that are currently difficult to accurately measure in terms of their direct productivity contribution.

Key growth rates and reform timeline since the 1980s

- 1.34 Table 1.1 summarises the average Australian productivity growth rates in each productivity cycle since the introduction of the widespread microeconomic reform agenda in the 1980s.
- 1.35 It also highlights key microeconomic and macroeconomic events and other economy-wide and global features of the cycles.

Table 1.1 Growth rates and economic reform backdrop for productivity cycles since 1981

Productivity Cycle	Average MFP Growth rate	Key Microeconomic reforms	Key Macroeconomic reforms	Other features of the cycle
1981-82 to 1984-85	1.1	Deregulation of the financial market 1983	Floating \$A December 1983 Original Accord February 1983	Mining Boom Recession
1984-85 to 1988-89	0.8	Entry of foreign banks 1987 Increased exports Award restructuring & removal of demarcations	Accord III: efficiency offsets for wage rises March 1987	Wall Street Crash, October 1987
1988-89 to 1993-94	1.0	Tariff reductions 1988-1991 Quota & subsidy reductions	Compulsory national superannuation scheme introduced Accord VII: enterprise bargaining October 1991	Recession 1990-1992 Immigration
1993-94 to 1998-99	2.3	Tariff reduction Nov 1996 National Competition Policy introduced		Asian Financial Crisis 1997-98 Australia's growing services sector Late 1990s China's rapid urbanisation and industrialisation
1998-99 to 2003-04	1.1		Goods and Services Tax, July 2000	Dot-Com Crash March 2001 Terrorist Attacks on US, September 2001 Australian Resources Boom from 2003—
2003-04 to 2007-08 Incomplete cycle	-0.3		Workchoices 2006	Chinese growth rate 13 per cent , 2007 Collapse of Lehman Bros Bank, Sept 2008 Global Financial Crisis 2008— RBA cash rate falls 200 basis points Sept-Nov 2008

Source Data - ABS, Australian System of National Accounts, Cat. 5204.0, 2007-08.

Conduct of the inquiry

- 1.36 The inquiry was first publicised on 25 June 2009 in a media release which was subsequently loaded to the committee's website. The first national advertisement of the inquiry appeared in *The Australian* newspaper on 8 July 2009.
- 1.37 Both the media release and newspaper advertisement called for submissions with a closing date of 21 August 2009. Advertisements on the inquiry program were periodically placed in *The Australian* throughout the conduct of the inquiry.
- 1.38 A total of 33 submissions and six supplementary submissions were received by the committee and authorised for publication on the committee's website.
- 1.39 The committee conducted nine public hearings between 23 October 2009 and 11 March 2010. Hearings were held in Canberra, Sydney and Melbourne, the majority being held in Canberra.
- 1.40 The committee utilised audio-conferencing at three Canberra hearings to gather evidence from four interstate witnesses. The taking of audio evidence is provided for under House Standing Order 235(b). Utilising this technology provided these witnesses with convenient and cost-effective access to the parliamentary proceedings and also provided efficiency gains for the committee.
- 1.41 A list of submissions and exhibits received and public hearings conducted may be found at appendices A, B and C respectively.

Reader guide and structure of the report

- 1.42 This report has been structured in an easy-to-read format. In discussing each issue, evidence and other material is provided, followed by the committee's conclusions and then, in some areas, recommendations for action. Recommendations are also listed at the front of the report.

Productivity growth and its importance

The economic concept of productivity

- 2.1 Productivity is the measure of production efficiency.¹ At a national level it captures the economy's ability to 'harness its physical and human resources to generate output and income'.² Productivity growth refers to an increase in the value of outputs produced for a given level of inputs, over a given period of time.
- 2.2 The Australian Bureau of Statistics (ABS) explained:
- In a very general sense, the best way to think about productivity is by thinking of production. You can have increased production from an increase in inputs, you can have increased production due to a more efficient use of those inputs or a combination of both of those things. In a growth accounting framework you can in simple terms measure productivity by looking at the ratio of output to one or more inputs. When you decompose it, in a sense, productivity is actually the residual of that calculation.³
- 2.3 The main theoretical approach to studying productivity is based on 'formal growth theory', where output growth is expressed as a function of growth in inputs and growth in the efficiency with which inputs are transformed into outputs.

1 Productivity Commission (PC), *Submission no. 20*, p. 1.

2 PC, *A Quick Guide to the Productivity Commission*, 2009. p.1.

3 Mr J Russo, Australian Bureau of Statistics (ABS), *Transcript*, 23 October 2009, p. 21.

- 2.4 Different approaches to calculating productivity growth can be used, with the 'neoclassical' model treating growth as *exogenous* (based on capital accumulation and national savings); and 'new growth theory' incorporating growth as *endogenous* (through technical change, research and development and capability building activities).
- 2.5 Productivity as a component of economic growth models did not surface until the post Second World War era.⁴ As such it was not closely monitored as an economic measure until the 1960s, coinciding with a time when Australia's productivity growth was relatively rapid.
- 2.6 During the 1980s, economic policy direction in Australia embraced the 'new growth theory'. This was characterised by the endorsement of competitive and flexible markets as the means to securing the most productive use of the nation's resources. The movement to economic management through new growth theory was based on the belief that this would deliver the economy a growth dividend and better living standards.

The components of productivity

- 2.7 There are three commonly used measures of productivity:
- Partial Factor Productivity (PFP) – examples are capital productivity (measured as GDP per unit of capital)⁵ and labour productivity. Labour productivity is the most used PFP measure. It is usually measured as the *volume* of output per *hour* worked.⁶ Other measures of labour productivity used (mainly for international comparisons) include the *value* of output (GDP) per *employee* or per *capita*. Estimating labour productivity is a relatively straightforward exercise. The PC notes three reasons for this:

...it is easier to measure as it avoids the need to estimate capital inputs and avoids the need to aggregate capital estimates and hours worked... a rough measure of labour productivity for the entire economy can easily be obtained by dividing GDP by official estimates of total hours worked in the economy (there are no official estimates of capital inputs for the whole economy)...and it

4 The Harrod-Domar model, developed between 1939 and 1946, first included productivity as a component of economic growth. The model was refined and independently published in 1956 by American economist Robert Solow and Australian economist Trevor Swann.

5 ABS, *Submission no. 16*, p. 2.

6 ABS, *Submission no. 16*, p. 2.

allows for a comparison of levels of labour productivity (value added per hour worked) between different parts of the economy or between different economies.⁷

- Total Factor Productivity (TFP) – this is a true measure of productivity which encompasses all the factors of the productivity equation. As it is very difficult to measure all the factors of productivity a proxy measure was developed to take account of multiple factors, but not all factors. This is known as *multifactor productivity*.
- Multifactor productivity (MFP) – the volume of output from a bundle of both labour and capital inputs. Estimating MFP is a complex exercise. In simple terms, it involves the construction of three separate indexes for labour, capital and output. The contributions of labour and capital are weighted according to their respective input contributions, usually measured in value of payments to the factors of production. The calculation of productivity growth is the residual of any difference between the level of output growth and the level of input growth.

2.8 Labour productivity is only a partial measure as it does not take account of the contribution of other factors of production. As such, it needs to be interpreted carefully as changes in labour productivity may reflect factors that are outside of workers' influence (for example, improved capital input).

2.9 MFP provides the better indicator of the overall improvement in an economy's efficiency, as it measures the growth in economic output above that directly attributable to growth in measured capital and labour inputs. In other words, MFP informs whether GDP growth originates from productivity growth or merely from increased inputs of labour or capital.⁸ As such, it captures the influence of improvements in production-related factors such as skills, technology, and management practices that are not incorporated in official capital and labour measures. The Treasury states:

MFP reflects technological changes, as well as a range of non-technological factors such as industry and firm level adjustment, economies of scale and cyclical effects (OECD 2001a).⁹

2.10 While estimates of output and hours worked are published for the whole economy, productivity is only well-measured in the part the ABS calls the

7 PC, *Submission no. 20*, p. 1.

8 ABS, *Submission no. 16*, p. 2.

9 The Treasury, *Submission no. 10*, p. 4.

‘market sector’. A detailed description of the market sector is at paragraph 2.58.

- 2.11 In these market-sector industries, prices are indicators of quality that can be used to compare the value of new goods and services to that of the old versions they replace. For industries outside the market sector – health, education, government administration and property and business services – it is more difficult to separate price changes from changes in the quality and quantity of services. In addition, the voluntary sector is not incorporated in official measures.
- 2.12 The proportion of the economy which falls within the non-market sector has grown considerably over the last twenty years. In 2008-09 the services sector comprised 72.3 per cent of GDP; whereas it was 63% of GDP in 1983-84. In contrast, the proportion of the economy in the market-sector which the ABS includes in national productivity growth calculations has declined since 1994-95, going from around 73 per cent of GDP to 62 per cent of GDP in 2008-09.¹⁰
- 2.13 For the purposes of this report productivity refers to MFP unless stated otherwise.

Productivity growth is not production growth

- 2.14 Productivity is often confused with production. Productivity is the measure of how efficient the production process is, irrespective of the stand-alone quality or quantity of output, or the stand-alone quality or quantity of inputs in that production process. It is a relative concept and can only be determined when assessing per unit output derived from per unit inputs in the production process.
- 2.15 This means that productivity will rise when inputs in the production process are optimally utilised to achieve greater levels of output. Achieving productivity gains is therefore not equivalent to working longer (eg longer labour hours) as this will result in a measure of greater inputs for every output. Nor does it necessarily correlate with higher volumes of outputs – as inputs could be increasing at the same or greater pace.

¹⁰ PC, *Submission no. 16.1*, p. 3.

Productivity levels versus productivity growth rates

- 2.16 Similarly, productivity levels are sometimes confused with the rate of growth of the productivity level. The calculation of both labour productivity and MFP provides estimates of the *level* of productivity. Analysis of trends in productivity levels tends to focus on *growth* rates.
- 2.17 Year-to-year changes in productivity growth can be volatile (reflecting changes in market conditions or the influence of the business cycle) – as a result, most research focuses on longer-term comparative changes, such as business-cycle to business-cycle or growth over a decade.

Productivity cycles

- 2.18 Snapshots of productivity growth between specific periods of time are referred to as productivity cycles. The last complete cycle ended in 2003-04 with productivity in that cycle averaging 1.1 per cent.¹¹ The current cycle, since 2004, is considered incomplete, but to 2007-08 it has recorded negative growth of -0.3 per cent.¹²
- 2.19 International measurement agencies follow the convention of using an arbitrary productivity period for comparison purposes. These are average growth rates between growth-cycle peaks, which are determined as peak deviations of the market sector MFP index from its long-term trend. Although productivity cycles of peak-to-peak productivity often correlate to the business cycle this is incidental to their determination. Productivity cycles cannot be determined until after the cycle is completed.
- 2.20 This practice has been criticised by Professor John Quiggin as creating distortions in the measurement of productivity growth:

Although much was made of the claimed productivity ‘miracle’ in the mid-1990s, these claims depended critically on the way in which the time series was divided into hypothetical ‘productivity cycles’.¹³

11 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2007-08, p. 43.

12 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2007-08, p. 42. (The average of 2004-05 of -0.6 per cent, 2005-06 of 0.3 per cent, 2006-07 of -0.3 per cent and 2007-08 of -0.4 per cent.)

13 Professor J Quiggin, *Submission no. 28*, p. 1.

The importance of productivity growth

- 2.21 An often quoted summary of the importance of productivity growth is that of distinguished US economist Paul Krugman:

Productivity isn't everything, but in the long run it is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker. World War II veterans came home to an economy that doubled its productivity over the next 25 years; as a result, they found themselves achieving living standards their parents had never imagined. Vietnam veterans came home to an economy that raised its productivity less than 10 percent in 15 years; as a result, they found themselves living no better - and in many cases worse - than their parents.¹⁴

- 2.22 Productivity growth at an economy-wide level means more aggregate outputs per aggregate inputs, which translates to greater returns on total inputs, thus more income is available to share around. The ABS notes:

Key to long term improvements in Australia's living standards is productivity growth and therefore enhancing national productivity is one of the basic goals of economic policy.¹⁵

- 2.23 At an industry level, productivity growth can be important to allow the industry to compete with other sectors of the economy for resources (labour, capital and raw materials) and maintain international competitiveness.¹⁶

- 2.24 It is important to note, however, that some sectors of the economy have traditionally had low productivity growth but are vitally important to aggregate productivity growth, for example, the health and education sectors. The outcomes from these sectors become the inputs to all sectors in the form of skilled, educated and healthy workers. This is also a reminder that government policies which only focus on sectors exhibiting productivity growth could be at the detriment of supporting productivity growth as a whole. The Productivity Commission (PC) stated:

If policy were directed at moving and supporting high productivity sectors, you would find that you were not actually

14 Krugman, P, *The Age of Diminished Expectations: US Economic Policy in the 1980s*, MIT Press, Cambridge, 1992, p. 9.

15 ABS, Submission no. 16, p. 2.

16 Master Builders Australia, *Submission no. 17*, p. 4.

supporting the sectors that in the long term were so important to wellbeing and living standards.¹⁷

- 2.25 At a firm level, productivity growth is important because it can allow the firm to remain competitive within the industry, through paying higher wages or returns to shareholders or to provide funds for investment.
- 2.26 Raising productivity has been a focus for governments over the last two decades, particularly with the transition to a more open economy as levels of protection have fallen, or have been removed and the greater flows of foreign capital and production links in the economy.
- 2.27 The importance of having robust national productivity has increased since the worldwide economic downturn and the emergence of new demographic and environmental challenges. The Chairman of the PC stated in evidence:
- It will also affect how well the country recovers from the impact of the global financial crisis as well as its capacity to meet longer term challenges such as population ageing and climate change.¹⁸
- 2.28 The challenges ahead for productivity growth are discussed in further detail in Chapter 5.

Economic growth

- 2.29 The measure of production for an economy as a whole is gross domestic product (GDP). GDP is the sum, for a particular period, of the gross value added of all resident producers, where gross value added is equal to output (value of goods and services produced at economically significant prices) less intermediate consumption (value of goods and services consumed in the production process).¹⁹
- 2.30 Economic growth is measured by the change in the level of real gross domestic product from one measurement period to another.
- 2.31 Although Australia is still a relatively young country it is now a mature developed economy. It was, however, up until mid last century, subject to the developing industrialised economy pattern. This was characterised by a small population with steady population growth up until the post war 'baby boom era' coupled with an economy focussed on a rich endowment

17 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 6.

18 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 2.

19 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 20.

of natural resources. This led to very high economic growth in the 1950s and 1960s, with per capita growth rates around four per cent per annum.

2.32 However, an economy highly reliant on the production of commodities with relatively low income elasticities of demand may have difficulty maintaining very high levels of economic growth on that basis alone. This was the story in Australia in the late 1970s, early 1980s when real GDP started to fall and annual per capita growth rates fell to around two per cent.²⁰

2.33 At an economy-wide level, the importance of continuing to achieve historically high rates of productivity growth can be seen in the difference between projections (and associated outcomes) in recent Treasury documents:

- The sensitivity of the budget bottom line of a negative scenario modelled as part of the 2009-10 Budget Papers – a combination of an equal 0.5 per cent decrease in the participation rate and in labour productivity, resulting in a 1 per cent decrease in real GDP by Year 2 – is to decrease in the underlying cash balance of around \$2.5 billion in Year 1 and around \$4.0 billion in Year 2;²¹
- The Australian Treasury forecasts that achieving long-term productivity growth of only 1.2 per cent to 2046-47 (below an historical rate of 1.75 per cent) would see a fall in income (GDP per capita) of almost 20 per cent. In contrast, achieving long-term productivity growth of 2 per cent to 2046-47 would see a rise in income (GDP per capita) of around 10 per cent.²²

2.34 The historical average for labour productivity growth over the last three decades has been 1.6 per cent, which attributed to most of the increase in GDP over this time.²³

Living standards

2.35 Realising improved living standards or maintaining high living standards is the main reason why governments strive to improve economy-wide productivity growth.

20 Steve Dowrick, *The Determinants of Long-Run Growth, Proceedings of a Conference – Productivity and Growth*, Reserve Bank of Australia (RBA), July 1995, p.12.

21 Budget Strategy and Outlook 2009-10, Budget Paper No. 1, The Treasury, p. 3-21.

22 The Treasury, *Intergenerational Report 2007*, p. 99.

23 The Treasury, *Intergenerational Report 2010*, p. 21. Also, The Treasury, *Submission no. 10*, p.3.

- 2.36 In order to improve or maintain living standards and maintain fiscal health, an economy must improve long-term economic growth. Productivity growth is one contributor of improved economic growth.
- 2.37 Per capita incomes across world regions, but particularly in Western Europe and Western off-shoots have risen dramatically over the last 60 years.²⁴ These increases were accompanied by other improvements in well-being and quality of life.²⁵
- 2.38 What constitutes higher living standards is not clearly defined. This is because there are qualitative as well as quantitative factors involved. Therefore, it can be argued that increased income per capita may not necessarily equal higher living standards; and this can be further complicated by unequal distribution of wealth in the economy.
- 2.39 However, from an economic viewpoint, living standards are assessed by the ability of a country to produce or acquire the goods and services it demands, and this is mostly measured using GDP per capita. Although not a perfect measure of overall living standards, it is a quantifiable and internationally comparable approximation.²⁶ The ABS supported the quality of GDP as a measure, explaining that 'generally it is accepted as a reasonably robust and established measurement.'²⁷ Mr Davies emphasised the international comparability of the national accounts in that 'they are more widespread than electricity and telephone plugs'.²⁸
- 2.40 There is also an argument for using GDP per capita to determine living standards because a country with higher GDP per capita will tend to have better social and environmental outcomes, ergo the wellbeing of its people will be high.²⁹
- 2.41 Productivity growth is a critical factor in attaining high living standards; however other frameworks conducive to achieving high average incomes must also be in place.
- 2.42 One example of this is where a country has productivity gains without strong labour utilisation. This was summarised in a 2007 PC Staff Working

24 RBA, 50th Anniversary Symposium, Sydney 9 February 2010, "Increased Understanding of Supply Side Economics", Anne O Krueger, Professor of International Economics, John Hopkins University, Ritch Professor Emeritus, Stanford University, Table 1, p. 32.

25 Including life expectancy increases of around 10 years in industrialised countries and a doubling of literacy rates.

26 Wellbeing and productivity measures are discussed in Chapter 8.

27 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 26.

28 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 26.

29 OECD, *OECD in Figures: Statistics on Member Countries*, Paris, 2002

Paper.³⁰ The paper noted that productivity growth in Norway in 2002 (abundant oil extraction production) was leading the productivity frontier, but that poor labour utilisation had reduced average welfare in the economy.³¹ A number of other European countries also recorded stronger productivity growth than the US but the PC concluded that the US was more appropriately at the productivity frontier because it had productivity improvements through technological progress, not merely through policy or industry distortions. Professor Quiggin supported this view:

You see, for example, in the data that countries which score very well on productivity numbers often do not do so well on employment. What that suggests is that some of the more problematic participants in the labour force in all countries tend to be shunted out of the workforce. The more that happens, the more your measured productivity can increase, but that is obviously not a socially desirable way of proceeding.³²

- 2.43 Dr de Brouwer of the Department of the Prime Minister and Cabinet supported the view that boosting productivity is not desirable where it comes at the expense of workforce participation:

Economists generally, and others, would say that the wellbeing of people is also enhanced by participating in society and participating in the workforce. There is a stronger sense of belonging, of social cohesion, that goes with that, and it is also important in its own right. So we would not use a very narrow metric of, 'Is it just increasing productivity?' There may be economic output increases from participation, which are important, but also the value of people – their sense of self-worth and their wellbeing – is also enhanced by that participation, and that is a broader measure. So that would certainly be in the national interest.³³

- 2.44 The Treasury agree that workforce participation is indeed another component of achieving growth in living standards, as well as population growth. Their submission shows, however, that the contribution of labour

30 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, p. 12

31 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, p. 12

32 Professor J Quiggin, *Transcript*, 19 November 2009, p. 18.

33 Dr G de Brouwer, Department of the Prime Minister and Cabinet, *Transcript*, 4 February 2010, p. 13.

productivity in Australia since 1977-78 has far exceeded the contribution of population and participation.³⁴

- 2.45 Australia has experienced a favourable shift in the terms of trade over the past decade which has raised prosperity for Australians by delivering higher purchasing power. The question which has arisen is whether Australia can rely on favourable terms of trade (due mostly to our rich resource endowments) for future prosperity, or whether increasing productivity growth is required.
- 2.46 History reveals that changes in Australia's terms of trade between 1960 and 2004 have contributed less than five per cent to the increase in real income, yet real income over the same period has increased by almost four fold.³⁵ Productivity improvements during this time have been cited as the 'largest single source of improvements in real income followed by labour force increases and capital stock increases'.³⁶ The Chairman of the PC stated that over the past four decades MFP growth had 'directly accounted for over one-third of total real income growth in Australia, with the remaining growth attributable to growth in labour and capital and changes in the terms of trade, with the terms of trade being dominant in more recent times.'³⁷
- 2.47 It must be borne in mind that a large part of this period was not characterised by the resources boom of the recent 'noughties' magnitude and that real income improvements in this century can be largely attributed to this. Income improvements through price effects reflect a cyclical trend rather than a structural trend and long-term growth depends on sustainability.

Committee conclusion

- 2.48 Productivity growth is an economic concept derived from national accounting statistics designed to give a measure of efficiency in economic activity. It is not a concept which directly takes into account contributions outside the market sector. The committee notes that although unpaid

34 The Treasury, *Submission no. 10*, p. 3.

35 W. Erwin Diewert, Denis Lawrence and Meyrick and Associates, *Measuring the Contributions of Productivity and Terms of Trade to Australia's Economic Welfare*, Consultancy Report, Report to the PC, March 2006, p. ix.

36 W. Erwin Diewert, Denis Lawrence and Meyrick and Associates, *Measuring the Contributions of Productivity and Terms of Trade to Australia's Economic Welfare*, Consultancy Report, Report to the PC, March 2006, p. ix.

37 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 2.

productivity contributions are not identified in the productivity function they may be potentially reflected within the aggregate MFP measure in the 'unmeasured' component. Unpaid productivity growth contributions will be discussed in more detail in Chapter 7.

- 2.49 Healthy aggregate productivity growth means that an economy is making efficient use of its resources to produce a given level of outputs which therefore results in higher living standards. Productivity growth is vitally important in a developed economy to obtain strong economic growth (GDP growth) and thus high GDP per capita.
- 2.50 GDP per capita is the most internationally recognised measure of living standards. Although there is considerable debate over whether real GDP per capita is an appropriate measure for overall community wellbeing it is a widely recognised and comparable measure. OECD analysis has also found that higher GDP per capita tends to correlate with higher social and environmental living standards as well as higher income standards.
- 2.51 Whilst long-term productivity growth is very important for the future growth of an economy, it cannot be the only goal. There are other features of an economy which are necessary to lead to overall improvements in prosperity and distribution of that wealth.
- 2.52 Australia is heading into an era where economic resources will become ever more constrained and need to be utilised in a smarter way. Australian businesses must be vigilant to ensure underlying firm productivity is robust, and all levels of government should ensure policies encourage aggregate productivity growth. This is because long-term prosperity relies on 'achieving more with a given quantity of resources, or equivalently achieving constant results with a lower resource footprint.'³⁸

The official productivity measures

What they are designed to measure

- 2.53 Official productivity estimates are designed to measure productivity in the income generating economy. They are, as the ABS pointed out at a public

hearing in October 2009, 'economic statistics'.³⁹ Mr Don Brunker of the PC reinforced this fact:

I think it is also worth stepping back and recognising that productivity measures try to serve a particular purpose, and the particular purpose is about efficiency within business organisations. They were never really designed to give us an understanding of how well the community in aggregate is going, although they are clearly a very important ingredient to that.⁴⁰

- 2.54 The ABS official productivity measure is derived from statistics 'compiled on the basis of the standard growth accounting framework, which is widely adopted by leading statistical agencies and recommended by the OECD.'⁴¹ The Australian System of National Accounts 'provides a record of Australia's economic wealth and the changes to that wealth brought about by economic activity.'⁴² It is important to note this economic measure is only an estimate. For example, when experimental data is included, a different result is achieved.

The ABS methodology

- 2.55 The ABS adopts a productivity measurement methodology based on *neoclassical* economic theory. The ABS calculates single factor productivity estimates (for labour and for capital)⁴³ and also multifactor productivity estimates. The calculation of MFP itself is a relatively straightforward exercise once separate indexes for output growth, labour growth and capital growth have been constructed; however, the calculation of the capital component is complex.
- 2.56 Once the separate indices are obtained the relative weights for the contribution of labour and capital are taken by the income shares of these factors of production.

39 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 23.

40 Mr D Brunker, PC, *Transcript*, 23 October 2009, p. 16.

41 ABS, *Submission no. 16*, p. 1.

42 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p.12.

43 A measure of real output per unit of labour is conventionally referred to as labour productivity. The measure of labour input used is hours worked. Measures of real output per unit of capital are referred to as measures of capital productivity. The capital input measure used is the flow of capital, which is calculated by weighting chain volume measures of the productive capital stock of different asset types together using their rental prices as weights.

- 2.57 The ABS calculates productivity estimates in 12 of 20 industry areas as recognised by the Australia and New Zealand Standard Industrial Classification 2006 (ANZSIC06) system.⁴⁴
- 2.58 The majority of industries included in the 'market sector' are those which have satisfactory estimates of the growth in the volume of output. As such, industries where economic values cannot be readily assigned to outputs are excluded (for example, government services). The market sector comprises the following 16 industries (Categories A-N and R-S):
- Category A: Agriculture, forestry, and fishing;
 - Category B: Mining;
 - Category C: Manufacturing;
 - Category D: Electricity, gas, water and waste services;
 - Category E: Construction;
 - Category F: Wholesale trade;
 - Category G: Retail trade;
 - Category H: Accommodation and food services;
 - Category I: Transport, postal and warehousing;
 - Category J: Information media and telecommunications;
 - Category K: Financial and insurance services;
 - Category L: Rental, hiring and real estate services;
 - Category M: Professional, scientific and technical services;
 - Category N: Administrative and support services;
 - Category R: Arts and recreation services; and
 - Category S: Other services.
- 2.59 Industries excluded from the market sector are (Categories O-Q and T):
- Category O: Public administration and safety;
 - Category P: Education and training;

44 Prior to December 2009 the ABS used ANZSIC93, which contained 16 industry categories, 12 of which were represented in the official productivity estimates. The move to ANZSIC06 reflects the growing influence of services industries in the Australian economy; the market sector now including categories L, M, N and S. ABS, *Supplementary submission no. 16.1*, p. 1.

- Category Q: Health care and social assistance; and
 - Category T (special industry category): Ownership of dwellings.
- 2.60 The ABS does not present MFP measures for industries excluded from the market sector because the volume estimates of gross value added are derived using a method in which input data are used as measures of output. As a result, meaningful productivity measures cannot be derived for these industries at present. The ABS noted the limitations in calculating output where there is no market value transaction:
- The basic set of output measures that we use in our economic statistics are based around actual monetary transactions – people putting their hand in their pocket and paying for things. Our basic concept of a transaction is the amount someone has parted with in order to receive the good or service.⁴⁵
- 2.61 Of the 16 industries included in the market sector four categories are excluded from the official productivity estimates. These include industry categories L, M, N and S. The official MFP market sector therefore includes categories A-K plus category R.
- 2.62 In 2008-09 the ABS released experimental estimates for an expanded market sector which included these four sectors with a time series dating back to 1994-95.⁴⁶ These estimates will be incorporated into the Australian System of National Accounts in 2010. The impact of this will be discussed in Chapter 4.
- 2.63 The ABS derives its estimates of MFP for the market sector by forming a combined chain volume measure (using constant price estimates)⁴⁷ of labour and capital inputs and dividing it into the chain volume measure of the gross value added of the market sector (the output of the market).

Measuring the individual components of MFP

- 2.64 Capital is measured on the basis of the 'flow' of services from the capital stock, with the flows weighted by a rental value, somewhat analogous to the concept of depreciation in an accounting profit and loss statement.

45 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 24.

46 ABS, *Supplementary submission 16.1*, p. 2.

47 The ABS computes chain volume measures by linking together movements in volumes, calculated using the average prices of the previous financial year, and applying the compounded movements to the current price estimates of the reference year.

2.65 The single index of capital services derived to calculate MFP is itself a combination of 13 separate indexes covering major asset types including machinery, computer software and inventories over the market sector industries. An aggregate chain volume measure of capital services for the whole market sector is then weighted with a measure of hours worked using estimates of capital and labour income as weights.

2.66 The ABS note that estimates of capital services productivity is the most unreliable productivity estimate:

Of all the constituents of the MFP measures, capital input poses the most problems. A major weakness of the estimates of capital services stems from the uncertain quality of the data used in their construction, such as mean asset lives and asset life distributions.⁴⁸

2.67 Constructing capital input indices is very complicated and relies on assumptions which are not universally agreed. The ABS states:

The construction of capital stock series, based on some cumulated function of past investment expenditures (the so called perpetual inventory model (PIM)), critically depends on the availability of constant quality price indexes and assumptions regarding the capital decay process.⁴⁹

2.68 Just one example of the detailed calculations in capital stock indices is the required finessing of rental values for tax and tax incentive/allowance impacts applicable to different capital equipment, in different industries.

2.69 Due to the inherent issues in calculating the capital service index, the ABS is currently reviewing its methodology and is also developing ways to capitalise research and development expenditure into the index.⁵⁰

2.70 In contrast, calculating the labour index is relatively uncomplicated. Estimates for hours worked are derived as the product of employment and average hours worked. Using an index of hours worked provides a better measure of labour input than using employment, because hours worked captures changes in overtime worked, standard weekly hours, leave taken, and changes in the proportion of part-time employees.⁵¹

48 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 365.

49 ABS, *Submission no. 16*, p. 4.

50 ABS, *Submission no. 16*, p. 5.

51 However, changes in the skill level of the labour force are not captured in hours worked, and so are reflected in the productivity estimates. To obtain a measure of productivity that excluded the effect of changing skill levels, it would be necessary to adjust hours worked for changes in the quality of the labour force.

Productivity growth measurement—statistical limitations

2.71 As noted earlier, estimating productivity, particularly MFP, is complex and subject to a number of measurement issues. Estimates are also based on a number of underlying theoretical assumptions that may not necessarily reflect the nature of production processes.

2.72 The ABS note that caution needs to be exercised in interpreting productivity measures which are derived as a residual and are therefore subject to any errors in the output and input measures. Furthermore, because productivity growth is comparatively low, such errors assume relatively greater importance with respect to productivity estimates.⁵²

2.73 The ABS also advise of the need to take a longer term view of MFP estimates, which are subject to the vagaries of the growth in the business cycle (as capacity utilisation varies so does MFP growth). The ABS note that:

Taking into account all of these factors, MFP estimates are probably most useful when computed as average growth rates between growth-cycle peaks, which are determined as peak deviations of the market sector MFP index from its long-term trend. In this way, most of the effects of variations in capacity utilisation and much of the random error are removed. However, average growth rates still reflect any systematic bias resulting from the methodology and data used.⁵³

2.74 The volatility in short-term MFP can be seen in the recent incomplete productivity cycle with annual averages ranging from -0.6 to 0.3 per cent growth.⁵⁴

2.75 The PC also stressed the business-cycle nature of productivity trends. In reference to a chart in their submission which depicted productivity growth cycles back to the mid-sixties Mr Terry O'Brien stated:

It is just a powerful reminder that productivity growth is intrinsically cyclical for reasons interactive with cycles in the broader economy.⁵⁵

52 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 375.

53 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 376.

54 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2007-8, p. 42.

55 Mr T O'Brien, PC, *Transcript*, 23 October 2009, p. 5—referring to PC, *Submission no. 20*, p. 14.

- 2.76 Measurement issues also arise from the accuracy of the statistical data and some of the assumptions made in their compilation. The main sources of data for productivity are output and capital stock measures from the National Accounts (ABS cat no 5206.0), with estimates of hours worked drawn from the ABS's labour force survey (ABS cat no 6203.0). The capital stock measures are mostly derived from surveys of businesses on the ABS 'business register' so the quality of responses to the surveys is important.
- 2.77 The fact that the official MFP calculation excludes six service sector industries is a statistical limitation which may prove increasingly troublesome as this part of the economy grows. The rise of the services sector is a phenomenon which occurs as economies advance. The fact that most of this sector is excluded from the ABS productivity growth measure makes it increasingly more difficult to determine the relative contributions of different sectors to aggregate productivity.
- 2.78 Currently, statistical agencies have not formulated a robust and comparable statistical method to account for the complexity of inputs and outputs in the service sector of their economies; so by and large they are omitted from the MFP measurement. The main problems that are encountered in trying to account for service sector inputs and outputs are summarised by Professors Cooper and Sheen in their submission:
- ...the distinction between inputs and outputs is difficult to resolve, where outputs may not be physical products and hence may be difficult to measure, and where complex interrelationships in the production of goods and services mean that the contribution of individuals is increasingly an unobservable task and not a specifically measurable component.⁵⁶
- 2.79 Their submission stresses the need to invest in finding better ways of measuring the outputs of a 'modern service oriented economy – where trading in tasks is increasingly dominant'.⁵⁷ They propose that with relatively poor information of what a modern economy actually does, coupled with the lack of an adequate measure of service outputs may mean countries fail to record the 'flow-on effects of technological advances, a failure which could lead to poor policy prescriptions'.⁵⁸
- 2.80 The ABS recognises this problem, stating that:

56 Professors & Professor J Sheen, *Submission no. 5*, p. 1.

57 Professors & Professor J Sheen, *Submission no. 5*, p. 3.

58 Professors & Professor J Sheen, *Submission no. 5*, p. 3.

...recent decades have witnessed the gradual shift in the composition of aggregate output towards service-producing industries and there is strong support to expand productivity measurement to these sectors, despite the significant measurement challenges that may be involved.⁵⁹

- 2.81 Measuring the productivity of public sector services is particularly difficult.⁶⁰ This issue is discussed in Chapter 8.
- 2.82 In their submission, Professors Cooper and Sheen proposed extending the 'attributes' methodology to measure outputs in an increasingly service-based economy:
- Approaches to indirect measurement of changes in the quality of attributes also need to be developed and these would require sophisticated economic modelling. For example, it may be possible to examine changes in individuals' economic behaviour to infer improvement in quality of attributes where switches in purchasing occur that are incompatible with the implications of price movements....In summary, there is an increased need for integration of data measurement and economic modelling tasks in the future economy.⁶¹
- 2.83 Despite its statistical drawbacks, the ABS outlines the unique advantages and features of the MFP estimate:
- MFP takes account of several factor inputs at the same time, and is largely a measure of the effects of technical progress, improvements in the work force, improvements in management practices, economies of scale, and so on.⁶²
- 2.84 Yet they also recognise the measure's non-statistical limitations: 'MFP can also be affected in the short to medium term by other factors such as the weather, and by variations in capacity utilisation associated with the business cycle.'⁶³ These non-statistical limitations will be discussed in greater detail in Chapter 3, in terms of recent productivity trends and in Chapter 8 about issues that are taking on greater importance as the composition of the economy changes.

59 ABS, *Submission no. 16*, p. 3.

60 ABS, *Submission no. 16*, p. 3.

61 Professors & Professor J Sheen, *Submission no. 5*, p. 4.

62 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 362.

63 ABS, *Australian National Accounts: Concepts, Sources and Methods*, Cat. no. 5216.0, 2000, p. 362.

International comparability of Australian productivity measures

2.85 Unlike macroeconomic measures such as GDP, which are mature measures incorporated into international standards which have been adopted by most countries around the world, there is less consensus about productivity measures worldwide. The ABS commented that productivity measures:

..are in some kind of intermediate state of maturity...it is recognised as a field where there is still a lot of merit in letting people experiment, stretch and try different things. So there is far less commitment and drive towards international standardisation.⁶⁴

2.86 However, the ABS has adopted all the main productivity measurement methodologies used by other countries; its methods align with those used in most OECD countries. This includes the standard growth accounting framework recommended by the OECD which has been adopted by leading statistical agencies.⁶⁵

2.87 The ABS is advancing its studies into increasing the coverage of industries included in the market sector of the productivity estimates. Experimental estimates have already been released for the ANZSIC categories of Rental, Hiring and Real Estate Services; Professional, Scientific and Technical Services; Administration and Support Services and "Other" Services.⁶⁶

2.88 The ABS is also leading other statistical agencies in the development of experimental MFP estimates. The ABS has already developed productivity estimates for individual industries and also quality adjusted labour input measures, both of which have been released. That said, the ABS recognises many challenges remain, including the international standardisation of new measures:

...it will be some while before there is enough consensus and similar thinking to establish an international standard, which is where the issues of international comparability come up.⁶⁷

2.89 The impact of the inclusion of experimental estimates is discussed further in Chapter 5.

64 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 27.

65 PC, *Submission no. 20*, p. 1.

66 ABS, *Experimental estimates of industry multifactor productivity*, Cat. no. 5260.0.55.002, 2008-09, February 2010.

67 Mr M Davies, ABS, *Transcript*, 23 October 2009, p. 27.

Committee conclusion

- 2.90 The statistical measurement of capital services productivity, and thus multi-factor productivity, is complex. The ABS cautions the interpretation of MFP productivity measures due to the complexity of the capital index construction, and as the available margin of error is very low caution should be used in interpreting short-term productivity. Therefore, annual productivity averages, which vary greatly from year to year, contain a lot of 'noise' and so the interpretation of growth is best performed on a cyclical basis.
- 2.91 That said the growth rates in the present unfinished productivity cycle, which now spans five years, provide enough trend information to expect the cycle to finish with negative growth.
- 2.92 The calculation of MFP is a partial estimate as it excludes six industry sectors which currently have outputs which are difficult to quantify. These sectors are predominantly service sectors and government sectors which do not produce tangible outputs and the outputs/outcomes from these industries are hard to disaggregate and value. They are, however, very important contributors to GDP and the measurement of productivity in these sectors is becoming increasingly important.
- 2.93 The ABS is progressing work into the viability of including a number of service sectors into the market sector but there is still a long way to go before a suitable services sector measurement is found. This will require ongoing commitment from the ABS and from international statistical agencies in adopting a standardised approach.
- 2.94 Despite the statistical limitations of multi-factor productivity as a methodology of measuring the aggregate productivity growth in an economy, it has some clear advantages over partial measures, like labour productivity. MFP accounts fully for capital and labour costs and can reflect changes in the operational environment of businesses, like management effectiveness and the capabilities of the primary inputs of capital and labour. Boosting this 'value-add' productivity stemming from the interactions between the primary inputs will be important for Australian businesses going forward.

Productivity growth trends

Long term productivity growth

- 3.1 Australia's long-term productivity growth rate, taken from the decade prior to any microeconomic reforms were implemented, 1973-74, through to 2006-07 in the yet unfinished cycle, averaged 1 per cent per year.¹ Long-term growth from 1964-65 to 2007-08 averaged 1.1 per cent per year and if growth is taken from the start of 1993-94 it also averaged 1 per cent per cycle, despite including the 2.3 per cent surge cycle. According to the Productivity Commission (PC), this places Australia 'just below the OECD rankings over the period'.²
- 3.2 Growth figures taken from cycle to cycle will give different results to those taken from decade to decade or from trough to trough. And annual results may vary wildly from year to year. However, it appears that in recent history the Australian productivity growth rate has settled at around 1 per cent per annum.

Performance in Australia in the 1970s and 1980s

- 3.3 Australian productivity in the 1960s to early seventies was above the current long-term average, with the first two productivity cycles commencing 1964-65 averaging 1.4 per cent across the cycles. However,

1 Australian Bureau of Statistics (ABS), *Australian System of National Accounts*, Cat. no. 5204, 2007-08, p. 42.

2 Productivity Commission (PC), *Submission no. 20*, p. viii.

from 1973 through to the late eighties the rate of growth declined, particularly marked in the mid to late eighties, dropping under the long-term average of 1 per cent.³

Government response to lagging productivity growth

3.4 Australia's declining productivity performance became a policy concern in the 1980s when the average growth rate declined to 0.8 per cent, but moreover, the concern was about falling incomes per capita:

Concerns about declining productivity, growth, income growth and income levels relative to other OECD countries in the early 1980s gave impetus to the major economic reforms, which were implemented from the mid-1980s.⁴

3.5 The Treasury submission to the inquiry highlighted the lengthy period of falling average GDP per capita between Australia and the OECD average (of the 24 longest-standing countries) from the 1950s to the early 1990s.⁵

3.6 With an increase in the adoption of market-based policies in the developed world there was a growing feeling that past institutional and industry frameworks were impeding Australia's growth and adding to the decline in Australia's relative incomes per capita.

Microeconomic reforms

3.7 A series of microeconomic reforms were implemented in the 1980s and 1990s to improve the declining economic growth by improving the competitiveness and flexibility of Australian firms both globally and domestically.

3.8 The Treasury states that the primary objective of the microeconomic reforms of this period were to:

Improve economic efficiency by correcting externalities and other market failures, establishing and protecting property rights and supporting a competitive market environment.⁶

3.9 These reforms started with the opening up of the economy in 1983 by floating the exchange rate, deregulating the financial sector and capital

3 PC, *Submission no. 20*, p. ix, Figure 2.

4 PC, *Submission no. 20*, p. vi.

5 The Treasury, *Submission no. 10*, p.8.

6 The Treasury, *Submission no. 10*, p. 7.

markets and introducing reductions in import protection, including the abolition of quotas and a phasing out of tariffs.⁷

- 3.10 The floating of the dollar in 1983 led to a swift devaluation of the currency, which also gave many Australian businesses an immediate competitive edge and thus first-time inducement to enter the global market. However, the globally-facing economy meant that only the most efficient businesses survived. A Committee for Economic Development of Australia paper on Australia's manufacturing sector noted that this era:

Forced manufacturers to either meet import competition or cease business. If they could meet the competition of foreign producers at home, they could meet it elsewhere.⁸

- 3.11 These immediate changes were followed by labour market reforms which created more flexibility in firms.⁹ These included a move away from centralised, to more enterprise-level, wage bargaining. Another was the reduction in 'demarcation', where an employee was restricted to working on part of a production process. According to a report commissioned by the Australian Chamber of Commerce and Industry (ACCI), labour market reforms since 1993 have contributed 1.4 per cent growth in labour productivity.¹⁰
- 3.12 National Competition Policy (NCP) was established in the mid 1990s and was eventually rolled out by all levels of government. It was designed to 'forge a national market by using a more coordinated approach of promoting competition across different jurisdictions'.¹¹
- 3.13 The heart of NCP was the restructuring of public sector monopoly businesses; provision for third party access to nationally significant infrastructure and the application of competitive neutrality principles such that government businesses did not enjoy an advantage over private sector competitors (eg previously tax advantaged). The application of the pro-competitive market rules in the *Trade Practices Act* were also extended with the effect of applying to all businesses in Australia.

7 As an example, the effective rate of assistance for manufacturing has declined steadily from about 20 per cent in the mid-1980s to just under 5 per cent in 2007-08. —PC, *Trade and Assistance Review 2007-08*, May 2009, Figure 2.5, p. 20.

8 Dr J Edwards, 'Export weakness, investment strength', *CEDA Competing from Australia Project Paper no. 2*, 2007, p. 4.

9 Mr Glenn Stevens, Reserve Bank of Australia (RBA), House of Representatives Standing Committee on Economics, *Transcript, 14 August 2009*, p. 13.

10 Australian Chamber of Commerce and Industry (ACCI), *Submission no. 7*, p. 73.

11 The Treasury, *Submission no. 10*, p. 8.

- 3.14 Referring to the business environment prior to the competition reforms of the 1990s, the ACCI submission stated:

These restrictions also created a business culture that focussed on securing government preference rather than on achieving a competition edge through effective costs management, innovation and responsiveness to customer demand and requirement.¹²

- 3.15 The NCP also incorporated a process for reviewing and overseeing a wide range of legislation at all levels of government, which, over a period of ten years, streamlined processes for businesses and reduced unnecessary regulatory burdens.¹³

- 3.16 The Treasury reported that NCP resulted in productivity gains in reforming infrastructure markets:

These reforms have improved efficiency across a range of areas of public infrastructure and the resulting increases in the productivity of Australia's stock of infrastructure have helped to raise Australia's potential output.¹⁴

Macroeconomic framework

- 3.17 Treasury's submission noted the role macroeconomic policies play in realising long-term growth¹⁵:

Medium-term frameworks for monetary and fiscal policy were also developed to promote macroeconomic stability.¹⁶

- 3.18 One macroeconomic framework which was strengthened in the early 1990s was monetary policy. Monetary policy started to focus on inflation targeting to ensure Australia's inflation rate was contained within a range throughout the business cycle. As inflation erodes living standards and deters investment it is essential to control it.

12 ACCI, *Submission no. 7*, p. 39.

13 The volume of regulation expanded in the period 2000-2006, some of which is a result of NCP reforms and the requirement for new legislation; the burden of these regulations may not have increased, as noted in: Australian Government, *Rethinking Regulation – The Report of the Taskforce on Reducing Regulatory Burdens on Business, January 2006*, pp. 5-6.

14 The Treasury, *Submission no. 10*, p. 11.

15 Barring one quarter of negative growth in December 2000 and one quarter in December 2008 (following the global financial crisis), the economy has continued to grow since the trough of the 1990-91 recession. RBA Statistical Tables, Table G1, GDP chain volume, viewed 2 March 2010: <http://www.rba.gov.au/statistics/tables/index.html>

16 The Treasury, *Submission no. 10*, p. 8.

- 3.19 Australia's inflation targeting strategy was formalised in 1996 in the 'Statement on the Conduct of Monetary Policy', an agreement between the then Federal Treasurer and the Governor of the Reserve Bank of Australia (RBA). The agreement set a target of maintaining inflation within a range of 2 to 3 per cent over the business cycle.¹⁷ The current Statement on Monetary Policy is the fourth agreement.
- 3.20 At its February 2010 public hearing with the House Economics Committee the RBA echoed the need to maintain stable monetary policy to foster productivity growth:
- If you look back through economic history, if you have high and variable inflation, resource allocation in the private economy tends to get screwed up and you end up with lower levels of productivity growth and lower living standards. What we can do for the community, what we can do for productivity growth, is deliver low and stable inflation.¹⁸
- 3.21 In the 1990s fiscal policy moved away from a focus on aggregate demand management in the Australian economy and took on a more microeconomic perspective. This was recently expressed by Dr Ken Henry, Secretary to the Treasury on the role of Australian fiscal policy:
- Over time, fiscal policy considerations have come to have more to do with the quality of government spending and taxation policy interventions in the economy.¹⁹
- 3.22 An example of this sort of fiscal policy behaviour was the introduction of various tax reforms since the 1980s.²⁰
- 3.23 The macroeconomic fiscal strategy adopted in the 1990s was aimed at creating balance over the cycle and of having a smaller public sector footprint. For example, during this period government owned enterprises and infrastructure were privatised. This had the impact of also reducing ongoing government expenditure.

17 RBA, *Fourth Statement on the Conduct of Monetary Policy*, December 2007.

18 Dr P Lowe, RBA, House of Representatives Standing Committee on Economics, *Transcript*, 19 February 2010.

19 Dr K Henry, Fiscal policy: more than just a national budget, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 12. Viewed 23 February 2010.

<http://www.treasury.gov.au/documents/1689/PDF/02_Fiscal_Policy.pdf>

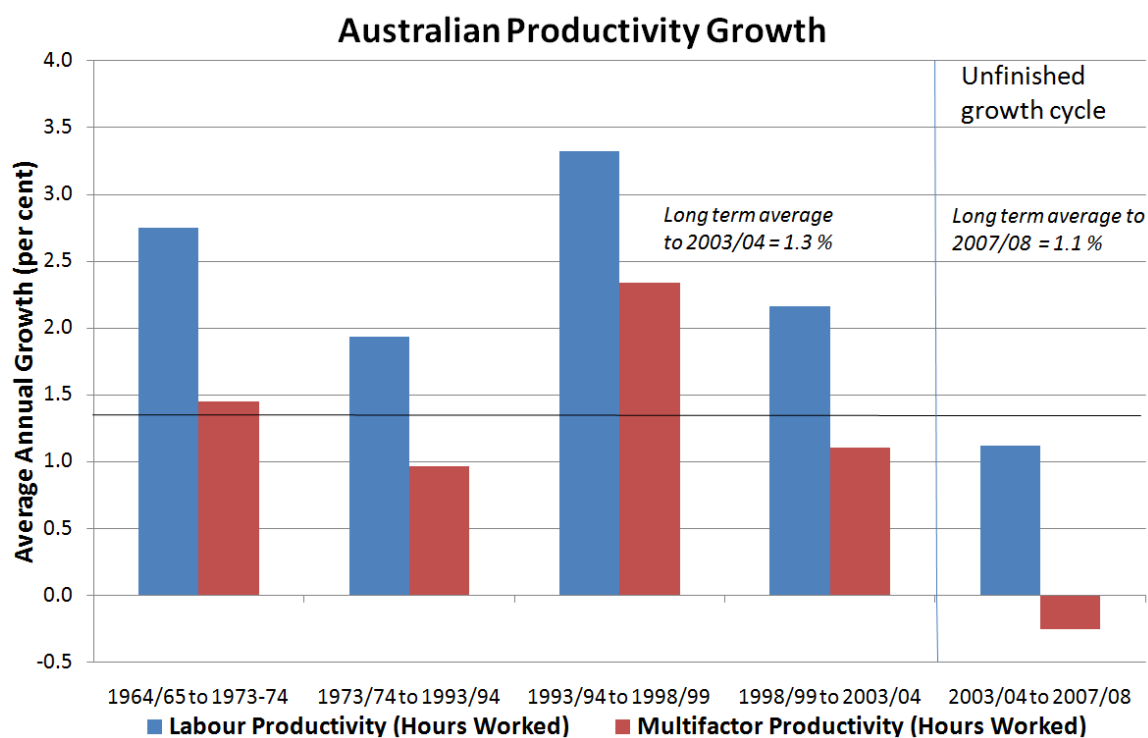
20 Reducing marginal tax rates encourages incentives for effort and reducing taxation on capital creates incentives for investment.

The productivity growth surge

- 3.24 Following the relative slump in growth from 1984-85 to 1993-94, with average growth at around 0.9 per cent over the two cycles, productivity growth in the subsequent cycle, 1993-94 to 1998-99, more than doubled.
- 3.25 Average productivity growth for the period was estimated at 2.3 per cent which far exceeded its long term average of 1.1 per cent. The PC, in their submission to the inquiry referred to this growth rate as 'extraordinary'.²¹ Consequently, this golden (and relatively short-lived) period of record productivity growth has been referred to as the 'productivity growth surge'. The growth surge can be seen pictorially in Figure 3.1.
- 3.26 As ACCI's submission highlighted, both labour productivity and MFP soared in the 1990s:

Growth in both labour productivity (output per hour worked) and multifactor productivity (output per combined unit of labour and capital) increased to record high levels between 1993-94 and 1998-99.²²

Figure 3.1 Australia's productivity growth (Percentage average annual rate of growth)



Source ABS, Australian System of National Accounts, Cat. no. 5204.0, 2007-08

21 PC, Submission no. 20, p. viii.

22 ACCI, Submission no. 7, p. 5.

- 3.27 The following cycle, 1998-99 to 2003-04 ended with an average of 1.1 per cent across the cycle, returning to the long-term average.

What caused the high productivity growth of the 1990s?

- 3.28 Much has been written about the contributions to the historically high rates of productivity growth in the Australian economy in the last decade of the 20th century. A number of economists and public policy analysts disagree on what the primary impetus for the surge was – one argument suggests that there was not really a miracle period of productivity growth.
- 3.29 The prevailing view is that extensive microeconomic reforms progressively introduced in the 1980s to the 1990s offered Australian businesses the platform for the biggest efficiency gains in decades.

Microeconomic growth theory

- 3.30 The majority of contributors to the inquiry supported the view that the superlative growth achieved in the 1990s was directly attributable to the raft of microeconomic reforms which commenced in the 1980s.
- 3.31 Treasury's submission stated:
- The PC (2005) found that NCP and related reforms directly contributed to productivity and price changes in infrastructure sectors during the 1990s, increasing Australia's GDP by 2.5 per cent or \$20 billion (in 2005-06 dollars).
- 3.32 The South Australian Government referred to the conclusion of the PC's 1999 report on the contribution of microeconomic reforms to productivity, stating that:
- The Productivity Commission compared the timing of reforms with observed productivity outcomes and undertook detailed case studies of particular sectors to identify the influences on changes in their productivity performance. The report concluded that microeconomic reform had played the major role in bringing about productivity gains.²³
- 3.33 The PC also emphasised that when Australian businesses were exposed to more competition following the microeconomic reforms of the 1980s, this created the impetus for businesses to change and become more productive:

23 South Australian Government, *Submission no. 22*, p.9.

A change in firm organisation, a change in management practice, or the adoption and development of new technologies might not happen without a clear purpose or incentive such as that provided by competition.²⁴

3.34 This 'impetus to be more productive' view was supported by the CLE:

A moment's reflection makes one realise that it is not simply the spread of computers that will generate productivity increases, but the incentives and capability to use them effectively which the microeconomic reforms allowed - including the enormous investments in modern communication systems following privatisation and deregulation of telecommunications globally.²⁵

3.35 The Treasury also referred to a study conducted in 2000 by the International Monetary Fund (IMF) which found that trade liberalisation, labour market reform and increased competition 'lifted Australia's trend MFP growth in the 1990s by between 0.5 and 0.9 of a percentage point (Salgado 2000)'.²⁶ These reforms essentially constituted the 'first wave' of reforms which were first implemented in the 1980s.

3.36 Another study conducted by the IMF supported the view that businesses adopted productivity enhancing measures after exposure to competition brought about by the microeconomic reform agenda. The Treasury noted the IMF's finding that:

...intensified competition through the reforms have driven the more efficient use of resources through new work practices and encouraged the more rapid uptake of new technologies (Tressel 2008).²⁷

3.37 ABARE's submission agrees that Australia's microeconomic reforms provided a spring-board for productivity growth by freeing up the environment market participants operated in:

These reforms benefited productivity growth by improving the incentives for innovation and by improving flexibility and options for decision-makers to improve performance.²⁸

24 PC, *Submission no. 20*, p. 9.

25 Centre for Law and Economics, ANU (CLE), *Submission no. 6*, p. 6.

26 The Treasury, *Submission no. 10*, p. 9.

27 The Treasury, *Submission no. 10*, p. 9.

28 Australian Bureau of Agricultural and Resource Economics (ABARE), *Submission no. 23*, p. 15.

- 3.38 Professor Chris O'Donnell's evidence lends more weight to this view. He stressed that microeconomic reforms, on a general level, are designed to promote competition, and that competition leads to technical efficiency within firms. He also notes, as a corollary, that non-competitive markets protect unproductive firms (such as those operating behind tariff walls):
- ...it is only in competitive environments that technically efficient firms will survive.²⁹
- 3.39 It can be inferred from Professor O'Donnell's evidence that the microeconomic reforms of the 1980s and 1990s led to aggregate productivity growth because the Australian economy became more competitive.
- 3.40 The Treasury submission emphasised that the microeconomic reform program delivered more to the Australian economy than a one-off productivity growth surge. It noted reductions in the prices and range of consumer goods and services available to Australians and improvements in service quality and reliability stemming from the 'second wave' of reforms (mostly NCP) which commenced in the mid to late 1990s.³⁰
- 3.41 Treasury also believes that these reforms have provided a platform for ongoing productivity growth:
- In particular, greater market competition and microeconomic flexibility have permanently improved firms' operating environment, promoting the ongoing search for and diffusion of more productive processes and better products (PC 2008).³¹
- 3.42 ACCI's submission agreed with PC analysis which concluded that NCP and affiliated reforms were directly responsible for significant infrastructure price reductions since the early to mid 1990s.³²
- 3.43 Professor John Quiggin, a leading Australian economist, is often presented as opposing the view that microeconomic reforms delivered a productivity growth surge. However, the main thrust of Professor Quiggin's argument is that the timing of some of the most substantial reforms could not have contributed to the high growth rates in the 1990s due to the later timing of reform implementation. For example, he contends that NCP, the most sweeping of these reforms, was not

29 Professor C O'Donnell, *Transcript*, 4 February 2010, p. 7.

30 The Treasury, *Submission no. 10*, p. 9.

31 The Treasury, *Submission no. 10*, p. 9.

32 Including, for example, significant reductions in real electricity prices, port, telecommunications and rail freight charges. ACCI, *Submission no. 7*, p. 42.

implemented until the late 1990s and therefore could not have been reflected in the 1993-94 to 1998-99 data:

National Competition Policy, one of the central elements of the Hawke-Keating government's microeconomic reform program (agreed in 1995) did not come into effective force until the late 1990s. The major microeconomic reforms of the Howard government, including the GST, privatisation of Telstra and other Government Business Enterprises, the replacement of the CES by the Job Network and a series of labour market reforms culminating in WorkChoices all took effect during this period.³³

- 3.44 Professor Quiggin accepts that microeconomic reforms in some sectors, like manufacturing and agriculture provided productivity growth; albeit limited. However, he believes other sectors did not fare as well:

Attempts to apply the 1980s microeconomic reform package in growth areas such as health, education, the financial sector and the information economy have been generally unsuccessful and in some cases actively counterproductive.³⁴

- 3.45 He concludes that 'the extent of any contribution to productivity growth from microeconomic reform over the period since 1980 is too small to be distinguished from other fluctuations in the time series'.³⁵
- 3.46 There is, however, some contention that this view is too simplistic and that factors outside these reforms significantly contributed to the record high growth rate.

Rapid adoption of leading edge information and communications technology

- 3.47 During the 1990s Australians embraced information communications technology (ICT) at an unprecedented rate given Australia is not a leading ICT producer.³⁶ This era also ushered in the first widespread use of the internet in businesses and government organisations.
- 3.48 The Department of Innovation, Industry, Science and Research noted that rapid adoption of ICT, despite Australia not being an ICT manufacturer,

33 Professor J Quiggin, *Submission no. 28*, p. 2.

34 Professor J Quiggin, *Submission no. 28*, p. 3.

35 Professor J Quiggin, *Submission no. 28*, p. 2.

36 Mr T Lowndes, Department of Innovation, Industry, Science and Research (DIISR), *Transcript*, 23 October 2009, p. 52.

‘reflects a culture of being willing to look at new practices and do new things’.³⁷

- 3.49 A number of studies have been undertaken on the stand-alone impact of ICT on aggregate productivity growth during the surge cycle. The committee received evidence to support the role ICT played in Australia’s record productivity growth rates in the 1990s.
- 3.50 The CLE has undertaken research on the long-term impacts of ICT in Australia compared to 18 OECD countries, during 1980-2005. Dr George Barker noted in evidence about this research that ‘Our conclusions show quite clearly that the spread of ICT capital and differences between nations are major drivers of productivity’.³⁸
- 3.51 The CLE also contend that when assessing the contribution of microeconomic reforms to the productivity growth surge, other factors must be controlled for. They note the remarkable uptake of the internet over the same period was a significant historic event and was a key contributor to the surge. They note:
- The internet is a major innovation associated with the Information and Communications Technology (ICT) industry the significance of which has been compared to the advent of railroads in the 19th Century.³⁹
- 3.52 The committee also heard evidence that it was not the uptake of computers per-se that led to productivity gains, but rather the connectivity of computers which came about in the 1990s:
- Computers came online with the first IBM personal computer in 1984 but they did not show up with a productivity effect for a long period. The insight was that it is not stand-alone computers that may contribute most to productivity but the networking of computers.⁴⁰
- 3.53 A number of submitters to the inquiry highlighted the fact that ‘ICT diffusion ‘played a significant role in the productivity growth surge. ICT diffusion essentially means that ICT is widely dispersed throughout the Australian economy.

37 Mr T Lowndes, DIISR, *Transcript*, 23 October 2009, p. 52.

38 Dr G Barker, CLE, *Transcript*, 30 October 2009, p. 37.

39 CLE, *Submission no. 6*, p. 3.

40 Dr G Barker, CLE, *Transcript*, 30 October 2009, p. 36.

3.54 The Manufacturing Alliance noted that ICT take-up and diffusion contributed up to 30 per cent of Australia's productivity growth in the 1990s.⁴¹ Dr Boon Lee, an academic economist, agreed with a study by Thierry Tressel of the IMF that Australian productivity growth in the 1990s benefited from the diffusion of ICT.⁴²

3.55 Talking generally about the relationship between ICT and productivity growth, a representative of the Department of Broadband, Communications and the Digital Economy stated:

It is well-recognised in economic circles that there is a relationship between the availability and use of ICT and productivity.⁴³

3.56 The PC acknowledges that the impact of ICT uptake in the 1990s cannot be discounted as a source of productivity growth, but that its contribution was insignificant compared to the benefits accruing from the microeconomic reforms which were 'fundamental and far-reaching'. The PC stated:

There was rapid uptake of new technologies (including ICTs) in this period but their contribution to MFP growth was small.⁴⁴

3.57 ACCI claims the microeconomic reforms of the 1980s and 1990s prompted the uptake of newly available technology, which gives a chicken-and-egg slant to the 'microeconomic reform versus ICT growth' argument:

More competitive markets also accelerated the adoption of new technologies and introduction of new products by firms to differentiate themselves from the mainstream and enable them to capture niche markets.⁴⁵

3.58 Although predominantly supporting the view that information communications technology was the prime driver of productivity growth in this period, Dr Barker similarly acknowledged the role of microeconomic reform in the rapid growth of productivity in the mid nineties:

The point is that the reform process came into play by creating the incentives and capabilities to invest in ICT, and it gave rise to a lot

41 The Manufacturing Alliance, *Submission no. 14*, p. 6.

42 Dr B Lee, *Submission no. 3*, p. 1. Reference to: Tressel, T, *Does Technological Diffusion Explain Australia's Productivity Performance?*, IMF Working Papers, April 2008.

43 Mr R Windeyer, Department of Broadband, Communications and the Digital Economy, *Transcript*, 25 February 2010, p. 2.

44 PC, *Submission no. 20*, p. ix.

45 ACCI, *Submission no. 7*, p. 42.

of the productivity growth that we have seen. Computers and the internet by themselves do not lead to the productivity effects. You have got to have a framework of law and policy that creates and supports the adoption.⁴⁶

- 3.59 Professors Cooper and Sheen of Macquarie University postulate that the contribution of ICT and microeconomic reforms is hard to distinguish because ultimately both depend on efficiencies of process. Their submission stated:

Although there has been a lengthy debate about the relative contribution of microeconomic reform versus technological change to the recent productivity growth spurt, even this distinction is now difficult to maintain. One reason for this difficulty is that microeconomic reform is concerned with the modification of the environment in which economic relationships are transacted with the aim of producing greater efficiency in these relationships. However, in an increasingly sophisticated world, technological change at its heart is also concerned with modifying the way tasks are combined.⁴⁷

A mirage caused by measurement quirks and other impacts?

- 3.60 Professor John Quiggin has been vocal in his alternative views on the reasons for Australia's record productivity growth cycle spanning 1993-94 to 1998-99. Firstly, he largely discounts the popular view that microeconomic reforms were responsible for the growth surge – mainly because he believes the most influential of the reforms (NCP) was implemented too late in the cycle period to have had any effect on the estimate.
- 3.61 Secondly, Professor Quiggin believes the arbitrary cut-off points in the productivity cycles create skews which may make a cycle appear more productive than in reality. As discussed in Chapter 2, productivity cycles do not mirror business cycles, and if they do, it is incidental.⁴⁸ Professor Quiggin asserts that the divisions of these 'hypothetical productivity

46 Dr G Barker, CLE, *Transcript*, 30 October 2009, p. 7.

47 Professors R Cooper & J Sheen, *Submission no. 5*, pp. 1-2.

48 The ABS first released MFP estimates for the market sector in June 1994. MFP was calculated back to 1963-64 and the data was organised using a concept of 'productivity cycles' which were inferred from the MFP series with start and end points of the cycles being peak deviations from long-term productivity growth. The cycles tend to span approximately six years.

cycles' created a superlative productivity growth result by using the years 1993-94 to 1998-99.⁴⁹

- 3.62 In his 2006 paper, *Stories about Productivity*, Professor Quiggin argues that the relatively short duration of the productivity cycle and the high year to year variability in the data meant that 'the MFP data set does not contain enough information to allow clear statistical discrimination between competing hypotheses'.⁵⁰ At an inquiry public hearing he stated:

There is a long statistical debate about the extent to which any increase in productivity in the mid-nineties was a genuine outcome of those reforms or merely a statistical blip. I have taken the view in my evidence that the evidence is not really sufficient to determine whether there was an upsurge in productivity followed by a slump or whether that was merely the product of seeing patterns in the data.⁵¹

- 3.63 Professor Quiggin cites the econometric work of Keith Hancock (2005)⁵² and concludes that the Australian MFP data set should be interpreted with caution. Quiggin writes:

Thus, the data contains more evidence on the level of MFP than on the rate of growth of MFP, and more evidence on the rate of growth of MFP than on trends in the rate of growth of MFP. Attempts to detect a structural break in the trend rate of growth of MFP are therefore likely to be fraught with difficulty.⁵³

- 3.64 Professor Quiggin notes that when the ABS first published MFP estimates which revealed a record growth period in 1993-94 to 1998-99, the PC inferred this was attributable to the microeconomic reforms which started in the 1980s. Quiggin uses the slow-down in MFP in the following cycle (from 2.3 per cent to 1.1 per cent) as supporting the view that the record growth in the 1990s was a result of a statistical anomaly, an economy moving out of the doldrums of the recession and an increase in work intensity.⁵⁴

49 Professor J Quiggin, *Submission no. 28*, p.1.

50 Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 19.

51 Professor J Quiggin, *Transcript*, 19 November 2009, p. 10.

52 Keith Hancock, *Productivity Growth in Australia 1964-65 to 2003-04*, Australian Bulletin of Labour, Vol. 31, No. 1, 2005, pp. 28-32.

53 Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 20.

54 Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 19.

- 3.65 Analytical work undertaken by the ABS in 1989 supports part of Professor Quiggin's view. This work identified that in terms of labour productivity the hours worked tend to lag the growth of outputs by up to four quarters.⁵⁵ This means that as a peak in the business cycle is reached, labour productivity will decline, and as the economy comes out of a trough labour productivity will rapidly grow, as was the case in the mid 1990s.
- 3.66 The increase in work intensity hypothesis put forward by Quiggin is that during the 1990s there was an unsustainable increase in work intensity (via a significant increase in working hours and reduced 'on-the-job leisure')⁵⁶ which was not necessarily reflected in the data. Professor Quiggin noted that the reported working hours peaked in 2000 and he concluded therefore that:
- Thus it seems likely that gains in measured productivity from this source during the 1990s were, at least partially, reversed after 2000.⁵⁷
- 3.67 For part of this hypothesis to hold it would mean that reported labour hours were under-estimated, thus resulting in productivity growth arising from reduced or static inputs yet greater output. This is because, as the PC noted in 1999, reported longer working hours would not influence estimates of productivity but 'greater work effort per hour worked would be reflected in the productivity measure'.⁵⁸ Although the PC agree that greater work intensity (being more efficient when on the job) could have influenced the estimates it indicates that the source of most of the productivity growth in that cycle did not emanate from labour productivity.⁵⁹
- 3.68 The PC assert:

55 N. Batty, *Gross Domestic Product, Employment and Productivity*, June quarter 1989, Australian National Accounts: National Income and Expenditure, Cat. no. 5206.0.

56 PC, *Microeconomic Reforms and Australian Productivity: Exploring the Links*, Commission Research Paper, Volume 1: Report, November 1999, p. 75.

57 Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 24.

58 PC, *Microeconomic Reforms and Australian Productivity: Exploring the Links*, Commission Research Paper, Volume 1: Report, November 1999, p. 75.

59 PC, *Microeconomic Reforms and Australian Productivity: Exploring the Links*, Commission Research Paper, Volume 1: Report, November 1999, p. 75.

The 1990s productivity surge could not be attributed to international trends, normal recovery from domestic recession, improved labour force skills, or greater work intensity.⁶⁰

- 3.69 The PC acknowledges that the recovery from the recession of 1990-92 and increased work intensity could have played some role in the improved productivity performance but that these alone could not explain the strength of the rise.⁶¹

Growth is cyclical

- 3.70 Even if productivity cycles were created at different points in the historic series – the periods would still exhibit a cyclical trend.⁶² It is therefore reasonable to expect wide variations in estimates within cycles as growth is volatile. This was expressed in the Australian Bureau of Agricultural and Resource Economics' (ABARE) submission:

Short-term movements are not typically a strong indicator of underlying productivity trends, as growth can be highly volatile.⁶³

- 3.71 It is reasonable to expect large variations in growth *between* different cycles. Professor Quiggin notes that 'dividing business cycles into two or more productivity cycles is likely to produce alternating periods of weak (contraction phases) and strong (expansion phases) productivity growth'.⁶⁴ Similarly, the Treasury's Summer 2006 Economic Roundup stated that:

A period of strong multi-factor productivity growth is not typically followed by another similar period.⁶⁵

- 3.72 The productivity cycle following the surge cycle did just that. Multifactor productivity growth fell from an average across the cycle of 2.3 per cent to 1.1 per cent. However, the next cycle has not seen a rebound to higher growth rates. Instead, the yet to be completed cycle from 2003-04 has exhibited decelerating growth.

60 PC, *Submission no. 20*, p. ix.

61 PC, *Microeconomic Reforms and Australian Productivity: Exploring the Links*, Media Release, 12 November 1999.

62 Professor Quiggin suggests there are nearly 40 possible choices for a break-point in the series. Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 24.

63 ABARE, *Submission no. 23*, p. 8.

64 Professor J Quiggin, *Stories About Productivity*, Australian Bulletin of Labour, Vol. 32, No. 1, 2006, p. 24.

65 Dolman, B, Lan, L & Rahman, J, *Understanding Productivity Trends*, Treasury Economic Roundup, Summer, 2006, p. 42.

Declining productivity growth since 2003-04

- 3.73 The current productivity cycle, commencing in 2003-04, at a peak level of productivity, is an incomplete cycle. So far, the story is of declining productivity growth with a growth rate to 2008-09 of -0.4 per cent.⁶⁶ This is a significant shift from the previous cycle's 1.1 per cent growth rate.
- 3.74 As ACCI's submission indicates the 'decline in productivity has resulted from very strong growth in demand for inputs – both capital and labour'.⁶⁷
- 3.75 It is interesting to note that hours worked in the market sector has grown by 2.2 per cent a year which is twice the historical average. This can be attributed to greater participation rates given the unemployment rate averaged 5 per cent over the unfinished cycle, with two and a half years at under 5 per cent.⁶⁸ A 2007 OECD report notes that employment growth tends to be associated with lower average measured labour productivity growth,⁶⁹ and this would be particularly so in an economy with supply side constraints. This is because as employment opportunities expand more low-skilled workers are employed who 'generate diminishing returns to labour input'.⁷⁰
- 3.76 Capital services have also increased significantly – from 3.8 per cent long-term average to 5.3 per cent over the unfinished cycle.⁷¹ Average output growth in this cycle is, however, now below its long-term average.⁷² Australia's current prosperity is therefore price driven, not volume driven, where high prices for commodities are boosting the value of Australia's outputs.

66 ABS, *Australian System of National Accounts*, Cat. No. 5204.0, 2008-09, p. 40.

67 ACCI, *Submission no. 7*, p. 11.

68 RBA, *Statistical Tables, Output and Labour*, Labour Force G7. Viewed 11 March 2010 <<http://www.rba.gov.au/statistics/tables/index.html>>.

69 OECD, *OECD Economic Outlook*, Chapter 2—More Jobs but Less Productive? The Impact of Labour Market Policies on Productivity, pp. 56-57.

70 OECD, *OECD Economic Outlook*, Chapter 2—More Jobs but Less Productive? The Impact of Labour Market Policies on Productivity, p. 57.

71 ABS, *Australian System of National Accounts*, Cat. no. 5240.0, 2007-08, p. 43, and ABS, *Australian System of National Accounts*, Cat. no. 5240.0, 2008-09, p. 40.

72 Long term output growth from 1964-65 to 2007-08 is 3.3 per cent. Refer ABS, *Australian System of National Accounts*, Cat. no. 5240.0, 2007-08, p. 43. Growth since the last completed cycle to 2008-09 approximates 2.8 per cent, falling from around 3.6 per cent for the incomplete cycle to 2007-08. ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 40.

Key reasons for the productivity growth decline

- 3.77 The majority of evidence received which commented on the productivity growth decline since 2003-04 agreed that the slow-down has predominantly been generated by poor productivity growth in three industries – Agricultural, forestry and fishing; Mining; and Electricity, gas and water services (EGW).⁷³
- 3.78 The Treasury noted the impact on aggregate productivity growth of falling productivity growth in two of the three industries:
- The Productivity Commission (2008) estimates that the combination of drought on agricultural output and the terms of trade related slowdown in mining productivity explains more than half of the fall this decade in Australia's multifactor productivity growth from its long-term average.⁷⁴
- 3.79 This impact is significant given the mining and agricultural industries shared in only 10.3 per cent of Australia's gross value add in 2008-09 (16 per cent of the market sector recognised in MFP estimates) and yet productivity declines in these two sectors alone accounted for more than 50 per cent of the decline in aggregate productivity growth over the decade.⁷⁵
- 3.80 When the productivity declines in the EGW sector are added to those in Mining and Agriculture, the PC calculated that 70 per cent of the 'recent rapid decline in productivity growth since the cycle ending in 2003-04 is accounted for by specific developments in these sectors'.⁷⁶
- 3.81 A variety of compounding reasons have been suggested for the slowing of growth in this cycle including a slow-down in the microeconomic reform agenda,⁷⁷ bottlenecks constraining growth in mineral exports, and supply side constraints leading to diminishing returns in the labour market.⁷⁸
- 3.82 The Manufacturing Alliance argues sub-optimal investment in infrastructure; skills and innovation have resulted in the productivity growth decline. They claim manufacturing R&D 'collapsed' in the current
-

73 The Treasury, PC, ACCI, ABARE, the Manufacturing Alliance and Master Builders Australia commented on the decline and all agreed with this conclusion.

74 The Treasury, *Submission no. 10*, p. 6.

75 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 28.

76 PC, *Submission no. 20*, p. x.

77 CLE, *Submission no. 6*, p. 7.

78 PC, *Submission no. 20*, p. x.

decade and Australia lags behind ‘many other nations’ in public and private investment in education and skills.⁷⁹

- 3.83 Although the PC agrees that investment in infrastructure, R&D and human capital are vital to productivity growth in the long-term, they dispute causal links of sub-optimal investment in these areas with declines in productivity this decade. They dispute R&D investment was below par because:

Real R&D in Australia has been growing quite strongly since the mid-1970s but growth has been particularly strong in the 2000s. ... After adjusting for Australia’s differences in industry composition (which affects R&D intensity) business R&D intensity is now 3rd amongst 20 key OECD countries.⁸⁰

- 3.84 Similarly, the PC dismisses sub-optimal infrastructure investment as a primary cause of the growth decline, because:

Although there is some empirical evidence that investment in physical capital, including public infrastructure, was subdued during the 1990s and early 2000s, the picture since the mid-2000s has been in stark contrast, with substantial increases in investment spending.⁸¹

- 3.85 The PC also asserts that measures of the change in labour quality⁸² suggest that education and training had only ‘a very small direct influence on the unusually high productivity growth of the 1990s and even less on the recent productivity slump’.⁸³

- 3.86 Other reasons suggested are comparative – that the impacts of ongoing regulatory reform and further ICT developments have had limited impacts this decade than they did in the previous decade. For example, the introduction of the internet, mobile telephony and electronic delivery of services gave the economy a big productivity hit in the 1990s which incremental developments this decade could not match.⁸⁴

79 Manufacturing Alliance, *Submission no. 14*, p. 6.

80 PC, *Submission no. 20*, p. x.

81 PC, *Submission no. 20*, p. x.

82 The ABS compiles experimental quality-adjusted measures of labour by adjusting hours worked by educational levels attained and work experience as proxies for quality. Reilly R, Milne W, Zhao S, *Quality-adjusted labour inputs*, ABS Research Paper, Australia, November 2005, Cat. no. 1351.0.55.010, p. 33.

83 PC, *Submission no. 20*, p. x.

84 The Treasury, *Understanding Productivity Trends*, Economic Roundup, Summer 2006, p. 10.

Sectoral factors

3.87 The mining sector contributed the key productivity growth decline of all industry categories since 2003-04, subtracting approximately 0.3 percentage points per year off market sector MFP between 2003 and 2008.

3.88 The timing of the productivity growth decline coincides with the start of the resources boom, when worldwide commodity prices increased. The higher prices for outputs gave Australian mining firms the incentive to add more labour to existing mines and invest in new capital and facilities. This increase in inputs has not translated to a commensurate increase in outputs, and as such, productivity has declined.⁸⁵ ACCI highlighted this mining sector input/output imbalance, stating:

Over the four years to 2007-08, the number of hours worked in mining increased by 47 per cent and the volume of capital services consumed increased by 38 per cent, while volume of mine output has risen by only 16 per cent.⁸⁶

3.89 In addition, some mining sectors, particularly coal, mining and oil, have experienced depleted in-situ mineral deposits and so have invested in further capital in-situ to extract diminishing reserves and/or invested in exploration at new sites for future reserves (corresponding with a long lead time to output extraction).⁸⁷

3.90 The PC note in their submission that improvements in the terms of trade can lead to a 'decline in productivity if resources are reallocated to more profitable but less productive industries'.⁸⁸ This observation was echoed by an Assistant Governor of the RBA in February 2010:

...the recorded productivity growth in the mining sector is quite low at the moment, but the value added is quite high because the prices the miners are getting are high. So we are getting, on the face of it, quite low productivity growth out of the mining sector but the actual value added, or the income we are getting as a society, is quite high.⁸⁹

85 The Treasury, *Understanding Productivity Trends*, Economic Roundup, Summer 2006, p. 10.

86 ACCI, *Submission no. 7*, p. 14.

87 PC, *Submission no. 20*, p.ix.

88 PC, *Submission no. 20*, Figure 1.2, p. 5.

89 Dr P Lowe, RBA, House of Representatives Standing Committee on Economics, *Transcript*, 19 February 2010, pp. 33-34.

3.91 The PC emphasised that this was a rational adjustment for a profit-maximising industry and one which the Australian economy has enjoyed higher per capita incomes:

This adjustment neatly underscores that businesses need to pursue opportunities to maximise profits, not target productivity as an end in itself. The national corollary of that is apparent in strong Australian real per capita income growth in 2000s up to the onset of the global financial crisis, notwithstanding the sharp productivity growth slowdown.⁹⁰

3.92 The Treasury notes that the growth in inputs has not been fully reflected in increased output but that, 'In part, this is likely to reflect lags between the time when investments are made and when the capital comes on stream'.⁹¹ From historical experience these lags take around five years for the increase in output to be realised.⁹²

3.93 It appears, however that the lag effect could be longer this time, more medium-term than short-term. This is due to the projected ongoing investment in the sector at very high rates. The ABS's private new capital expenditure⁹³ survey found that the first estimate for expenditure in 2010-11 is up 15.3 per cent from the first estimate for 2009-10 with mining the main contributor for the rise.⁹⁴ Thus, even though investment is now at historically high levels it is set to increase even more.⁹⁵ The forecast growth in mining capital investment over the next two years is expected to be significant which means output growth has to catch the last five years of investment growth as well as the projected growth, before productivity growth rates pick-up in the mining sector.

3.94 Australia's agricultural sector has also detracted from aggregate productivity growth this decade at an average rate of 1 per cent per annum.⁹⁶ This has largely been a result of two very bad drought years in 2002-2003 and 2006-07, coupled with higher than average temperatures

90 PC, *Submission no. 20*, p. 38.

91 The Treasury, *Submission no. 10*, p. 5.

92 The Treasury, *Submission no. 10*, p. 5.

93 New capital expenditure refers to the acquisition of new tangible assets either on own account or under a finance lease and includes major improvements, alterations and additions.

94 ABS, *Private New Capital Expenditure and Expected Expenditure*, Australia, December 2009, Cat. no. 5625.0, February 2010, p. 6.

95 This level of investment would account for 48.4 per cent of total private capital expenditure.

96 The Treasury, *Submission no. 10*, p. 6.

and lower than average rainfall experienced in many Australian agricultural regions.⁹⁷

- 3.95 Additionally, positive influences in the 1990s which lead to strong productivity growth either did not continue in the 2000s or did not have the same level of impact. For example, the 1990s enjoyed the returns from earlier microeconomic reforms, good weather conditions, rapid advances in technology and new crop varieties.⁹⁸ ABARE notes that other factors have had an impact but that the contribution to productivity slow-down is still unclear and remains a focus of their current research. They note:

While drought has played a role in the productivity slowdown in Australia, other factors such as broader environmental and resource quality issues, population ageing and labour and skill shortages may have affected performance in the agriculture industry. Declining research investment, a trend observed in many developed economies (Pardey, Alston and Beintema 2006), is one key factor which may have contributed.⁹⁹

- 3.96 Agriculture's story contrasts with that of mining – it contributes around a third of mining's contribution to GDP¹⁰⁰ but has historically had strong productivity growth, averaging around 17.5 per cent of market sector productivity growth since 1974-75. Productivity growth has accounted for the entire increase in output in the sector over the last thirty years.¹⁰¹ Therefore ongoing productivity growth is vital for the future of the agriculture sector.
- 3.97 Structural adjustment within the industry has seen long-term productivity gains. For example, during the 1990s, following reductions in wool prices, farmers left the sheep industry in favour of cropping. As a result the farms that remained were more efficient.¹⁰²
- 3.98 Looking forward, ABARE states that climate change poses the greatest threat to not only agricultural, but national productivity growth if firms are unable to make adaptations in their production processes. They assert:

97 ABARE, *Submission no. 23*, p. 9 and p. 14.

98 ABARE, *Submission no. 23*, pp. 8-9.

99 ABARE, *Submission no. 23*, p. 9.

100 Industry gross value add 2008-09: Agriculture, forestry and fishing \$29 551 million; Mining \$89 482 million. ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 28.

101 ABARE, *Submission no. 23*, p. 10.

102 ABARE, *Submission no. 23*, p. 11.

A similar situation exists in cases where firms face resource depletion, declining land quality, reduced water availability and other environmental pressures. Productivity growth will depend on the ability of firms to innovate in response to these new and growing environmental pressures.¹⁰³

3.99 ABARE also believes the agricultural sector is likely to be hampered in the long-term by underinvestment in research and development and current drought policy which provides a disincentive for structural adjustment.¹⁰⁴

3.100 The other industry presented as being a main player in Australia's productivity growth decline is the utilities sector – electricity, gas and water (EGW).¹⁰⁵ ACCI's submission highlighted that average annual MFP in this sector has fallen 4.2 per cent per year since 2003-04, 'subtracting 0.1 percentage points per year from market sector MFP growth'.¹⁰⁶ This is equivalent to around 0.7 percentage points this decade within the market sector.

3.101 The Treasury states that 'the significant declines in this sector are unclear'¹⁰⁷ and yet the PC specifies 'large increases in capital and labour inputs, together with significantly reduced output growth'.¹⁰⁸ The Chairman of the PC explained:

Reduced rainfall has necessitated the introduction of demand management initiatives to reduce urban water consumption, along with new capital investments for recycling and desalination. Rural water consumption is also significantly down and major conservation initiatives are underway.¹⁰⁹

3.102 ACCI and Master Builders Australia Ltd pointed out the divergence in the market sector MFP between the three sectors with lagging productivity and the rest of the market sector. This can be seen pictorially in Table 3.1, which shows positive, although subdued growth, in most other industries. ACCI stated:

103 ABARE, *Submission no. 23*, p. 18.

104 ABARE, *Submission no. 23*, p. 19.

105 The industry category under ANSZIC 2006 is now Electricity, gas, water and waste services.

106 ACCI, *Submission no. 7*, p. 14.

107 The Treasury, *Submission no. 10*, p. 6.

108 PC, *Submission no. 20*, p. x.

109 Mr G Banks, PC, *Transcript*, 23 October 2010, p. 3.

It is evident that MFP for market sector excluding these three industries has continued to grow since 2003-04, albeit at a much slower pace as compared to previous cycles.¹¹⁰

Table 3.1 Recent growth in multifactor productivity by industry classification

	2007-08		Four years to 2007-08	
	Growth %	Contribution % points	Growth % per year	Contribution % points
Agriculture, forestry and fishing	7.6	0.3	-1.4	0.0
Mining	-7.9	-1.0	-4.8	-0.4
Manufacturing	-0.2	-0.1	-0.8	-0.2
Electricity, gas and water	-5.8	-0.2	-4.2	-0.1
Construction	2.1	0.2	1.0	0.1
Wholesale trade	3.2	0.2	0.3	0.0
Retail trade	-0.1	-0.1	0.6	0.0
Accommodation, cafes and restaurants	-3.4	-0.2	-0.2	0.0
Transport and storage	-0.7	0.0	0.8	0.1
Communication services	4.7	0.2	3.0	0.1
Finance and insurance	3.2	0.4	2.2	0.4
Cultural and recreation services	-0.7	0.0	0.2	0.0
Market sector	-0.4		-0.3	

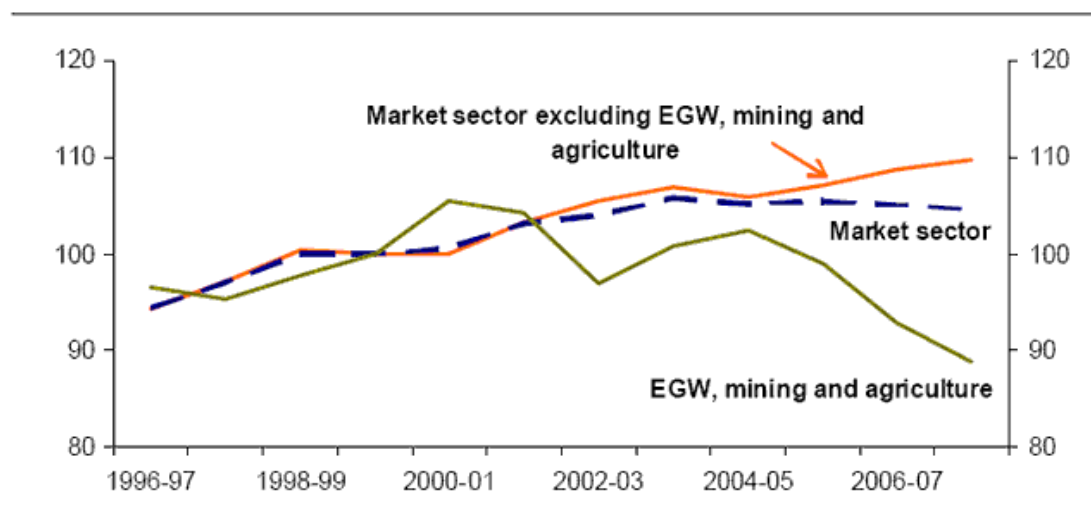
Source *Master Builders Australia Ltd, Submission no. 17, p. 6. Using www.pc.gov.au/research/productivity/estimates-trends, based on ABS, MFP Experimental Estimates, 2007-08.*

3.103 Although the steep decline has been mostly pronounced in three industries, softer growth across the ABS market sector indicates a trend of declining productivity across the economy. This can be seen in Figure 3.2.

110 ACCL, *Submission no. 7*, p. 15.

Figure 3.2 Multifactor productivity in the market sector excluding EGW, mining and agriculture, 1996-97 to 2007-08

Index 1999-2000 = 100



Source PC <<http://www.pc.gov.au/research/productivity/estimates-trends/recent-movements>> viewed 15 March 2009.

Structural change

- 3.104 The last decade has seen a continuation of structural change in the economy. The services sector has continued its long-term trend of growth and the mining sector has expanded its share of inputs in the production process,¹¹¹ thus diverting resources, particularly labour, from other industries.
- 3.105 Reduced productivity growth rates in the mining sector have already been discussed at paragraphs 3.87 – 3.91. This is likely to be a medium-term trend; given estimated investment spending in this industry is due to grow significantly over the next two years.¹¹²
- 3.106 Another underlying reason why productivity growth may have declined is the ongoing dominance of the services sector which now constitutes 72 per cent of gross value add and yet only half of services industries are recognised in the MFP estimates. The Manufacturing Alliance highlights the work of Professor Allan Hughes and Dr Vadim Grinevich of the University of Cambridge, stating:

111 PC, *Submission no. 20*, p. 22.

112 ABS, *Private New Capital Expenditure and Expected Expenditure*, Cat. no. 5265.0, December 2009, p. 9.

...the study shows that services sectors have dominated the acceleration of productivity growth in the Australian economy since 1992.¹¹³

- 3.107 It is worth noting that the work of Hughes and Grinevich revealed that the productivity growth in the services sector was attributable to just three services sectors: Financial intermediation, Wholesale trade, and Other business activities not elsewhere classified. Financial intermediation (the current classification equivalent is Financial and insurance services) remains the highest contributor to MFP growth (refer Table 3.1). Wholesale trade, has, however, slowed since the 2004 data set used in the Hughes-Grinevich study.¹¹⁴
- 3.108 There are a number of impediments to achieving strong productivity growth in an economy increasingly focussed on service provision and these problems will be discussed in more detail in Chapter 5, which discusses the challenges Australia faces to boost productivity growth.

Slowing microeconomic reform

- 3.109 The CLE also concluded, from a study of ICT impacts post 2000, that it was a slowing in microeconomic reform in this period that caused the slump in productivity growth:

The message that emerges is that despite the catch up on ICT over the period post 2000, the slowing of microeconomic reform seems to have led to a slip in Australia's competitiveness.¹¹⁵

- 3.110 This is the argument that microeconomic reforms of the 1980s and 1990s picked the 'low hanging fruit' and so further reforms are more difficult. The Australasian Institute of Mining and Metallurgy note that:

Many commentators would suggest that the beneficial impacts of past microeconomic reforms are beginning to wane – measures such as the float of the currency, dismantling the protective wall of tariffs and quantitative import restrictions, making labour markets more flexible and reducing cost of transport.¹¹⁶

113 Manufacturing Alliance, *Submission no. 14*, p. 5.

114 <http://www.cbr.cam.ac.uk/research/programme1/project1-22.htm>

115 CLE, *Submission no. 6*, p 3.

116 Australasian Institute of Mining and Metallurgy, *Submission no. 13*, p. 5.

- 3.111 Professor John Quiggin believes the key reform areas have been almost completely achieved, with the remaining emphasis now focussing on 'essentially symbolic issues'.¹¹⁷ He states:

I think there certainly was some slackening off in the pace of microeconomic reform after 1998 but if you had accepted the analysis of the Productivity Commission that we really had transformed the economy and were continuing to transform it, I do not think we would have seen the kind of slump in productivity growth that actually shows up in the data.¹¹⁸

- 3.112 Professor Quiggin notes that the microeconomic reform agenda of the 1980s and 1990s has been exhausted and that:

...we need to look in new directions for increased productivity that particularly focus on expanding participation in education and also on new policies designed to take advantage of the information revolution.¹¹⁹

- 3.113 The PC agreed that following the sharp growth decline in the 1998-99 to 2003-04 productivity cycle, we can no longer rely upon previous microeconomic reforms to deliver productivity growth.¹²⁰

- 3.114 ABARE agrees that irrespective of what caused the productivity decline this decade, we need to look to the future to improve productivity growth. Their submission states:

Nevertheless, the slowdown in productivity growth this decade suggests a revived focus on lifting productivity growth is necessary to facilitate a return to positive long-term growth.¹²¹

Committee conclusions

- 3.115 Growth rates have averaged 1.1 per cent per annum across the growth cycles of the last forty years. Australia has also sat at approximately the OECD average since the 1990s.¹²² Given this, and given the enormous positive influences on productivity in the 1990s productivity growth rates averaging above 2 per cent are the exception, not the norm.

117 Professor J Quiggin, *Submission no. 28*, pp. 2-3.

118 Professor J Quiggin, *Transcript*, 19 November 2009, p. 14.

119 Professor J Quiggin, *Transcript*, 19 November 2009, p. 10.

120 PC, *Submission no. 20*, p. 20.

121 ABARE, *Submission no. 23*, p. 8.

122 The Treasury, *Submission no. 10*, p. 6.

- 3.116 An often overlooked fact is that despite the slowing pace of growth Australia now enjoys productivity levels much higher than any achieved during the growth surge.
- 3.117 The committee agrees with the prevailing view that microeconomic reforms and stable macroeconomic foundations contributed to the majority of productivity growth in the 1990s. It is likely that the main microeconomic impacts on this period of growth came from the first wave of reforms introduced in the 1980s, which provided the impetus for businesses to become much more efficient.
- 3.118 The committee considers the surge of the 1990s to have been a result of a mix of factors, not least the growth in global economic activity in the 1980s and 1990s.
- 3.119 The committee does not discount the enormous contribution to the growth surge through Australian businesses rapidly adopting and subsequently expanding the use of, ICT equipment and applications. The committee believes that this knowledge-based growth will also be critical to the future productivity growth story.
- 3.120 The committee notes the statistical limitations of the productivity cycles and of inferring trends in a short cycle, however, the quantum of the 1990s surge weakens the argument that the record growth was a mere statistical oddity. Likewise, other factors, like the recovery from the 1990-1992 recession had impacts on productivity growth but were not the prime source of productivity growth.
- 3.121 The committee accepts the limitations in constructing productivity estimates and accepts there may be distortions created in using different periods of comparison. However, these comparison problems are mitigated when comparing growth rates instead of levels. Even if statistical distortions were to have been a significant issue in the 1990s data it is implausible to have accounted solely for the more than doubling of the growth rate in this period.
- 3.122 Irrespective of what can be attributed to causing the growth, the surge period has left the legacy of reinvigorated microeconomic and macroeconomic frameworks and an economy confident to embrace world-leading ICT technology.
- 3.123 However, Australia now resides in a different economic construct. There has been significant structural change in the economy which is likely to widen over the medium-term. Australia is a global participant in a world where many economies remain under substantial macroeconomic pressures, including the leading world economy, the US.

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- 3.124 The mining sector continues to lead the growth in GDP due to the global dominance of China and its voracity for minerals and ores. Whilst it is pumping out income and leading to high living standards this sector is also leading the decline in productivity growth rates.
- 3.125 Although short-term productivity rates can be very volatile, the slow-down in productivity in the last decade suggests that a revived focus on lifting aggregate productivity growth is important in order to return to positive growth cycles and retain high living standards in the long-term.
- 3.126 What is important now is identifying the future challenges to productivity growth and ensuring the fine-tuning of future frameworks to foster an environment conducive to strong productivity growth.

Productivity in other nations

- 4.1 In assessing the productivity performance of other nations, a distinction should be drawn between the aggregate productivity *level* and the aggregate productivity *growth* rate. There are lessons for Australian policy makers when looking at both.

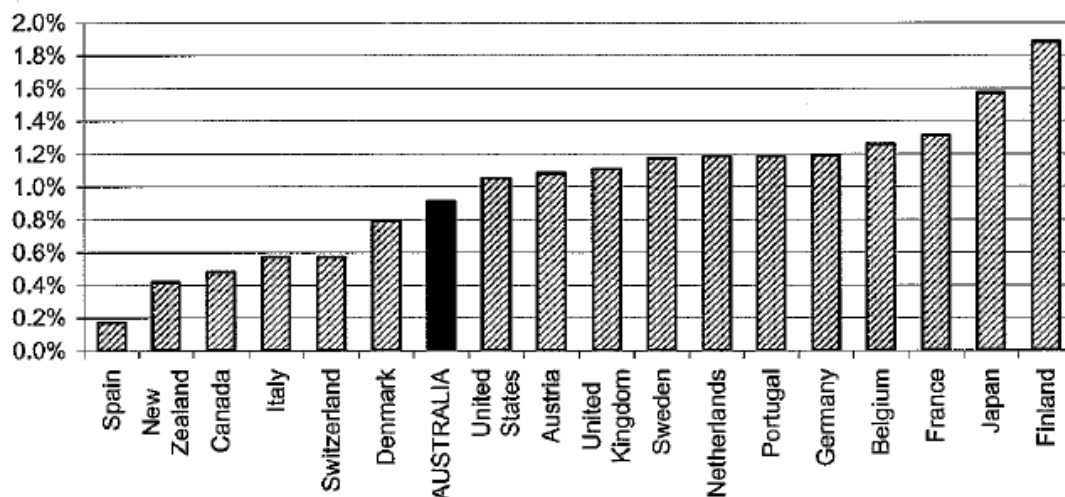
International trends in developed countries

- 4.2 Productivity has grown significantly since it began to be closely monitored as an economic measure in the 1960s. However, MFP growth has deteriorated over the last decade in the major OECD economies, with potential impacts on the real economy over and above the impacts of the Global Financial Crisis.¹
- 4.3 The figure overleaf illustrates average MFP growth among major OECD nations in recent years.

1 OECD, *The real economy and the crisis: revisiting productivity fundamentals*, April 2009.

Figure 4.1 MFP growth in selected OECD countries^(a), 1985-2007^(b)

Average annual growth rate



Source Productivity Commission, Submission no. 20, p. 12. Original data source: OECD Stat (database)

(a) Selected countries are those for which data are available (b) closest available years. To 2006 for Italy, Japan and Sweden, to 2005 for Denmark, Finland, Netherlands and the United Kingdom, to 2004 for Belgium, 1989-2006 for New Zealand, 1990-2006 for Spain.

International productivity leaders this century

4.4 A number of countries stand out for their exceptional productivity levels, or exceptional productivity growth. Unique features of these economies are explained below.

The United States of America

4.5 The United States became the world's 'productivity leader' early in the 20th century. It achieved and maintained this position:

...as resources shifted away from its less-productive agricultural sector and as it accumulated knowledge and capabilities that led to the development and diffusion of major technological, management and organisational advances.²

2 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* Productivity Commission (PC) Staff Working Paper, March 2007, p. 2

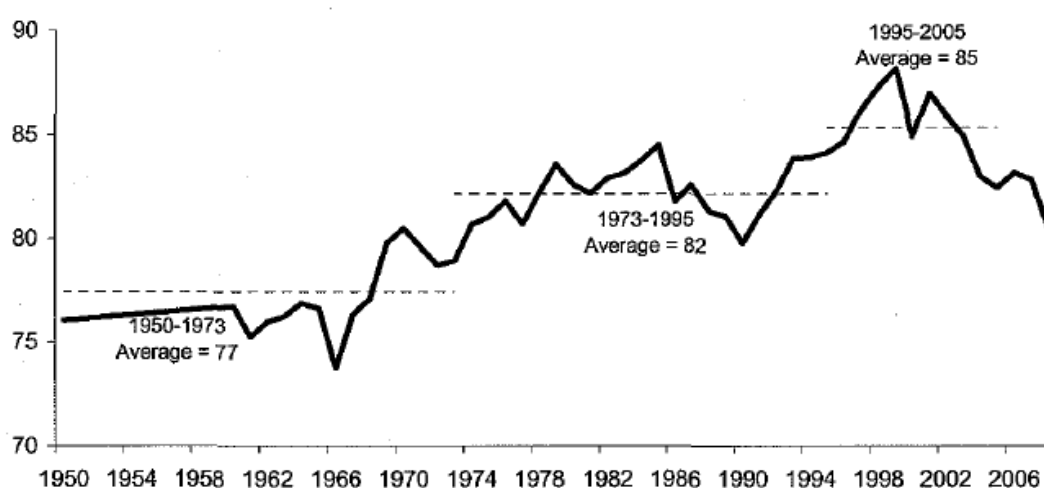
4.6 It can still be considered as the productivity leader on an aggregate level, despite being overtaken by countries such as Norway. The countries which have overtaken the United States have done so due to industry mix or employment policies, rather than through technological factors.³ Professor Quiggin told the inquiry that the United States is still the frontier country:

It is important to remember that the US is not, in terms of these productivity measures, the highest measured country in output per hour. Some European countries are significantly higher. To my mind, I do not think that says that those countries are for example technologically ahead of the US. It is just a reminder that that productivity data, especially in the context of international comparisons, needs to be taken with a grain of salt.⁴

4.7 A Productivity Commission (PC) Staff Working Paper projected that Australia is unlikely to reach the productivity levels of the United States in the coming decades.⁵ This is due mainly to productivity improvements associated with ICT manufacturing, which Australia is not substantially engaged in; the additional human capital advantages enjoyed by Americans due to their higher average levels of education; and constraints associated with our remoteness from world markets.

Figure 4.2 Australia chasing the productivity frontier

Australian labour productivity as a percentage of the United States level, 1950 to 2008



Source Productivity Commission, Submission no. 20, p. 13.

3 ACCI, Submission no. 7, p. 15.

4 Professor J Quiggin, Transcript, 19 November 2009, p. 18.

5 PC, Can Australia match US productivity performance?, March 2007, p. 57.

Norway

- 4.8 Norway has been at the front of the productivity frontier since 1991, but it has natural endowments in gas reserves, with mining (based on extraction of oil) contributing around 20 per cent of total output.⁶ This has created a high productivity climate without significant government intervention.
- 4.9 However, such an industry mix and policies constraining employment mean that Norway's high productivity has been achieved with low labour utilisation, that is, the number of hours worked per head of population is relatively low.

Finland

- 4.10 As shown in Figure 4.1, Finland had the highest MFP growth of selected OECD countries between 1985 and 2007.
- 4.11 Finland has made significant investments in human capital, which as the Department of Education, Employment and Workplace Relations noted, has led to very strong results in standardised international students tests.⁷
- 4.12 The strength of the outcomes produced by the Finish education system was shown by a McKinsey study in 2009. It argued that had America closed the gap in achievement in its schools with countries like Finland and South Korea between 1983 and 1998, GDP would be 9 to 16 per cent higher.⁸

Singapore

- 4.13 Singapore has high rates of economic growth and productivity, which Professors Kuruvilla, Erickson and Hwang attribute to the success of the Singapore Skills Development System (SSDS).⁹
- 4.14 The SSDS is described in Chapter 6.
- 4.15 Mr Michael Rice gave evidence to the committee at a public hearing about Singapore's focus on education to allow it to bridge the productivity gap in manufacturing:

6 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, pp. 3, 7, 8.

7 Department of Education, Employment and Workplace Relations, *Submission no. 19*, p. 6.

8 McKinsey, *The economic impact of the achievement gap in America's schools*, April 2009, p. 17.

9 Kuruvilla, S, Erickson, C, Hwang, A, *An Assessment of the Singapore Skills Development System: Does it constitute a viable model for other developing nations?*, May 2001.

...my colleague Dr Brian Lloyd and I visited Singapore, and we had the opportunity to meet the secretariat for the minister for industry, technology, and trade... Because of my interest in engineering supply and demand, I said, 'What are you doing about engineering graduations? This was quite some years ago. He said, 'We are going to increase them to a level where two per cent of our workforce have engineering qualifications.' I said, 'Why?' and he said, 'Because that is where Germany is, that is where America and Japan are, and we want to be there too. Then I said, 'Are you going to achieve that?' and he said, 'Yes.' And they did – by the year 2000.¹⁰

France

- 4.16 Figure 4.1 shows that France has achieved sound MFP growth. However, labour utilisation dropped dramatically in the 1970s.¹¹ The OECD recently stated that France has one of the highest minimum costs of labour among OECD countries, as well as employment legislation which discourages older workers from staying in the workforce. Both contributed to the low labour utilisation outcome.¹²
- 4.17 Low labour utilisation brings about undesirable social consequences; this is unlikely to be a successful means of raising productivity in a country like Australia.

Productivity in developing economies

- 4.18 Labour productivity in the emerging economies of Brazil, India, Indonesia, China and South Africa has been estimated to be substantially below the levels in the upper-half of the OECD countries. The productivity gap varies from 55 per cent (South Africa) to 90 per cent (India) lower than the richest OECD countries.¹³ The OECD has suggested that this productivity shortfall can be explained primarily by human capital and physical infrastructure shortfalls.¹⁴

10 Mr M Rice, *Transcript*, 20 November 2009, p. 24.

11 PC, *Submission no. 20*, p. 12.

12 OECD, *Economic policy reforms: Going for growth 2010*, p. 109.

13 OECD, *Long-term growth and policy challenges in the large emerging economies*, March 2010, p. 9.

14 OECD, *Long-term growth and policy challenges in the large emerging economies*, March 2010, p. 15.

- 4.19 It should be borne in mind that productivity statistics for developing countries are difficult to find, and with measurement methodologies varying widely, results may be questionable. Accordingly, drawing comparisons is difficult.

China and India

- 4.20 The OECD estimates that total factor productivity in China grew at 4.4 per cent in the period 2005 – 2008.¹⁵ Future productivity growth will be spurred by the trend shift from the low-productivity agricultural sector and improving education levels.¹⁶
- 4.21 The OECD cited a study by Bosworth and Collins (2007) which showed that average total factor productivity growth in India increased from 1.1 per cent from 1978 – 1993 to 2.3 per cent from 1993 – 2004. Poor infrastructure support from government, low educational attainment and inflexible labour markets are identified as the impediments to Indian productivity growth.¹⁷
- 4.22 China and India are still experiencing large-scale industrialisation and as such have the ‘benefit of backwardness’; that is, it is easier for an economy to grow fast if it is catching up than if it is near the technological frontier.¹⁸

Problems with international comparisons

- 4.23 Drawing conclusions from comparing Australian productivity levels with other countries is problematic for two reasons: differences in measurement methodology; and economic differences: in economic structures, industry composition, comparative advances, regulatory settings, and cultural and social factors.
- 4.24 The PC submitted that useful comparisons can only be drawn with the United States:

These comparability issues mean that cross time comparisons are best made with the labour productivity 'frontier' country alone. The United States is widely regarded as representing the frontier.¹⁹

15 OECD, *OECD economic surveys: China*, February 2010, p. 108.

16 OECD, *OECD economic surveys: China*, February 2010, p. 11.

17 OECD, *Globalisation and emerging economies*, pp. 318, 324.

18 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, p. 19.

Differences in measurement

- 4.25 Unlike GDP measurement, the methodologies used in productivity measurement are not mature. While there are best practice methodologies, there are not standard methods in place. This makes benchmarking Australian productivity against other countries problematic.
- 4.26 This issue was discussed in detail in Chapter 2.

Economic differences

- 4.27 Australia, like all others, is a unique economy. Our industry composition (or industry mix) and comparative advantages (such as mining) are different in nature and scale to other economies. Taxation policies and regulatory settings are unique, and changes to these occur on different timeframes to the rest of the world.
- 4.28 Further, measurement issues arise where countries are at different stages in the business cycle and significant exchange rate fluctuations.²⁰
- 4.29 Social and cultural factors also impact upon the options open to industry and government to boost productivity. For example, policies which lead to low labour utilisation (and hence high unemployment) are unlikely to be acceptable to the Australian community, even if they provide significant productivity benefits.

What can we learn from other nations?

- 4.30 Productivity measurements in other countries are most useful for observing the outcomes of particular policies, and how those policies impacted upon productivity growth. It is worthwhile learning from the strengths of other countries' successful strategies.
- 4.31 Australia should note the productivity outcomes of policies which are relevant in the Australian context and look to countries whose productivity challenges are relatively similar to ours.
- 4.32 In particular, Australia may learn from the results of long-term investments made some time ago in other nations, as productivity growth is a long-term agenda and most policies are a long-term investment.

19 PC, *Submission no. 20*, p. 12.

20 The Treasury, *International comparisons of industry productivity*, Economic Roundup, 2008, p. 53.

4.33 This is preferable to a focus on aggregate productivity measures, which are not reliable enough to draw robust conclusions about relative performance.²¹

Committee conclusions

4.34 The committee believes that benchmarking our productivity against other countries is problematic, as measurement methodologies are inconsistent and Australia is a unique economy.

4.35 Meaningful benchmarking can only be conducted against the frontier country, the United States.

4.36 We can, however, analyse the policy approaches of other countries in terms of boosting capacity and capabilities in the economy. This is a smart thing to do especially in a fiscally constrained environment, where we need to prioritise spending and plan for the long-term

21 PC, *Submission no. 20*, p. 11.

Australia's future productivity growth rate—the challenge

The Australian economy in the 21st century

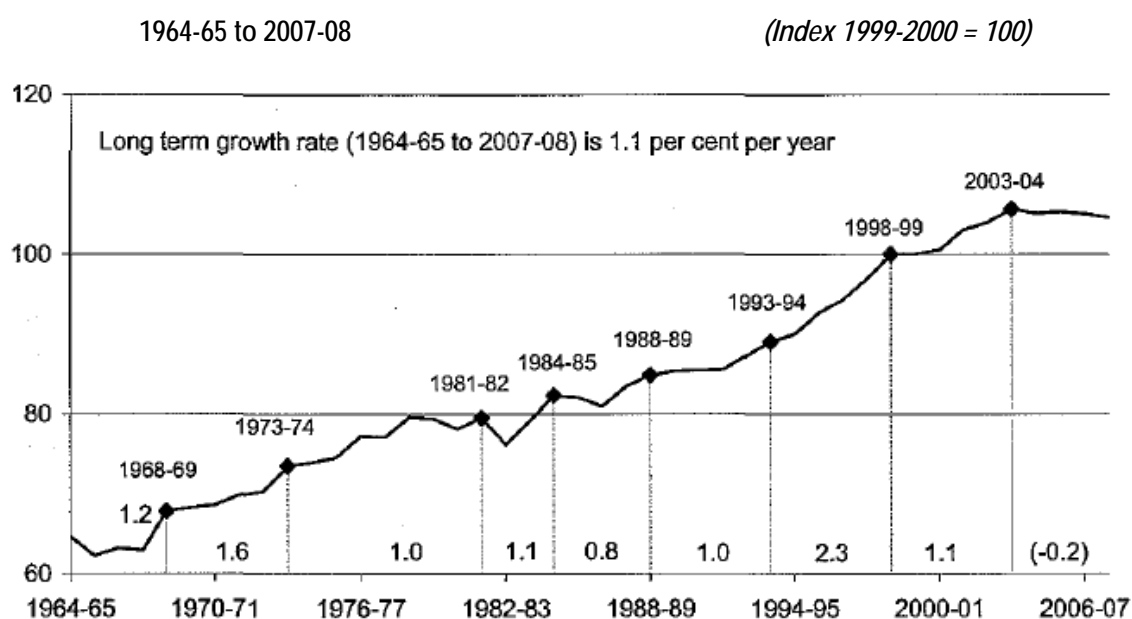
- 5.1 The productivity growth rates achieved in the 1990s are, by historic international and domestic performance comparisons in the same period, stand-out results. Similarly, the current declining productivity growth rate of the unfinished cycle commencing 2003-04, is a markedly low productivity growth cycle, albeit productivity is at a much higher level than it was pre-1990.¹ This can be seen pictorially in Figure 5.1 (overleaf) which shows the average MFP growth rates within productivity cycles, 1964-65 to 2007-08.
- 5.2 Boosting productivity growth is vital for the future living standards of Australians, and, as the Australian Chamber of Commerce and Industry (ACCI) highlighted, even half the average productivity growth of the 1990s would yield significant economic prosperity into the future:

If Australia could sustain half of the productivity growth improvement achieved during the 1990s, real cumulative GDP for the next four decades would be some \$2000 billion higher than if average productivity growth rates slipped back to the levels recorded during the 1970s and 1980s.²

1 The highest level of productivity recorded since 1964 per MFP indexes was 100.6 in 2003-04. Despite MFP being relatively high compared to the 1990s productivity growth period, its growth is trending down.

2 Australian Chamber of Commerce and Industry (ACCI), *Submission no. 7*, p. 7.

Figure 5.1 Market sector MFP index and average growth rates within productivity cycles,



Source Productivity Commission, Submission no. 20, Figure 2, p. ix. (Market sector using ANZSIC93 categories.)

- 5.3 The Australian economy has experienced significant structural change since the reforms of the 1980s. The manufacturing sector's share of GDP and employment has fallen from around 30 per cent in the mid 1950s to under ten per cent in the new millennium. The services sector contributions to GDP and employment have gradually displaced some of the manufacturing and agricultural sectors' shares. This is in line with structural change in most OECD countries.³
- 5.4 Since the start of the resources boom in 2003-04 the mining sector has delivered unprecedented prosperity to Australia. It has brought about a reversal of the terms of trade situation from that of the 1980s, reaching previously unmatched levels.⁴ The Australian resources sector was minimally impacted by the Global Financial Crisis (GFC) – the buoyancy in this sector is attributable to China's ongoing demand for raw materials.⁵ The Governor of the Reserve Bank of Australia (RBA) commented in February 2010:

3 Pilat, D et al, 'The changing pattern of manufacturing in OECD economies', *OECD Science, Technology and Industry working papers*, no. 2006/9, p. 11.

4 Australia's terms of trade index ranged between 54.8 and 70.3 in the 1980's, and rose to a high of 118.3 in September 2008. In December 2009 it was 102.5: ABS, *Balance of Payments and International Investment Position*, Cat. no. 5302.0, December 2009, p. 24.

5 Commodity prices were initially subdued, but have bounced back. Index of Commodity Prices 1 March 2010 <<http://www.rba.gov.au/statistics/frequency/commodity-prices.html>>.

In 2010 the terms of trade could once again reach a very high level, a level in fact exceeded in modern times only by the extraordinary level seen in 2008.⁶

- 5.5 This has meant the mining sector is driving Australian economic growth, but as previously discussed in Chapter 3, it lags in productivity growth.
- 5.6 Given the significant and expected ongoing structural change in the Australian economy, coupled with the demands of major demographic and environmental issues, achieving the very high rates of productivity growth recorded in the 1990s will be increasingly difficult.
- 5.7 Since September 2008 the world economy has faced the biggest financial crisis since the Great Depression. Although Australia has fared relatively well during this downswing, with the economy growing at 0.9 per cent in the December 2009 quarter, it now faces constrained fiscal, and looming supply side, pressures.
- 5.8 The RBA echoed this sentiment at its February 2010 hearing with the House Economics Committee, stating:

Now we must turn our attention to the challenges of managing an economic expansion. Issues of capacity, productivity, flexibility, adaptation to structural change and so on will all come back to the fore, as they should. For our community to tackle those challenges successfully, one important condition is monetary and financial stability.⁷

The challenge presented by structural change

- 5.9 Australia has been experiencing gradual structural change in the economy over the last fifty years; with the services sector contributing to a growing proportion of GDP relative to the manufacturing and agricultural sectors. This change has also been accompanied by a change in the demand for inputs (economic resources) for particular sectors.
- 5.10 One of the most significant recent triggers for structural change in the Australian economy has come from the burgeoning mining sector. This sector has expanded considerably since 2003-04 with industry gross value

6 Mr G Stevens, Reserve Bank of Australia (RBA), House of Representatives Standing Committee on Economics, *Transcript*, 19 February 2010.

7 Mr G Stevens, RBA, House Standing Committee on Economics, *Transcript*, 19 February 2010, p. 4.

added at basic prices more than doubling, from \$34 523 million in 2003-04 to \$89 482 million in 2008-09.⁸ There have also been affiliated impacts on the services sector, and to a lesser extent, the manufacturing sector, supporting the mining sector.

- 5.11 When structural change occurs economic resources will flow to those sectors demanding the greatest share of the economy's inputs. This has happened in Australia since the start of the mining boom in 2003-04 with significant labour movements into the mining sector.⁹
- 5.12 When resources flow to sectors in this way it does not necessarily mean that resources flow to their more efficient use. This was highlighted in the Productivity Commission (PC) submission, where it noted that an improvement in the terms of trade may 'lead to a decline in productivity if resources are reallocated to more profitable but less productive activities'.¹⁰

The rise of the services sector

- 5.13 The services sector now accounts for approximately 72 per cent of the Australian economy (gross value added at basic prices).¹¹ It is likely the overall proportion has slipped from approximately 76 per cent in 2004-2005 to 72 per cent due to the impact of the Global Financial Crisis.
- 5.14 The highest contributing sector to the economy was the Financial and Insurance Services sector at 10.8 per cent gross value added (GVA¹²), followed by the manufacturing sector at 9.4 per cent GVA. The manufacturing sector continued its steady decline from 12.2 per cent at the start of the century, whilst the mining sector took third ranking at 7.7 per cent GVA, a steady increase from 5.4 per cent in 2000-2001.¹³

8 Australian Bureau of Statistics (ABS), *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 28.

9 In November 2005 trend employed persons in mining was 128, 200, but by November 2009 it was up to 162,500. In contrast, manufacturing employment fell by 32,600. ABS, *Australian Labour Market Statistics*, Cat. no. 6105.0, January 2010.

10 Productivity Commission (PC), *Submission no. 20*, p. 5, Figure 1.2.

11 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 28. The 2008-09 National Accounts use ANZSIC06 industry classifications taking the market sector from 16 to 20 industry classifications.

12 Gross Value Add is a concept similar to GDP for each industry sector. The total of all industry sectors is GDP.

13 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, p. 28.

5.15 In December 2009 the Australian System of National Accounts utilised, for the first time, Australian and New Zealand Standard Industrial Classifications 2006 (ANZSIC06). ANZSIC06 expanded the market sector classifications previously detailed in ANZSIC93 from 16 to 20 industry classifications. According to the Australian Bureau of Statistics (ABS):

Expanding the definition of the 'market sector' to include new industries reflects the growing influence of services industries in the Australian economy.¹⁴

5.16 The services sector is now represented in (ANZSIC06) by 16 of the 20 industry classifications – the remaining four sectors being Agricultural, Forestry and Fishing; Mining; Manufacturing, and Ownership of Dwellings.¹⁵ Of these sixteen services industries only nine are currently included in the market sector MFP estimates.¹⁶

5.17 The expansion of the services sector as a share of all industries in the market sector of the economy since the early 1960s, at the 'expense' of agriculture and manufacturing sectors is captured in Figure 5.2. The services sector is now dominating not only GDP but also the percentage of total employment.¹⁷

14 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2–8-09, p. 28.

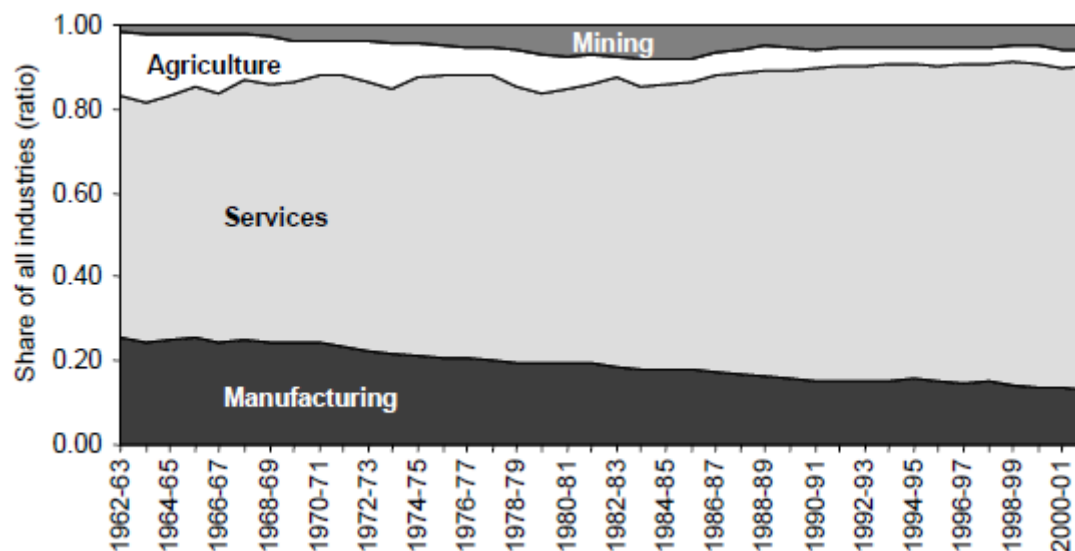
15 ABS, *Australia and New Zealand Standard Industrial Classification 2006 (ANZSIC06)*, Cat. no. 1292.0.

16 Experimental MFP estimates which included ANZSIC categories M, N, and S were released 5 February 2010: ABS, *Experimental Estimates of Industry Multifactor Productivity, 2008-09*, Cat. no. 5260.0.55.002. Refer paras 2.57 – 2.62 for more explanation.

17 Refer House of Representatives Standing Committee on Economics, Finance and Public Administration, *Servicing our future*, May 2007, p. 6.

Figure 5.2 Changes in the composition of the Australian economy

1962-63 to 2001-02 (Current prices)

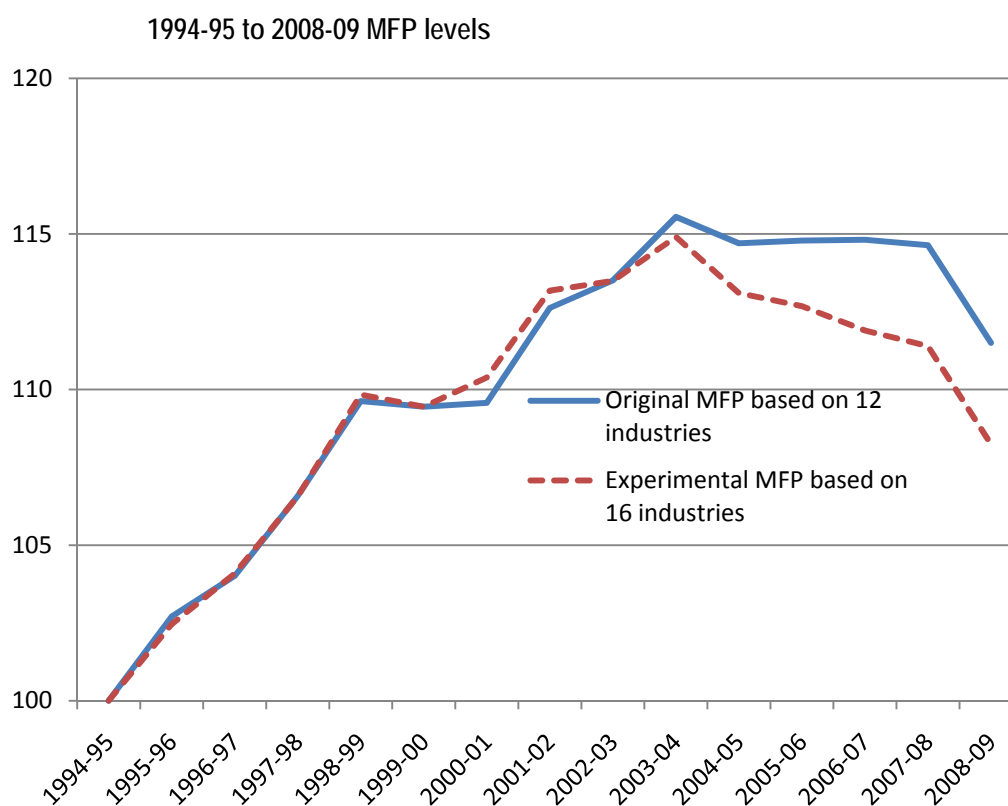


Source: Productivity Commission, *Trends in Australian Manufacturing*, Commission Research Paper, 2003, p. 18.

- 5.18 As discussed in Chapter 2, one of the limitations of the official MFP estimate is that productivity in the services sector is largely unrecorded. However, even if there was a robust official estimate, measuring productivity in this sector is difficult because of the obstacles in capturing the output from the services sector. One of the main impediments is the ability to measure the quality of outputs for non-physical products.
- 5.19 In addition, the level of productivity growth in the services sector is likely to reach an optimal level sooner than in other sectors due to its high reliance on labour inputs and this may pull down aggregate productivity growth. This can be seen by the inclusion of the four new services sectors¹⁸ into experimental aggregate MFP estimates as shown in Figure 5.3.

18 Experimental MFP estimates for Rental, hiring and real estate services (Category L); Professional, scientific and technical services (Category M); Administrative and support services (Category N), and Other Services (Category S) were released 5 February 2010: ABS, *Experimental Estimates of Industry Multifactor Productivity, 2008-09*, Cat. no. 5260.0.55.002.

Figure 5.3 Impact of including additional service industries on aggregate productivity



Source ABS, *Experimental Estimates of Industry Multifactor Productivity, 2008-09, Cat. 5260.0.55.002*.

The limits of labour productivity

5.20 It is hard to achieve very high levels of productivity growth in sectors characterised by high levels of labour input, as the services sector tends to be. This is because many services are personalised, and as such there is a limit to what can be physically achieved in a given time.¹⁹ For example, enormous economies of scale and efficiency improvements have been achieved in mass produced clothing, yet an individual tailor operates in much the same way as they have for decades.²⁰

5.21 Service sectors also tend to have low capital to labour ratios. For example, the labour share of Retail Trade income and Accommodation and Food Services income comprises 71 per cent and 64 per cent respectively; whilst the labour share of Mining income and Agricultural income is 19 per cent

19 For example hair cutting is individualised and can't be incorporated into a production line, nor can caring for an ill person or providing architectural services to individuals.

20 House of Representatives Standing Committee on Economics, Finance and Public Administration, *Servicing our future: inquiry into the current and future directions of Australia's services export sector*, May 2007, p. 9.

and 39 per cent respectively.²¹ Clearly not all services are as labour intensive as these two industry sectors but most services rely on human ‘inspiration and/or perspiration’ and, as such, have higher labour inputs.

5.22 Dr George Barker of the Centre for Law and Economics (CLE) indicated that productivity growth is difficult where labour inputs predominate:

We are finding that capital is very important, of course, because labour without capital is not very productive.²²

5.23 Australian labour productivity growth in the period 1993-94 to 2003-04 was higher in manufacturing and agriculture than it was in all but two services sector industries.²³ In the current unfinished cycle to 2008-09, labour productivity has fallen in all but one services sector, retail trade.²⁴

5.24 Falling labour productivity in a large and growing sector of the economy is a concern. As MFP growth is labour productivity growth minus the effect of capital accumulation on productivity, labour productivity growth therefore generally exceeds MFP growth, except where capital deepening is unchanged. Consequently, falling labour productivity growth will generally mean falling aggregate productivity growth. ABS evidence to the inquiry points out the close association between labour productivity and living standards:

As growth in labour productivity has a close long term relationship with growth in labour earnings, labour productivity is often regarded as a basic indicator of improvements in economic living standards over time.²⁵

5.25 As mentioned by ACCI, Australia appears to have exhausted its capital deepening capacity (capital to labour ratio) with the long-term rate of capital deepening stabilising at around 1.1 per cent per annum (as shown in Figure 5.4):

21 ABS, *Experimental Estimates of Industry Multifactor Productivity, Australia: Detailed Productivity Estimates*, Cat. 5260.0.55.002, Table 12: Income shares for value added based estimates of MFP (ISVA), 29 January 2010.

22 Dr G Barker, Centre for Law and Economics ANU, *Transcript*, 30 October 2009, p. 40.

23 House of Representatives Standing Committee on Economics, Finance and Public Administration, *Servicing our future*, May 2007, p. 8.

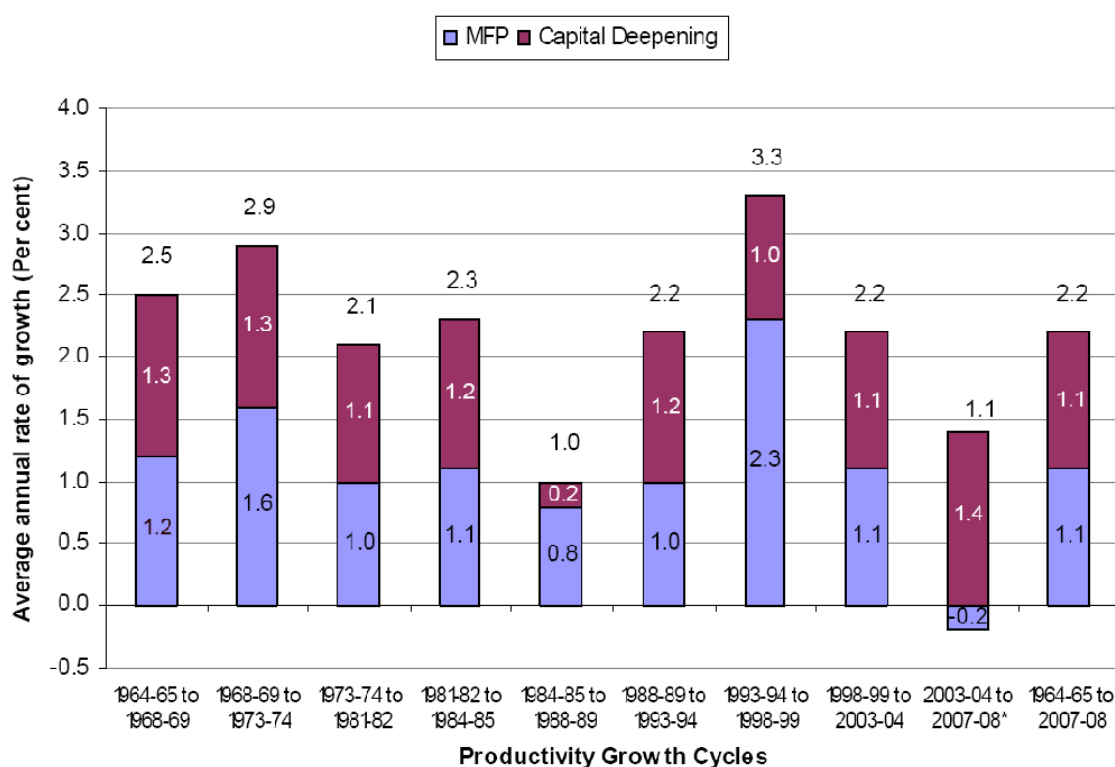
24 Comparison of 1993-94 to 2003-04 and 2003-04 to 2008-09 using ABS, *Experimental Estimates of Industry Multifactor Productivity, Australia: Detailed Productivity Estimates*, Cat. no. 5260.0.55.002, Table 4: Labour Productivity Indexes, 29 January 2010.

25 ABS, *Submission no. 16*, p. 2.

In summary, Australia's labour productivity growth during the 1990s was due to stronger MFP growth or improved efficiency rather than additional capital deepening.²⁶

- 5.26 Note, however, that even though there has been additional capital deepening in the unfinished productivity cycle, of 1.4 per cent to 2007-08²⁷, this reflects very strong business investment in the mining sector since 2003-04, rather than capital investment in other sectors.²⁸
- 5.27 This suggests that future productivity growth in the services sector is likely to be boosted by a focus on improved technical efficiency rather than a focus on capital deepening.

Figure 5.4 Growth in labour productivity and capital deepening over productivity cycles



Source ACCL, Submission no. 7, p. 10. Note the productivity cycle 2003-04 to 2007-8 is an incomplete productivity cycle.

26 ACCL, Submission no. 7, p. 10.

27 The Treasury, Submission no. 10, p. 5.

28 Labour productivity in the mining sector is now running at -5.2 per cent in the unfinished cycle to 2008-09. ABS, *Experimental Estimates of Industry Multifactor Productivity, Australia: Detailed Productivity Estimates*, Cat. no. 5260.0.55.002, Table 4: Labour Productivity Indexes, 29 January 2010.

5.28 That said many service sectors have achieved productivity growth through innovative use of new technology. For example, information technology has improved efficiencies for retailers and wholesalers by better tracking of stock and significant efficiencies at the point of sale. The CLE notes:

In 2003, Australia had a 12.3 percentage point advantage in terms of ICT contribution to labour productivity over and above that of Europe.²⁹

5.29 It was noted in many submissions to the inquiry that R&D activity is closely associated with innovation and productivity growth. However, the services sector has a lower proportion of research and development (R&D) activity than it does of aggregate output and employment, with the mining and manufacturing sectors leading.³⁰

5.30 The Manufacturing Alliance noted that while the development and application of new technologies within a service oriented firm are key to productivity growth, it is critical to have the management and workforce capability to exploit this. They stated:

The transformation of productivity in the services sectors is intimately linked to the development and application of information technologies which in turn require the effective development of a wide range of complementary investments in management and other organisational and often intangible assets.³¹

Assessing quality of service outputs

5.31 Measuring quality of outputs in the services sector is particularly challenging due to the production of non-physical outputs. This is not a new phenomena, as outlined by the RBA in 1995:

There are inherent difficulties in identifying the productivity of non-market industries where it is hard to obtain the market value of output, and also of service industries where it is hard to measure the quality of output. And yet these industries comprise a large and increasing share of the economy.³²

29 Centre for Law and Economics, ANU, *Submission no. 6*, p. 9.

30 House of Representatives Standing Committee on Economics, Finance and Public Administration, *Servicing our future*, May 2007, p. 9.

31 The Manufacturing Alliance, *Submission no. 14*, pp. 5-6.

32 RBA, *Proceedings of a Conference – Productivity and Growth*, July 1995, p. 4.

- 5.32 Whilst this issue was identified decades ago it has not gone away. It is increasingly important to identify ways of incorporating quality assessments into service provision inputs and outputs to gauge productivity growth. This is because quality is what sets services outputs or outcomes apart and the services sector continues to dominate the economy.
- 5.33 One of the priority recommendations of the recently formed *Commission on the Measurement of Economic Performance and Social Progress* (the 'Stiglitz-Sen-Fittoussi Commission') is the need to improve the measurement of non-market service sectors of the economy.³³ Soon after the recommendations of the Stiglitz-Sen Commission were released in September 2009, the Secretary to the Treasury, Dr Ken Henry, drew attention to the importance of the recommendation.³⁴
- 5.34 In the same presentation, Dr Henry particularly emphasised the difficulty in valuing output in the health and education services sectors, sectors for which not even experimental productivity growth statistics have been formulated. He stated:
- ABS measures of the value of output of the health and education services sectors are based on the cost of production, with the split between quantity and price largely based on relevant wage cost indices. This means, for example, that if it takes one doctor twice as long to perform the same medical procedure to the same quality as another, then the first doctor is calculated to have produced twice as much.³⁵
- 5.35 The PC also commented that productivity measures fail to adequately capture quality:
- Moreover, measures of productivity imperfectly capture the underlying concept (for reasons including the imperfect valuation of quality improvements).³⁶

33 Commission on the Measurement of Economic Performance and Social Progress, *Report of the Commission on the Measurement of Economic Performance and Social Progress*, Professor J. Stiglitz, Professor A Sen and Professor J-P Fitoussi, 14 September 2009, p. 14.

34 Dr K Henry, *Fiscal Policy: more than just a national budget, Address to the Whitlam Institute Symposium*, 30 November 2009, p. 23.

35 Dr K Henry, *Fiscal Policy: more than just a national budget, Address to the Whitlam Institute Symposium*, 30 November 2009, p. 23.

36 PC, *Submission no. 20*, p. 35.

- 5.36 It went on to note the importance of understanding the underlying reasons for productivity growth in an industry, to determine the appropriateness of any given policy response.³⁷

The dominance of the mining sector

- 5.37 As was discussed in Chapter 3, the mining sector currently drives Australian economic growth. Since the start of the resources boom around 2003 this sector has more than doubled its contribution to GDP and notably increased its share of the labour market.³⁸

- 5.38 However, as discussed in paragraphs 3.87 to 3.91, it has been the main contributor to the aggregate productivity decline. This has been mainly due to additional labour inputs and massive capital deepening without a commensurate increase in output.

- 5.39 At a public hearing of the House Economics Committee, an Assistant Governor of the RBA noted the productivity paradox associated with the mining sector:

...the prices we are getting are historically high and that is allowing the mining companies to extract ores and coal and iron ore that is probably of lower standard than otherwise would be mined but the price is high, and that ultimately helps our living standards.³⁹

- 5.40 The sector is expected to continue to invest heavily in further capital expenditure over the next 2 years.⁴⁰ The Australasian Institute of Mining and Metallurgy noted the extended times for current mining investment to translate into additional outputs. They noted that mining exploration expenditure may realise outputs up to ten years away:

That is, there is a delay of approximately three years between the commencement of construction of new mining projects, and the project reaching normal output capacity. If we are to further include exploration expenditure as an input, the lead time between

37 PC, *Submission no. 20*, pp. 35-6.

38 ABS, *The Australian System of National Accounts*, Cat. no. 5204.0, 2008-09, Industry Gross Value Added, p. 28; ABS, *Australian Labour Market Statistics*, Cat. no. 6105.0, January 2010, p. 30.

39 Dr P Lowe, RBA, House of Representatives Standing Committee on Economics, *Transcript*, 19 February 2010, pp. 33-34.

40 ABS, *Private New Capital Expenditure and Expected Expenditure*, Cat. no. 5265.0, December 2009, p. 9.

exploration and proving up a mineral resource (to the point where it becomes viable) can take ten years or more.⁴¹

- 5.41 Given the expected ongoing surge in mining investment it is not unreasonable to assume that this could result in an extended period of low productivity growth emanating from the mining sector and dragging aggregate productivity growth down.

Other major challenges for future productivity growth

Australia's growing population

- 5.42 While Australia's population growth is slowing, it is still projected to grow from 22 million currently to 35.9 million by 2050.⁴² This growth is attributed to both natural increase (the fertility rate exceeding the mortality rate) and net overseas migration.

- 5.43 This brings significant challenges for future public policy. As the Treasury commented:

...you have to think about a range of questions there, particularly about what that means for urban infrastructure and also about the way in which the government delivers services. The answers to those questions are going to depend critically on the quality of the policy settings that we have in place and the quality of the policy decisions that are taken, with many of those taken today...there is an ongoing need for those of us who are in the public sector to look at making sure that, given that resources are finite and will prove increasingly so over time, we are operating as efficiently as possible without under-providing public goods.⁴³

- 5.44 The majority of this population growth will occur in cities, placing further pressure on infrastructure and representing a major productivity challenge. Populations of more than 7 million in Sydney and Melbourne, and double current levels in Brisbane and Perth, will contribute to further urban congestion issues. The Bureau of Infrastructure, Transport and Regional Economics has estimated that the social cost of avoidable

41 Australasian Institute of Mining and Metallurgy, *Submission no. 13*, p. 3.

42 The Treasury, *Intergenerational Report 2010*, p. 5.

43 Mr J McDonald, The Treasury, *Transcript*, 23 October 2009, p. 71.

congestion was \$9.4 billion in 2005, and projects that this cost will rise to \$20.4 billion by 2020 unless action is taken.⁴⁴

- 5.45 Congestion represents a significant quality of life and productivity issue. Combating congestion through improvements to road and public transport infrastructure will reduce the time spent by the workforce getting to work, enabling the better matching of skills with shortages.⁴⁵ Reduced congestion will also reduce freight costs to business.⁴⁶
- 5.46 Urban sprawl brought about by the expanding population in major cities is placing further demand on public infrastructure. Master Builders Australia notes that Australia has a competitive advantage in low cost and well serviced urban land;⁴⁷ productivity will decline if greater demands are placed on already over-stretched infrastructure. For example, there have been significant increases in usage of urban rail services, with an average increase of 22 per cent in the five years to 2007-08,⁴⁸ without a corresponding increase in the level of services provided.
- 5.47 The Department of Infrastructure, Transport, Regional Development and Local Government described the need for action:
- One of the current productivity challenges that we face is the rapid urban growth in Australia's major cities, and that requires us to rethink our approach to the development of our cities and is driving the need for better long-term infrastructure investment and planning in relation to cities. Indeed, the Prime Minister spoke at the Business Council of Australia on 27 October [2009] ... about the government's commitment to longer term reform of city planning in the interests of national productivity and sustainability.⁴⁹
- 5.48 Investment in new public infrastructure such as hospitals and schools will be necessary to provide the services demanded by the growing population. As the PC noted:
- ...there is an imperative for the range of human services to be delivered more efficiently as well as more effectively. Services in

44 Bureau of Transport and Regional Economics, *Exhibit no. 7*, p. xv.

45 The Manufacturing Alliance, *Submission no. 14*, p. 20.

46 Mr G Dolman, Bureau of Infrastructure, Transport and Regional Economics, Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG), *Transcript*, 26 November 2009, p. 9.

47 Master Builders Australia, *Submission no. 17*, p. 3.

48 Dr P Laird, *Submission no. 15*, p. 8.

49 Ms L O'Connell, DITRDLG, *Transcript*, 26 November 2009, p. 2.

the areas of education, health, child care and aged care are all important to Australia's future productivity and the wealth and the well-being of the community generally.⁵⁰

5.49 Water is very important for industrial development and productivity growth, which must occur to service a larger population. Supply has been a significant issue for Australia in recent years, with significant water-restrictions in place across the country.⁵¹ Resolving these supply issues will bring major economic benefits. Mr Simon Mottram submitted that:

...almost limitless water supply...removes a major hurdle preventing industrial growth. It would also provide security and certainty, in supply and pricing of water resources, thus allowing industry to plan further into the future, or tackle projects with greater risk, or need of greater investment where water is an issue.⁵²

5.50 In addressing the challenges outlined above, it is essential that economic resources are used in the most efficient manner possible. Public and private investments in infrastructure and human capital are essential to facilitate this efficiency. Without these investments, economic resources will be diverted to more marginal uses, with a resulting decline in productivity.

5.51 For example, existing infrastructure is unlikely to provide social services efficiently in major cities subject to urban sprawl. Hospitals currently operating at or near capacity will be unable to operate as efficiently when demand increases due to the growing population.

5.52 However, a larger population also brings benefits to productivity. In its submission, the Treasury noted that the large population of the United States brings economies of scale, specialisation and trade.⁵³ As our population grows, we can expect to accrue some of these advantages in Australia. Further, the *Intergenerational Report 2010* noted that population growth

...puts pressure on infrastructure and services, but will continue to contribute to economic growth. It can be socially and

50 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 2.

51 20 per cent of the reduction in productivity growth since 2003-04 has been attributed to the utilities sector, which is in part dealing with water supply issues.

52 Mr S Mottram, *Submission no. 27*, p. 2.

53 The Treasury, *Submission no. 10*, p. 7.

environmentally sustainable provided governments plan and invest, well ahead of time, for a larger population.⁵⁴

- 5.53 The benefits of a larger population for productivity are discussed further in Chapter 6.
- 5.54 As noted above, population growth can be a driver of productivity growth, but infrastructure and public policy settings need to support it.⁵⁵ Sensible investment and planning will ensure that the benefits of population growth outweigh its costs.

The ageing population

- 5.55 Australia's growing population is also ageing. The number of people of working age to support persons 65 years and over will fall from 5.0 currently to 2.7 in 2050. This is a challenge facing most countries.⁵⁶ Life expectancy at birth will rise from 79.9 for males and 84.4 for females in 2010 to 86.0 for males and 89.8 for females in 2047.⁵⁷ Population ageing was cited as a long-term challenge in a number of submissions, including ACCI, the PC, the Treasury, the Australian Bureau of Agricultural and Resource Economics (ABARE), the Department of Education, Employment and Workplace Relations (DEEWR), and the Tasmanian Treasury.
- 5.56 Ageing provides two significant broad challenges for the economy: first, greater pressures associated with service provision and social security for persons over 65; and second, a smaller portion of the population at working age, slowing the rate of economic growth per capita. As expressed by ACCI, these challenges increase the imperative to ensure that the remaining workforce is more productive:

Strong productivity growth is crucial in the future in order to counteract the projected detrimental effects of an ageing population will have on the growth in living standards following lower average workforce participation.⁵⁸

- 5.57 Health and aged care are already very significant components of government spending; and will rise as a portion of GDP as the population ages. Treasury projects that health spending will rise from 3.7 per cent of GDP in 2009-10 to 6.9 per cent in 2046-47, and aged care spending will rise

54 The Treasury, *Intergenerational Report 2010*, p. xv.

55 The Manufacturing Alliance, *Submission no. 14*, p. 20

56 The Treasury, *Intergenerational Report 2010*, p. viii.

57 The Treasury, *Intergenerational Report 2010*, p. 155.

58 ACCI, *Submission no. 7*, p. 5.

from 0.8 per cent to 1.9 per cent over the same period. In real dollar terms, spending on health and aged care will rise from \$2 550 per capita in 2009-10 to \$8 900 per capita in 2046-47. Aged and service pensions will also rise from 2.6 to 4.2 per cent of GDP, or from \$1 480 per capita to \$4 240 per capita in real dollar terms.⁵⁹

5.58 Ageing will bring about a decline in workforce participation, as a higher portion of the population is of retirement age.

5.59 With a smaller portion of the population able to participate in the workforce, investment in education to build capacity is critical. This will enable Australia to maximise participation:

A schooling system that delivers excellence and equity in outcomes for all students is the foundation for supporting productivity and participation both now and in the future.⁶⁰

5.60 DEEWR went on to emphasise the importance of:

...a schooling system that enables all Australians to reach their full potential and participate fully in Australia's society and economy, by ensuring that all have the key foundation skills necessary for higher level work, training and life-long participation.⁶¹

5.61 Improving the quality of education will maximise participation, and increase the productivity of the workforce. Treasury noted that education and training improves both productivity and participation.⁶²

5.62 An individual's productivity is 'largely determined by their educational attainment, skills and experience'. However, the benefits go further: 'increases in educational attainment may translate into increases in aggregate productivity that exceeds changes in the productivity of individual workers reflected in wage changes'.⁶³

5.63 Australia's young people are critical to productivity growth. DEEWR submitted that:

We will need to engage with young Australians to ensure they feel they belong and are valued by society and thus are connected and

59 The Treasury, *Intergenerational Report 2010*, pp. 156-7.

60 Department of Education, Employment and Workplace Relations (DEEWR), *Submission no. 19*, p. 9.

61 DEEWR, *Submission no. 19*, p. 9.

62 The Treasury, *Submission no. 10*, p. 12.

63 The Treasury, *Submission no. 10*, p. 12.

contributing to mainstream Australian economy, society and culture.⁶⁴

Workforce participation

5.64 With a smaller working population, it is critical that opportunities are maximised for particular groups to participate in the workforce, with Professor John Quiggin commenting that:

...what we need to be looking at is providing people with the kinds of flexibility that may enable them to make the most productive contribution to society, both in the workforce and out of it.⁶⁵

5.65 Further, education and healthcare impact on participation. ACCI noted that health condition affects participation in the workforce, as well as a person's quality of life. On education, ACCI noted PC modelling which indicated that:

An additional year of schooling can increase the workforce participation rate by around 0.5 per cent for males and 4 per cent for females.⁶⁶

5.66 A high-quality healthcare system can provide improved participation rates, as a person's health condition affects their capacity to work. ACCI noted that a healthier population will have more people in the workforce, and less people relying upon government benefits.⁶⁷

5.67 Removing barriers to the participation of women in the workforce will provide a boost to productivity while serving underlying social goals. DEEWR commented on initiatives such as paid parental leave and childcare support which assist women to work, recognising that:

...there is a strong economic argument here, especially given the challenges that we face in participation levels with an ageing population, to make sure that we are not losing public investment in the skills of a big section of our workforce.⁶⁸

5.68 Flexibility in workforce arrangements can allow continued participation for groups in the community who might otherwise leave the workforce. Such arrangements include part-time work, working from home and job-

64 DEEWR, *Submission no. 19*, p. 8.

65 Professor J Quiggin, *Transcript*, 19 November 2009, p. 13.

66 ACCI, *Submission no. 7*, pp. 23-4.

67 ACCI, *Submission no. 7*, p. 23.

68 Mr R Griew, DEEWR, *Transcript*, 30 October 2009, p. 15.

sharing. These particularly apply to women, and older workers who wish to have a 'staged retirement'. They also contribute to workplace morale, which lifts productivity by improving work intensity when on the job.

Impacts of climate change and the mitigation of climate change

- 5.69 Climate change is a major issue for Australian public policy, and has impacts for productivity in two dimensions: the real effects of climate change on the economy; and the effects of policies designed to mitigate the effects of climate change. At the time of writing, legislation to introduce a Carbon Pollution Reduction Scheme, which features an emissions trading scheme, was before the Parliament.
- 5.70 The real effects of climate change are evident in many agricultural regions experiencing higher than average temperatures and lower than average rainfall in the past decade.⁶⁹ This has led to a fall in production and productivity growth in many agricultural industries. ABARE submitted that 'the influence of climate change could see these effects become more frequent or more prolonged', with 'declines in crop yields, pasture growth and livestock production' and rising production costs.⁷⁰ This has significant impacts for Australian productivity growth and GDP given agriculture's contribution to GDP is 2.8 per cent.
- 5.71 Maintaining the competitiveness of the agricultural sector will require firms to:
- Efficiently adapt to, and mitigate, the effects of climate change on production processes...Productivity growth will depend on the ability of firms to innovate in response to these new and growing environmental pressures.⁷¹
- 5.72 Climate change threatens the availability of water, as well as increasing the likelihood of extreme weather events. The Australian Food and Grocery Council expressed its concern about the uncertainty of the impact of climate change, which threatens the availability of resources for Australian food manufacturing.⁷²
- 5.73 Adopting efficient policy to mitigate against climate change is essential to Australia's international competitiveness and productivity. The PC stated:

69 Australian Bureau of Agricultural and Resource Economics (ABARE), *Submission no. 23*, p. 14.

70 ABARE, *Submission no. 23*, pp. 14-5.

71 ABARE, *Submission no. 23*, p. 18.

72 Dr G Annison, Australian Food and Grocery Council, *Transcript*, 30 October 2009, p. 17.

I guess the point we have made...is that getting the design of the regulatory framework right will be very, very important for productivity...this is the biggest regulatory challenge Australia has ever faced and by implication the potential for regulatory burdens and so on from not designing the system well is quite high.⁷³

- 5.74 The PC went on to stress that, given the high costs involved in meeting the challenge of climate change, productivity growth is particularly important:

The way in which we have invoked the whole challenge is that given the costs that are undoubtedly going to accompany that regime it is another reason for making sure that the rest of our economy is as efficient as possible so that we can be generating the income growth that is going to be needed to sustain that cost over time.⁷⁴

- 5.75 ABARE agreed that productivity growth will be particularly necessary in industries such as agriculture which are directly affected by mitigation policies:

The mitigation response to climate change also is likely to impose an additional productivity drag, if you like, on the agriculture sector in terms of the increased cost. If we are looking at maintaining profitability in agriculture, the likelihood, is that we are going to need to increase productivity growth from what it has been in the past rather than the slight decline that we have seen recently.⁷⁵

- 5.76 With the current Australian economy reliant on coal, increased energy costs pose a risk to productivity growth. In its submission ACCI noted Australia's relatively low energy costs. It also stated that:

Australia's international competitiveness and economic and social well-being depend on reliable, affordable and sustainable energy supplies. They are important inputs for most business activities and are essential for supporting basic quality of life.⁷⁶

73 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 14.

74 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 14.

75 Mr P Gooday, ABARE, *Transcript*, 23 October 2009, p. 61.

76 ACCI, *Submission no. 7*, p. 52

- 5.77 ACCI went on to argue that climate change mitigation policy should not exceed that of our international competitors, which would risk compromising
- ...the relative competitive advantage Australia achieves through less expensive energy costs.⁷⁷
- 5.78 Firms will need to adapt and innovate to meet the challenges posed by the new economy which incorporates climate change mitigation policies. For example, the agriculture sector will need to utilise new methods to reduce water consumption and low carbon emissions.⁷⁸
- 5.79 While climate change presents a great challenge, it also provides great opportunities. ACCI contended that we should focus internationally: contributing to climate change mitigation through innovation which enables developing countries to reduce their carbon emissions.⁷⁹ The Treasury suggested that in the medium to long-term, mitigating against and adapting to climate change will provide boosts to productivity.⁸⁰ For example, energy producers will have strong incentives to innovate aggressively, with the end result being new energy sources which require fewer inputs.
- 5.80 Likewise, the South Australian Government stated that:
- ...by facilitating the growth of high-value add 'cleantech' industries... Australians can profit from the economic opportunities which come with the transition to a carbon constrained economy.⁸¹
- 5.81 The Australian Institute of Mining and Metallurgy argued that use of technology is the key to meeting the challenge of climate change. This provides Australia with a competitive advantage as we have 'extensive expertise in clean coal research' and are 'at the forefront of energy efficiency improvements in the production of key commodities'.⁸² Sound government policy can facilitate innovation and cement this competitive advantage.

77 ACCL, *Submission no. 7*, pp. 53-4.

78 CSIRO, *Adapting Agriculture to Climate Change: Preparing Australian Agriculture, Forestry and Fisheries for the Future*.

79 Mr G Evans, ACCI, *Transcript*, 23 October 2009, p. 35.

80 Mr T McDonald, The Treasury, *Transcript*, 23 October 2009, p. 75.

81 Government of South Australia, *Submission no. 22*, p. 15.

82 Australian Institute of Mining and Metallurgy, *Submission no. 13*, pp. 18-19.

Macroeconomic policy constraints

- 5.82 Meeting the challenges identified above, and facilitating the drivers of productivity growth into the future, will require public investment.
- 5.83 However, following the Global Financial Crisis federal, state and local governments are operating in a fiscally constrained environment. Australia's fiscal response to the crisis was swift and large – 'amounting to 5 ½ per cent of GDP, the third largest in the OECD'.⁸³ This action reversed the budget surplus in a very short period of time, resulting in tightening of the 2009-2010 Budget and the Australian Government committing to a 2 per cent per annum cap on real spending growth, to enable the budget to return the budget to surplus in 2015-16.⁸⁴
- 5.84 The PC in its submission referred to the constrained fiscal environment and how this will impact on Government spending choices:
- ...governments' initiatives to boost productivity growth will need to be attentive to fiscal and resource costs; initiatives with low fiscal cost, such as regulatory reforms, would seem particularly attractive in an era of fiscal consolidation.⁸⁵
- 5.85 ACCI alluded to the importance of a sound fiscal position to the Government's capacity to provide productivity-enhancing infrastructure and services:
- ... to ensure the sustainability of the Government budget in the future and the ability to fund its reform agenda on Australia's health, education and taxation system and etc. which will enhance Australia's productivity, the Government needs to impose strict discipline to rein in its spending and improve the efficiency of public sector.⁸⁶

Setting a productivity growth target

- 5.86 The 2010 Intergenerational Report, released in January 2010, noted that labour productivity has slowed in the last decade, averaging only

83 Mr G Banks, PC, *Back to the Future: Restoring Australia's Productivity Growth*, Presentation to the Melbourne Institute Australian Economic and Social Outlook Conference 'The Road to Recovery', 5 November 2009.

84 The Hon Wayne Swan MP, *Budget Paper No. 1: Budget Strategy and Outlook*, p. 1-11.

85 PC, *Submission no. 20*, p. 36.

86 ACCI, *Submission no. 7*, p. 21.

- 1.4 per cent growth, compared with 2.1 per cent in the 1990s.⁸⁷ The report then projects that if annual labour productivity growth were to average 2 per cent over the next 40 years it would result in an average 3 per cent real annual GDP growth over the period, and culminate in 15 per cent higher real GDP per capita in 2049-50.⁸⁸
- 5.87 The Prime Minister referred to the intergenerational report findings in a number of public speeches in January 2010. He noted an example in the report of projected economic outcomes to 2049-50, using a 2 per cent per annum average labour productivity growth rate.⁸⁹
- 5.88 Given that average labour productivity growth since 1964 has averaged 2.3 per cent per annum⁹⁰ raising average aggregate labour productivity growth to 2 per cent per annum over the next forty years should be comfortably achievable. However, given recent structural changes in the economy and the fact that in the current unfinished cycle labour productivity has approximated only 1.1 per cent,⁹¹ Australia has some way to go to return to its long-term average.
- 5.89 The references to projections based on a 2 per cent labour productivity growth rate per annum were interpreted by various economic commentators as a government target for multifactor productivity growth.
- 5.90 However, the government does not have an official productivity growth rate target.
- 5.91 The committee concluded in Chapter 4 that Australia is best to benchmark against its own performance, rather than against the performance of other nations. A productivity growth rate target would provide a means of benchmarking domestic productivity performance over time.
- 5.92 Having a productivity growth rate target is also a means of providing greater awareness of what drives long-term economic growth. According

87 The Australian Government, *Australia to 2050: future challenges, the 2010 Intergenerational Report*, January 2010, p. 22. Also reflected in media release The Hon Wayne Swan MP, Government's Productivity Agenda to Tackle Future Challenges, Canberra, 1 February 2010. Website accessed 22 March 2010,

<<http://www.treasurer.gov.au/DisplayDocs.aspx?doc=pressreleases/2010/007.htm&pageID=003&min=wms&Year=&DocType=0>>

88 The Treasury, *Intergenerational Report 2010*, p. 22.

89 Prime Minister of Australia, the Hon Kevin Rudd MP, Building Australia's future: beginning a building decade for a stronger Australia, Speech to Australia Day reception, Melbourne, 18 January 2010. <<http://www>

90 ABS, *Australian System of National Accounts*, Cat. no. 5204.0, 2007-08, p. 23.

91 ACCL, *Submission no. 7*, p. 10.

to a Telstra report released in February 2010 on business attitudes and behaviours towards improving Australian productivity, there is far from universal understanding amongst Australian CEOs about technical productivity measures.⁹² Additionally, fewer firms were prioritising productivity in their business plans than they were in the previous year.

5.93 The report concludes that productivity targets within firms are important and yet only 42 per cent of firms are employing them:

Only 42% have specific productivity targets and know what these targets are...In order for productivity to become actionable within an organisation, measures and targets need to be in place and well understood by all relevant stakeholders.⁹³

5.94 Even though a technical knowledge of productivity is not essential for business success, knowledge of how efficiency improvements drive a firm's competitiveness, and ultimately profitability, is essential. Firms will never choose to focus on productivity over profit, and similarly governments will not focus on productivity ahead of GDP growth. However, as Mr Saul Eslake of the Grattan Institute recently noted, if there is an ongoing myopic focus on GDP generated by favourable terms of trade, this will not necessarily drive ongoing economic growth:

The effects of this slowdown in productivity growth have been masked by the enormous increase in the prices Australia receives for its resources exports over the past decade. However, while the China-driven resources boom almost certainly has further to run, it seems highly implausible that it will continue for another 50 years, and it would be imprudent for policy-makers to assume that it will. Eventually, Australia's 'terms of trade' will return to the downward path which they travelled for most of the twentieth century.⁹⁴

5.95 He states that maintaining a focus on productivity as a principal driver of future GDP will ensure policies support productivity growth, not to reach a target per se, but to improve Australia's overall wellbeing:

...a higher rate of productivity growth, that is, more rapid growth in the value of goods and services produced for each hour of work done – provides the best means of...meeting the ongoing

92 Telstra, *Telstra Productivity Indicator*, February 2010.

93 Telstra, *Telstra Productivity Indicator*, February 2010, p. 10.

94 Mr S Eslake, Grattan Institute, '2% Productivity Growth Target is a Worthy Objective', *The Age*, 28 January 2010.

aspirations which most Australians have for rising standards of living for themselves and their children.⁹⁵

- 5.96 As ACCI noted in their submission, achieving a productivity growth rate of half the rate achieved in the 1990s will lead to real GDP \$2 000 billion higher than if the rate slips back to 1970s and 1980s levels.⁹⁶

Committee conclusions

- 5.97 Structural change arising from the long-term expansion of Australia's services sector and more recently, from the resurgence in the boom in the mining sector, provides the Australian economy with its principal medium-term productivity growth challenges.
- 5.98 Evidence to the inquiry demonstrates it will be increasingly difficult to raise productivity above its long-term average in the medium-term. The reasons are three-fold.
- 5.99 One reason is that it will become increasingly difficult to measure all the productivity in the economy due to the expansion of the services sector and the intertwining of products and services. Services sector outputs (or outcomes) already comprise a significant slice of GDP, over 70 per cent, and are expected to continue rising along with OECD trends.
- 5.100 The second reason is the proclivity of services industries to possess inherent productivity limitations that industries producing tangible products (eg consumer goods and commodities) do not have. This is due to a high labour-to-capital ratio in this sector coupled with a propensity for services to be more tailored, and as such less able to accrue efficiencies from standardisation of processes.
- 5.101 The third reason is the increasing dominance of the mining sector in the market sector and the massive projected capital investment activity over the short-term that will lengthen the lead times on returns to capital.
- 5.102 Estimating MFP for the services sector is very difficult as it requires carefully assessing the quality of services – quality is a factor which is more likely to change in this sector than is quantity of input or outputs. It is very difficult to accurately capture quality changes in data.
- 5.103 Additionally, the official market sector MFP estimate excludes seven of the 16 services industry categories. Experimental MFP estimates were released

95 Mr S Eslake, Grattan Institute, '2% Productivity Growth Target is a Worthy Objective', *The Age*, 28 January 2010.

96 ACCL, *Submission no. 7*, p. 7.

in December 2009 which included four of these seven industries excluded from the official estimate. The result of this inclusion was that the productivity growth estimate fell even further. This gives weight to the hypothesis that the services sector exhibits lower aggregate productivity growth than non-services sectors. It also suggests that when the remaining three services industry categories are added to the MFP estimate, namely Education and training, Health care and social assistance, and Public administration and safety; the productivity growth estimate will fall even further.

- 5.104 The deepening of the productivity growth decline as more service sectors are added could be the result of teething problems in the methodology, being they are experimental estimates, or that productivity in services industries is very hard to capture. It could, however, reflect an underlying trend – that as more services industries are added to the market sector MFP, it is harder to achieve a robust aggregate productivity growth estimate.
- 5.105 The committee recognises that the highest ranking productivity growth industries in the MFP market sector between 2003-04 and 2007-08 were in fact service industries: Communication services at 3 per cent growth, followed by Financial and insurance services. The committee believes these higher rates may be because the services in these industries are largely homogenous, now involve a high degree of ‘customer self-service’ and that there are reliable quantifiable proxies for measuring quality of outputs. It is also worth highlighting that both industries now record growth rates below their growth rates recorded in the cycle immediately prior to the growth surge.
- 5.106 This suggests that further statistical analysis by the ABS is required before additional experimental estimates are included in aggregate MFP. Moreover, the committee cautions the reliance on aggregate MFP estimates which include services sectors that produce difficult to value outputs or outcomes.
- 5.107 While the committee agrees with the recommendation of the Stiglitz-Sen Commission that measures to non-market activities need to be broadened, the committee believes the ABS should undertake work to consider alternative ways of estimating the economic contribution of industries which do not have neatly quantifiable outputs. This may mean using an economic measure other than traditional productivity estimates for many of the services sector industries. These estimates could be released as a complement to the traditional MFP estimates.

Recommendation 1

5.108 **That the Australian Bureau of Statistics (ABS) investigate alternative ways of measuring the optimal available use of economic resources used in services industries in the economy, either by:**

- **Excluding those services sectors which do not have straight-forward quantifiable input and output data from the aggregate MFP estimates and instead developing a separate services sector index which is not necessarily based on traditional productivity constructs; or**
- **Investigating ways to develop robust services sector MFP estimates for all services industry categories for inclusion in the aggregate MFP estimates.**

The government should ensure that the ABS is funded appropriately to conduct the study.

5.109 The committee believes achieving multifactor productivity growth rates above Australia's long-term average of 1.1 per cent is a critical long-term national goal. Rather than being something that can be overlooked in a fiscally constrained environment it is a goal that requires immediate commitment in order to meet the challenges of the future.

5.110 The longer-term challenges Australia faces, including demographic ageing, accommodating significant growth in population, maintaining strong workforce participation and dealing with the impacts of climate change add to the imperatives of achieving higher productivity growth rates.

5.111 The committee agrees that good levels of workforce participation are imperative. Productivity growth is important, but not at the expense of social wellbeing in the community by underutilising labour.

5.112 The committee acknowledges that changes to the costs of inputs arising from climate change mitigation policies may impact the profitability of firms in the short-term but are unlikely to impede productivity. On the contrary, the committee believes impetus will be created for firms to utilise costly inputs in more efficient ways, ultimately leading to more productive and profitable outcomes.

5.113 The committee supports the adoption of a national productivity growth target for the market-sector. This will ensure productivity remains a key consideration in relevant policy development.

5.114 The committee notes, however, that care should be taken in wielding productivity estimates as gospel. These measures are estimates only, not hard and fixed results. This fact was borne out in the changes to MFP estimates in the unfinished productivity cycle when the national accounts were expanded in December 2009 and MFP market sectors shifted. Also, as was discussed in Chapter 4 on international comparisons, achieving a high productivity growth rate in itself does not necessarily correlate to positive economic or social outcomes.

Recommendation 2

5.115 **That the Australian Government introduces a national aggregate productivity growth target for the medium-term to 2030; and that modelling is undertaken by the Productivity Commission to assess the appropriate level for the target.**

The economics of productivity growth

- 6.1 This chapter discusses the technical means by which productivity growth occurs. This can inform how governments use policy settings to facilitate productivity.

The production possibility frontier

- 6.2 To evaluate targets and policies to improve productivity it is important to first understand the economics that underlie productivity measurement and growth.
- 6.3 From a theoretical perspective productivity growth can be decomposed into improvements in efficiency, given current levels of knowledge and technology and the discovery of new methods for production, such as the invention of new equipment. Both are measured with reference to the production possibility frontier.
- 6.4 The production possibility frontier represents the maximum amount of output that can be produced with given inputs. In colloquial terms it represents 'best practice'. It identifies how products should be produced, such as the type of capital equipment to use and the number of workers to employ. The production possibility frontier identifies firms that are producing the maximum amount possible with their inputs and those firms that are inefficient, as they are not achieving the same level of output with their inputs.
- 6.5 Productivity growth can occur when inefficient firms adopt best practice production methods to enable them to 'catch up' to the most efficient firms. Productivity growth can also occur by discovering new ways of

producing products that redefine what is identified as the most efficient production method.

How productivity growth can be boosted

- 6.6 Immediate causes, underlying factors and fundamental influences are the determinants of productivity growth in the economy.
- 6.7 *Intermediate causes* of productivity growth are those which 'have a close a tangible link to input/output relationships in production'.¹ They occur at the firm level, and are discussed in detail below.
- 6.8 *Underlying factors* promote the immediate causes of productivity growth by helping to 'shape up the extent to which the immediate determinants of productivity growth evolve'. These factors can be influenced by public policy. They include the level of competition in a market; trade and investment openness; and general supply and demand conditions.²
- 6.9 Government has a role to play in ensuring that the *fundamental influences* of productivity growth are conducive to an economy maximising its productivity. These influences include the policy environment, particularly the level of investment in productivity-boosting initiatives such as education and infrastructure; institutional settings which govern how governments, firms and individuals interact; and social capability, which refers to the orientation of a people to effect change to bring about productivity growth.³

Immediate causes

- 6.10 Firms are able to increase productivity growth in three main ways: technological change, improvements in technical efficiency, and changing the scale or mix of inputs and outputs. These are discussed with examples below.
- 6.11 Various submissions, including those received from Treasury, the Australian Chamber of Commerce and Industry (ACCI), the Australian Bureau of Agricultural and Resource Economics (ABARE), and the

1 Productivity Commission (PC), *Submission no. 20*, p. 7.

2 Australian Chamber of Commerce and Industry (ACCI), *Submission no. 7*, p. 22.

3 ACCI, *Submission no. 7*, pp. 20-21.

Productivity Commission (PC), referenced these intermediate drivers of productivity growth, albeit using different terminology.

Technological change

6.12 Technological change can be defined as:

...change, in a very broad sense, in the stock of knowledge – what we know we can or cannot do.⁴

6.13 In simple terms, the building of a railroad constitutes technological change, while the actual use of the railroad contributes to technical efficiency. In terms of knowledge, basic research often contributes to the stock of knowledge which can then be used by firms to develop new products and ideas.⁵

6.14 The development of new technologies aid productivity growth by enabling more efficient means of production. Government policy decisions can provide the impetus for technological change, as demonstrated by the National Broadband Network (NBN). Dr Lee advocated a two-phase approach in pushing such development:

The path towards long-term growth would involve two subsequent phases. First in the short term, policy reforms advocating the adoption of ICTs and other technologies should be embraced and employed. Second and more significantly in the long term, creative innovation in technology and creative thinking in the work force and education system (ie. from content learning to applied learning) should be developed resulting in new technologies, new ideas and new entrepreneurship skills.⁶

6.15 Technological change also encompasses *smart infrastructure*, such as technology which provides clear warnings to motorists about congestion bottlenecks. This enables them to avoid the bottleneck, or plan a more efficient route to their destination.⁷ An Inquiry into Smart Infrastructure, of which the terms of reference includes the potential productivity benefits of smart infrastructure, is currently being conducted by the House of Representatives Standing Committee on Infrastructure, Transport, Regional Development and Local Government.

4 Professor C O'Donnell, *Transcript*, 4 February 2010, p. 4.

5 Department of Innovation, Industry, Science and Research (DIISR), *Submission no. 26*, p. 12.

6 Dr B Lee, *Submission no. 3*, p. 1.

7 Ms P O'Connell, Department of Infrastructure, Transport, Regional Development and Local Government, *Transcript*, 26 November 2009, p. 11.

- 6.16 Technological change can be developed through local R&D, imported from overseas, or adapted from overseas using locally developed complementary products. Evidence of all three approaches can be seen in the ICT sector.⁸
- 6.17 Australia stands out as a leader amongst OECD countries in the adoption of ICT capital. An International Monetary Fund Working Paper found that countries with flexible labour markets and best practice product markets have higher levels of ICT capital deepening. Reforms undertaken in Australia over the last two decades have enabled firms to take advantage of ICT developments, which has assisted productivity growth.⁹
- 6.18 Professor Green stated that technological change does not need to be inspired by existing demand from business or consumers. He noted the marketing strategy of Apple, which regularly releases cutting-edge products:

Apple, for example, does not do any marketing; it only reviews the impact that it has on markets it has actually created for itself, because it assumes that the customer does not know what he or she wants — Apple will work it out for them. That is a pretty radical and extreme example, but it shows how some companies are thinking: that they are not there to follow the market trends, they are there to create them.¹⁰

Improvements in the technical efficiency of the production process

- 6.19 Professor O'Donnell described technical efficiency as:
- ...moving closer to a best-practice frontier. This can involve adopting best-practice technology – for example, minimum tillage in agriculture – or simply eliminating mistakes in the production process.¹¹
- 6.20 He went on to discuss the importance of adopting technology and using it in an efficient manner, citing how using the NBN might contribute to technical efficiency:

The sort of thing I had in mind, from an economic viewpoint, that it is not just enough to employ the right people and install

8 PC, *Econometric Modelling of R&D and Australia's Productivity*, p. xxx.

9 International Monetary Fund, *Does Technological Diffusion Explain Australia's Productivity Performance?*, January 2008.

10 Professor R Green, *Transcript*, 11 March 2010, p. 8.

11 Professor C O'Donnell, *Transcript*, 4 February 2010, p. 1.

broadband technology in your company. You need to be able to use that effectively. You need to be able to manage those resources effectively within the firm and eliminate mistakes in the production process. That is what this economic measure of technical efficiency picks up. So, yes: the bottom line here is that it is one thing to acquire these resources, but a very important part of the productivity story is how those resources are used.¹²

- 6.21 Utilising technology enables firms to develop new mechanisms and processes to make their production more efficient. While discussing the NBN, Mr Windeyer of the Department of Broadband, Communications and the Digital Economy described the new technology as:

...a general purpose technology that enables other industries and firms to change the way they do business.¹³

- 6.22 Mr Windeyer went on to discuss research being conducted by CSIRO and NICTA (formerly National ICT Australia), among others, into 3-D photo technology. When utilised by firms in conjunction with the high-speed NBN, this will enable such information to be shared widely.¹⁴ This technology could be used for purposes such as costing vehicle repairs, as it offers people:

...better and more efficient ways to carry out their existing business.¹⁵

- 6.23 Improved education and training enables firms to access skilled labour, which is important for productivity growth. A more skilled workforce will lead to:

...new technologies, new ideas and new entrepreneurship skills. These approaches will thus form the stepping stone to development and changes in other sectors of the economy which in the long term, will lead to gains in productivity growth.¹⁶

- 6.24 Dr Lee described how Singapore's skills development system contributes to that country's skills base. It is expected to bring significant productivity benefits in the next ten to fifteen years. Education has been reformed in

12 Centre for Efficiency and Productivity Analysis, University of Queensland, *Submission no. 11*, p. 6.

13 Mr R Windeyer, Department of Broadband, Communications and the Digital Economy (DBCDE), *Transcript*, 25 February 2010, p. 9.

14 Mr R Windeyer, DBCDE, *Transcript*, 25 February 2010, p. 12.

15 Mr R Windeyer, DBCDE, *Transcript*, 25 February 2010, p. 10.

16 Dr B Lee, *Submission no. 3*, p.1.

Singapore, and bodies established to match supply and demand for skills in the economy. Further, incentives have been offered to foreign investors to participate in skills development of the workforce, benefiting both those investors and local workers.¹⁷

- 6.25 Management capability within firms contributes to the level of technical efficiency of that firm. In a study commissioned by the Department of Innovation, Industry, Science and Research, Professor Roy Green found that management practices in Australian firms are moderately above average when benchmarked against other advanced economies. Of particular note was the finding that large firms are performing better in quality of management practices than smaller firms.¹⁸ This is of concern as Australia has a larger proportion of smaller firms in comparison with major economies such as the United States, Germany and the UK.¹⁹
- 6.26 At a public hearing, Professor Green stated the benefits of programs which improve management capability in firms:

Certainly we know from experience overseas that this is one of the most cost effective ways of improving the productivity performance of organisations to investment in workplace development, including innovation capability.²⁰

- 6.27 He went on to describe the benefits of an ICT entrepreneurs program he was involved with previously:

...the key thing for them [the participants] was personal transformation. It had transformed their ability and their confidence and they were able to form connections and joint ventures and to collaborate as well as have a greater confidence in attacking their key markets both locally and globally.²¹

- 6.28 The Centre for Law and Economics stressed the need for 'IT penetration' in the economy in order to boost productivity growth, submitting that it is not sufficient for people to adopt new technology, they needed to be actively using it:

A moment's reflection makes one realise that it is not simply the spread of computers that will generate productivity increases, but the incentives and capability to use them effectively which the

17 Dr B Lee, *Transcript*, 19 November 2009, pp. 3-4.

18 DIISR, *Exhibit no. 11*, pp. 5-6.

19 Professor R Green, *Transcript*, 11 March 2010, p. 6.

20 Professor R Green, *Transcript*, 11 March 2010, p. 4.

21 Professor R Green, *Transcript*, 11 March 2010, p. 5.

microeconomic reforms allowed – including the enormous investments in modern communication systems following privatisation and deregulation of telecommunications globally.²²

Changing the scale or mix of inputs and outputs

- 6.29 With Australia's population predicted to grow from 22 million currently to 35.9 million by 2050 (see paragraph 5.42) the scale of production within the Australian economy will expand.
- 6.30 Larger populations bring efficiencies of scale to production which cannot be achieved by smaller economies. For example, the United States' large population gives it advantages of scale, and provides larger markets which enable specialisation to be viable. The PC has also noted that supply chains in the United States are concentrated on a small number of hubs which serve several major cities. Accordingly, producers have access to several very large markets. In comparison, there are large distances between major cities in Australia, adding to transport costs.²³
- 6.31 A PC Staff Working Paper argues that the United States benefits from having a number of very large cities, whereas Australia has smaller cities and is sparsely settled. Our remoteness from foreign markets means Australian producers pay more for capital equipment and to take their products to foreign consumers.²⁴
- 6.32 The agricultural sector illustrates how productivity rises within firms as scales of production increase:

Agriculture is changing, as all industries are changing. Agriculture is changing, with farms leaving the industry. Typically, of those that leave, other farms either take over the whole operation or perhaps blend it in with their operations. So farms are steadily getting larger. Those ones that are getting larger are those that have actually been more productive.²⁵

22 Centre for Law and Economics, Australian National University, *Submission no. 6*, p. 6.

23 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, p. 42.

24 Dolman, B, Parham, D, Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, pp. 35-44.

25 Dr T Sheales, Australian Bureau of Agricultural and Resource Economics (ABARE), *Transcript*, 23 October 2009, p. 61.

6.33 Family-run businesses in Australia stand out for poor productivity performance.²⁶ In addition to being generally small scale, Professor Green also attributed the lower productivity growth in these firms to a lack of:

...the necessary long-term commitment to building professional management capability with key positions attained by merit rather than family affiliation. This long term commitment and strategic approach is required for success in both domestic and global markets. It should also be acknowledged that some family firms have different drivers that may result in relatively 'poorer' productivity performance, but do deliver other benefits.²⁷

6.34 However, the benefits of relying upon this driver of productivity growth on an economy-wide level (as distinguished from GDP growth) are open to question. The Centre for Efficiency and Productivity Analysis submitted that:

...levels of scale and input-oriented mix efficiency are already high, suggesting that capital investment will not yield significant productivity gains.²⁸

6.35 At a public hearing, Professor O'Donnell expanded on this point, citing the mining industry as an example of an industry which is expanding, but where productivity is actually declining. He went on to say:

...further expansion of the economy, out into the region of decreasing returns to scale, is unlikely to yield significant productivity gains. It does not mean that incomes will not rise. It just means that productivity may not rise.²⁹

6.36 Changing the mix of inputs and outputs may also lift productivity growth. This can be achieved by using inputs in different combinations, and/or altering the mix of outputs produced.

6.37 One means of changing the mix of inputs is a shift in the labour and capital components of production. This has been seen in many manufacturing industries, where processes once completed by people have been automated.

26 DIISR, *Exhibit no. 11*, p. 7.

27 DIISR, *Exhibit no. 11*, p. 7.

28 Centre for Efficiency and Productivity Analysis, University of Queensland, *Submission no. 11*, p. 7.

29 Professor C O'Donnell, *Transcript*, 4 February 2010, p. 3.

- 6.38 A change in the mix of outputs is also described as a change in the scope of outputs.³⁰ For example, ABARE cited strong productivity gains in the agricultural sector during the 1990s, brought about by a shift from sheep into cropping. This shift occurred due to relatively lower wool prices during that period. Crop enterprises and remaining wool producers were more productive than the previous output mix in that sector.³¹

Productivity growth in the economy

- 6.39 Having efficient firms in an economy increases the likelihood of having high aggregate productivity growth. Thus productivity growth can be targeted at firms or the overall framework firms operate in.
- 6.40 The frameworks and systems are mostly developed and overseen by government. Thus there is a role for government to intervene in the market to influence the efficient allocation of resources. This may be achieved directly, through direct fiscal means, or through microeconomic reforms and regulatory structures.

Government policies to influence productivity growth

- 6.41 As government policies affect the environment in which firms operate they play a considerable role in influencing productivity growth.
- 6.42 Public policy also supports the proper functioning of markets (for example, strong prudential regulations stood Australia in good stead during the Global Financial Crisis), improves the efficient allocation of resources in the economy and can remove market distortions (for example, removing trade barriers). Public policy can also promote flexibility in firms, and encourage workplace skills development – all drivers of productivity growth.³²
- 6.43 The Treasury stated that:
- Addressing market failures in the areas of infrastructure, innovation and human capital also provides an important avenue for productivity gains.³³

30 PC, *Submission no. 20*, p. 8.

31 ABARE, *Submission no. 23*, p. 11.

32 The Treasury, *Submission no. 10*, p. 3.

33 The Treasury, *Submission no. 10*, p. 3.

- 6.44 Mr Robert Griew, from the Department of Education, Employment and Workplace Relations, also noted that appropriate macroeconomic and microeconomic policies form part of the mix of components required for productivity growth:

The terms of reference for this inquiry reflect the reality that productivity will be a function of a range of factors: macroeconomic stability, microeconomic reform, technological improvements, private and public capital investment, research and development, and training and development of the workforce.³⁴

Macroeconomic

- 6.45 Macroeconomic policies affect certainty and stability of prices of inputs.³⁵ They can also affect the pace of technological change and freight efficiencies through public investment. These sorts of policies are interventionist. They may influence the level of technological change (i.e. via public investment), technical efficiency (improved capabilities of workers through skills and training) and also the scale of outputs and ratio of inputs.

- 6.46 The *Intergenerational Report 2010* noted that:

A stable macroeconomic environment increases the level of certainty that people and businesses have in making decisions. By ensuring macroeconomic stability, public policy frameworks can promote economic growth and improve efficiency in the allocation of resources across the country. This is positive for productivity.³⁶

Microeconomic

- 6.47 Microeconomic policies may affect technical efficiency (e.g. regulatory burdens), technological change (regulation of radio-spectrum) and the scale and input mix of capital versus labour (e.g. capital subsidies, tax depreciation, on-costs of labour).
- 6.48 Professor Chris O'Donnell noted that microeconomic reforms may affect technical efficiency generally:

34 Mr R Griew, Department of Education, Employment and Workplace Relations, *Transcript*, 30 October 2009, p. 2.

35 The Treasury, *Submission no. 10*, p. 9.

36 The Treasury, *Intergenerational Report 2010*, p. 22.

Microeconomic reform is also something that can lead to improvements in technical efficiency because that leads to increased competition and firms that operate in highly competitive environments must be technically efficient if they are going to survive.³⁷

6.49 ACCI and Master Builders Australia espoused, in both their submissions and appearances before the committee, the need for reduced business taxation, including the reduction in capital gains tax. The only other specific area of tax reform the committee received evidence on was R&D tax concessions.³⁸ This will be discussed under *Innovation and R&D* in Chapter 7.

6.50 Treasury and the PC explained the need for a tax regime to be neutral, but neither responded in any detail, referring tax reform expertise to the tax review currently being undertaken by Treasury. The Chairman of the PC noted:

Clearly, Australia's tax system has evolved considerably over time in ways that are productivity enhancing – for example, by reducing punitive marginal tax rates, which have been an impediment to effort in the past, and lowering taxation on capital to ensure that we are still attractive as a destination for investment and so on.³⁹

6.51 The Secretary to the Treasury recently publicly remarked about the factors that affect participation in the workforce:

If the policy settings aren't right, if the incentives are misaligned, the tax and transfer system can deprive individuals of the opportunity to develop their capabilities; perversely, it can lock disadvantaged groups into cycles of dependence.⁴⁰

6.52 None of the economists who provided evidence to the inquiry suggested significant taxation reform as a main driver of productivity and in fact one economist, Professor Chris O'Donnell, pointed out the dangers in attempting to drive productivity through price signals:

37 Professor C O'Donnell, *Transcript*, 4 February 2009, p. 3.

38 Received from Innovation Australia, *Submission no. 25*; DIISR, *Submission no. 26*; PC, *Submission no. 20*; and Australasian Institute of Mining and Metallurgy, *Submission no. 13*.

39 Mr G Banks, PC, *Transcript*, 23 October 2010, p. 13.

40 Dr K Henry, *Fiscal Policy: more than just a national budget*, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 20.

There are three main drivers of productivity growth, and two of these are associated with improvements in net income – technical efficiency improvement and technical progress – and one is associated with decreases in net incomes, and that is changes in relative prices. If we really want to improve productivity, then the message is that we need to make sure that we do it in a way that also improves net incomes.⁴¹

- 6.53 Similarly, Mr Simon Mottram noted that tax changes which increase the value, but not the volume of output, are not measures to actively promote productivity growth. He cites as an example the recent changes to Section 23AG of the *Income Tax Assessment Act (1936)* (foreign income tax exemption):

The reform agenda here has taken a passive approach, looking at potential for increase to an existing income stream while assuming the reform applied will not have any impact upon it. Microeconomic reform in this case is ineffective, creating disincentive and curtailing the growth rate of productivity in this area.

- 6.54 Mr Andrew Thomas, appearing at a hearing in Sydney for the Australian Rail, Tram and Bus Industry Union also gave an example of how taxation can skew the use of resources in an economy and create inefficiencies:

Another issue is that company cars have a fringe benefits tax applied to them; rail does not. If you have a company car and you drive to work, they can apply a fringe benefits tax, which is offset by the company.⁴²

- 6.55 Directing productivity growth through tax mechanisms, things that influence the prices of inputs or value or outputs, can have unintended consequences or provide no real incentives for productivity growth.
- 6.56 One example of this provided by the Australian Institute of Mining and Metallurgy is a tax deduction for mining exploration expenditure but which is generally not applicable to junior companies who comprise 70 per cent of this market – they do not earn enough revenue to take advantage of it.⁴³ At a time when current mining productivity growth is declining, partly due to the diminishing returns on existing mines, this

41 Professor Chris O'Donnell, *Transcript*, 4 February, 2010.

42 Mr A Thomas, Australian Rail Tram and Bus Industry Union, *Transcript*, 4 December 2010, p. 5.

43 Australian Institute of Mining and Metallurgy, *Submission no. 13*, p. 10.

provides a cautionary tale in putting weight on tax incentives to drive productivity growth.

- 6.57 Another example of an unintended consequence of fringe benefits tax was noted by Mr Catchpole of the Australian Institute of Mining and Metallurgy on company provided childcare at remote mining locations. He noted the importance of having childcare near mines to increase participation but that:

...the numbers are not enough to justify building a childcare centre, but if you try to choose a more flexible option then you get hit with the fringe benefits tax. Increasingly, it is not just female participation. Our latest remuneration in employment survey has indicated that something like 20 per cent of the members, I cannot remember how many, identify themselves as carers.⁴⁴

Committee conclusion

- 6.58 Improvements in technology and technical efficiency at the firm level will lead to improvements in productivity and income. Changing the scale and/or mix of inputs and outputs will not always lead to improvements in productivity, even if higher income is achieved. This has been borne out recently in the mining sector with higher output prices inducing firms to employ more inputs, without a commensurate increase in output volume – thus higher incomes but falling productivity growth.
- 6.59 Where governments intervene in the market in an attempt to boost aggregate productivity the focus should be on improving firms' access to technological capacity and on improving technical efficiencies within the firm. The focus of public policy should not be on increasing the scale of outputs or the prices of inputs or outputs. Although these may result in income gains they will not necessarily result in productivity gains.
- 6.60 Actions by government to influence the scale of production or the prices of inputs or outputs will create distortions in the allocation of resources and will not lead to long-term productivity growth. Thus the committee does not believe the primary impetus of productivity growth will emanate from tax reform which affects the cost of inputs or value of outputs. Tax policy is directed at income and equity effects rather than efficiency outcomes.

44 Mr M Catchpole, Australasian Institute of Mining and Metallurgy, *Transcript*, 20 November 2009, p. 19.

- 6.61 Tax reform is essential where there are distortions in the system which prevents resources flowing to their most efficient use, for example, punitive marginal tax rates which diminish the incentive to work and reduce participation. This will be particularly important as the highly-experienced portion of the workforce ages and considers retirement or ongoing participation.
- 6.62 The focus of government policy must be on maintaining a stable macroeconomic environment and continuing the microeconomic reform agenda to ensure the environment firms operate in is conducive to efficient production. The secondary focus should be on supporting the improvement in the capability of the inputs to production; be that through technology advances that are fully utilised by firms, and/or through greater technical efficiencies in firms.

Promoting future productivity growth

- 7.1 Productivity surged in the 1993-94 to 1998-99 cycle, and has since declined. Boosting productivity growth in spite of the challenges outlined in chapter 5 will be assisted by well-targeted public policy.
- 7.2 This chapter discusses how government can boost productivity through a range of public investment and regulation initiatives. The agenda of the current government is described under each heading.

The national policy approach to facilitating productivity growth

- 7.3 Government policy decisions cannot by themselves raise the level of productivity growth. Rather, sensible government intervention in markets, through investment in infrastructure and human capital or modifying regulatory frameworks, lifts productivity by enabling firms to allocate resources more efficiently.
- 7.4 Professor Green opined on the role of government in meeting the challenge of raising the level of productivity growth:
- I think government can only do so much to facilitate change. It cannot prescribe change. It cannot prescribe good or productive behaviour. But it can facilitate it, and it needs to find flexible and agile ways of doing so.¹
- 7.5 The Treasury described the role of public policy in responding to the productivity challenge:

1 Professor R Green, *Transcript*, 11 March 2010, p. 8.

Public policy settings also play a vital role in achieving productivity growth as they affect the environment in which firms operate. Policy is important for improving the efficiency of resource use in the economy as it can support well-functioning markets, remove distortions and enhance flexibility, responsiveness and dynamism at the level of the firm and the individual.²

7.6 They went on to discuss how policy intervention can facilitate productivity:

Policy can also promote an operating environment in which workers and firms have the incentives and the capacity to continually adapt to take advantage of opportunities, which in turn improves productivity. Addressing market failures in the areas of infrastructure, innovation and human capital also provides an important avenue for productivity gains.³

7.7 A 2009 OECD study on *The Political Economy of Reform* also noted that maintaining strong macroeconomic policy allows governments to continue reform agendas. The report commented:

One of the most robust findings to emerge from recent econometric work on the political economy of structural reform is that sound public finances tend to be associated with more reform.⁴

7.8 This is akin to the introduction of reforms which involve compensation or inducement for economic benefits expected to be shared more broadly. An example of this was the national competition payments paid by the Commonwealth to the States in the 1990s in return for the States implementing the lion's share of National Competition Policy reforms. The payments were made in recognition that the benefits were expected to accrue to the national economy.

7.9 The Manufacturing Alliance argued that in using public policy to facilitate productivity growth, governments should, where possible, focus on economy-wide drivers of productivity growth.⁵

2 The Treasury, *Submission no. 10*, p. 3.

3 The Treasury, *Submission no. 10*, p. 3.

4 OECD, *The political economy of reform: Lessons from pensions, product markets and labour markets in ten OECD countries*, 2009, p. 41.

5 The Manufacturing Alliance, *Submission no. 14*, p. 6.

7.10 In a similar vein, the Productivity Commission (PC), while discussing taxation policy in evidence to the Committee, described the risks associated with 'picking winners' based on current productivity levels in particular sectors:

...it is terribly humbling to look back over the unpredictable course of productivity movement and its surges. If we had been sitting here back in the late eighties and we were wondering where productivity acceleration was going to come from...we would not have guessed wholesale and retail trade...it is just a reminder that neutrality is a tremendously important principle in tax system design here and it is a word of caution about the sort of magic ingredient approach to productivity growth.⁶

7.11 Australia has already implemented substantial microeconomic reforms; however, there is still room to build on this platform. As Treasury notes, the PC identified a number of issues in infrastructure markets that could benefit from further reform in order to efficiently allocate resources and minimise waste:

Such measures include pricing and regulatory reforms that encourage private sector participation, and the promotion of efficient outcomes in public investment through the development of methodologies for making efficient and transparent investment decisions.

The Productivity Commission (2006) has estimated that improving productivity and efficiency in energy, transport, infrastructure and other activities could, after a period of adjustment, increase GDP by nearly 2 per cent.⁷

Key productivity drivers and current policy frameworks

7.12 A number of areas were repeatedly identified in evidence to the inquiry as being key future contributors to driving higher productivity growth. The discussions elucidated are detailed below under the relevant key categories, followed by a summary of the key policy initiatives being undertaken in these areas.

6 Mr T O'Brien, Productivity Commission (PC), *Transcript*, 23 October 2009, pp. 13-4.

7 The Treasury, *Submission no. 10*, p. 11.

7.13 The Manufacturing Alliance summarised the views expressed in many submissions. It emphasised the importance of infrastructure, skills and innovation as drivers of productivity, stating that:

A significant reform agenda around investments in infrastructure, skills and innovation is also what is required for Australia to achieve a significant acceleration in long-term productivity growth.⁸

Human capital investment

7.14 There is a growing interest in the role of human capital in increasing economic efficiency and social wellbeing. COAG's reform agenda includes a key focus on building Australia's human capital to promote productivity growth. Human capital refers to the knowledge, skills, competencies and attributes acquired by workers through education and experience which increases their value in the marketplace.

7.15 The OECD has described human capital as 'the fundamental building block for growth strategies in the knowledge-based economy'⁹ and acknowledged that there is a broad consensus that human capital is a key determinant of GDP per capita growth.

7.16 While Australia's first two waves of reform were largely focused on incentives and flexibility, the PC suggested that if Australia is looking to make substantial increases in productivity, there is relatively more to be done in the area of building capabilities in the human capital areas of health and education.¹⁰ The PC has estimated that specifically targeted reforms in the areas of health and education which improve workforce productivity could add 3 per cent to annual GDP.¹¹

7.17 The PC has acknowledged that boosting human capital is essential, but will not be without effort:

The stimulus of intensified competition and the gains of flexible markets remain, but further productivity improvement is now in the more difficult terrain of improving human capital and innovation.¹²

8 The Manufacturing Alliance, *Submission no. 14*, p. 6.

9 OECD, *Micro Policies for Growth and Productivity*, Final Report, 2005, p. 9.

10 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 7.

11 PC, *Submission no. 20*, p. xv.

12 PC, *Submission no. 20*, p. 37.

- 7.18 In a research report published by the OECD, Mr Roope Uusitalo stated that:
- ...it is widely realized that an increasingly complex society and rapid technical change requires a highly educated workforce, if the country wishes to succeed in the international competition.¹³
- 7.19 He then noted that investing in human capital through education is a productivity enhancing investment:
- Education policy is directed to meet the skill needs of the modern workplace and to improve the performance of the individuals in the labour market. In fact, education is seen almost as a universal cure to some of the most severe economic problems such as unemployment and poverty. Human capital is also regarded as key factor in generating higher productivity and economic growth.¹⁴
- 7.20 Further, at the launch of the *Education at a Glance 2009* indicators, the Secretary-General of the OECD argued that human capital investment is a vital component of recovering from economic downturns. Benefits accrue to both the individual and the wider economy through higher economic growth.¹⁵
- 7.21 A paper by Forbes et al, *The effects of education and health on wages and productivity*, released in March 2010, examined the impact of improved health and education upon an individual's earning capacity and productivity in the workforce.¹⁶
- 7.22 The study's methodology utilised hourly wages as an indicator of labour productivity. It also noted that 'intangible characteristics such as motivation and work ethic' had an impact on the productivity of an individual. The paper acknowledged that this proxy for productivity would only work in 'reasonably competitive markets' but that differences in wages provide a useful indicator of health and education impacts on labour productivity.
- 7.23 Extensive modelling of the productivity outcomes from human capital investment accruing to the wider Australian economy (for example GDP gains) has not yet been undertaken.

13 Mr R Uusitalo, *Essays in Economics of Education*, 1999, p. 7.

14 Mr R Uusitalo, *Essays in Economics of Education*, 1999, p. 7.

15 Mr A Gurria, OECD, *The return to investment in education*, 8 September 2009.

16 Forbes, M, Barker, A, Turner, S, *The effects of education and health on wages and productivity*, PC Staff Working Paper, March 2010, p. xiii.

Education

- 7.24 While Government has a role to play in developing human capital through formal education and training, Treasury acknowledged that there are policy challenges for government in ensuring Australia's education and training system is effective and responsive, with a focus on flexibility.¹⁷
- 7.25 The Department of Education, Employment and Workplace Relations (DEEWR) stated that the development of skills and capabilities:
- ...is a process that begins at birth, and develops through childhood into adulthood and throughout life. Skill accumulation occurs through early childhood learning, schooling, higher education, vocational education and training and work.¹⁸
- 7.26 The Australian Chamber of Commerce and Industry (ACCI) stated that Australian industry needs a skilled, flexible and motivated workforce equipped with the skills and knowledge required to meet the needs of employers.¹⁹
- 7.27 In the *Intergenerational Report 2010*, the Australian Government highlighted a number of initiatives it has introduced to support the development of human capital and increase labour force participation. These included increasing incentives to work through personal income tax cuts, increases in the Child Care Rebate and the introduction of Paid Parental Leave. Reforms in the education, employment services and health sectors have also been aimed at boosting workforce participation.²⁰
- 7.28 The Government has acknowledged that in addition to maintaining policy settings which promote human capital, targeted assistance may also be required to assist those facing multiple, entrenched disadvantage.²¹
- 7.29 The PC noted that due to the current fiscal environment Australia is facing, 'spending a lot on education and health is going to be trickier than it was before'.²²

17 The Treasury, *Submission no. 10*, p. 13.

18 Department of Education, Employment, and Workplace Relations (DEEWR), *Submission no. 19*, p. 5.

19 Australian Chamber of Commerce and Industry (ACCI), *Submission no. 7*, p. 58.

20 The Treasury, *Intergenerational Report 2010*, p. 27.

21 The Treasury, *Intergenerational Report 2010*, p. 104.

22 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 7.

7.30 The committee queried representatives from DEEWR on whether there had been a comprehensive study of the results from other countries prior to it reaching the conclusion that investment in human capital was a key focus of raising the rate of productivity growth. A representative from DEEWR stated:

My advice to the committee would be that we are incredibly well served by the evidence here. It is much clearer than it was 15 years ago. The neuroscience and the implications of the neuroscience for policy for young children and the transitions into and early years of school are pretty much beyond refute. That is not debated really. There is very solid research on teacher quality and education as well.²³

7.31 The Australian Institute of Mining and Metallurgy described the education and training challenges in their sector:

Despite the short term decline in commodity prices, expectations of skills needs to meet demand over the medium term continue to be high...With significant numbers of skilled workers and professionals due to retire, sustaining investment in meeting the future skills needs of the minerals sector remains a priority.

Traditional sources of supply of labour such as South Africa, Brazil, China and India are now facing their own growth challenges/labour shortages, and can no longer necessarily be relied upon to 'fill the gaps' for the Australian minerals sector. We need to plan adequately to meet our own professional skills needs.²⁴

7.32 In December 2008, the Australian Government released the *Review of Australian Higher Education*, which was led by Professor Denise Bradley. The recommendations of the review included national targets for degree attainment, Commonwealth-subsidised places for qualified students, strengthened accreditation processes for universities, and a national accountability framework.²⁵

7.33 In response to the review, the Government announced additional funding for higher education and research of \$5.4 billion over four years. This includes establishing the Tertiary Education Quality and Standards Agency, a package to improve participation amongst low socio-economic

23 Mr R Griew, DEEWR, *Transcript*, 30 October 2009, p. 6.

24 Australian Institute of Mining and Metallurgy, *Submission no. 13*, p. 15.

25 Australian Government, *Review of Australian Higher Education*, December 2008.

status students, and a target of 40 per cent of 25 to 34 year-olds holding a bachelor degree or higher by 2025.²⁶

Health

7.34 Discussions on human capital investment tend to focus on education; however the concept goes further than this. The OECD defines human capital as

...the knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.²⁷

7.35 Accordingly, human capital encapsulates the whole person. A person's health is a critical component in their wellbeing—personal, social, as well as their productivity.

7.36 Good health is a form of capital which can enable individuals to increase their lifetime earnings.²⁸ More broadly, a healthier population will be a better workforce, as more people can participate at higher intensity. This has significant implications for the level of productivity.

7.37 In addition, the impact of health upon productivity goes further than merely curing illness; preventative health and improving the general wellbeing of the population is important. The Australian Food and Grocery Council discussed how it is working with governments to ensure that people eat well:

We are critically aware of the role of food in health, particularly in the current preventive health debate. We have long been talking about food and the food industry being a part of the solution to the health challenge that the nation faces.

Notwithstanding that, we still have the dilemma that there is a lot of evidence that many consumers are not eating in a manner which is appropriate to their good health, so we are moving more closely and working with government in a number of areas to specifically look at how the food industry collectively rather than at an individual company level can make changes to the food

26 Australian Government, *Transforming Australia's Higher Education System*, 2009.

27 OECD, *Human Capital: How what you know shapes your life*, 2007, p. 29.

28 OECD, *Human Capital: How what you know shapes your life*, 2007, p. 11.

supply that make it even easier for consumers to select healthy diets.²⁹

- 7.38 In its submission, DEEWR discusses how giving people the best chance to achieve positive health outcomes begins at birth:

Building resilience through the life-cycle needs to be at the centre of Australia's agenda for productivity over the upcoming decades. An agenda around building resilience might start with giving every child the best possible start in life through integrated health, development and care from birth with later interventions in the middle years.³⁰

- 7.39 The Australian Society for Medical Research submitted that improved funding in the health and medical research (HMR) sector would provide a sound return:

Historically, the productivity of the Australian HMR sector has significantly enhanced the health and wellbeing of the nation, with a direct impact on economic returns through decreased hospital stays, reduced Medicare and PBS costs and a healthier, more productive workforce.³¹

- 7.40 A more productive health system will contribute to economic growth. The PC noted that if all jurisdictions within Australia were to operate their health systems at best practice, there is a potential one per cent improvement in GDP.³²

- 7.41 The Australian Bureau of Statistics stated that the productivity measurement of human capital tends to focus upon the education dimension rather than the health dimension:

...possibly at some future point we could open that door a little further and actually try to capture health outcomes as part of that as well by using administrative and other data from the health system – though I do not know how you would do it – to supplement the educational data. You could perhaps incorporate that into productivity estimates in that simple way in the longer term.³³

29 Dr G Annison, Australian Food and Grocery Council, *Transcript*, 30 October 2009, pp. 22-23.

30 DEEWR, *Submission no. 19*, p. 2.

31 Australian Society for Medical Research, *Submission no. 31*, p. 5.

32 Mr G Banks, PC, *Transcript*, 23 October 2009, pp. 6-7.

33 Mr J Russo, Australian Bureau of Statistics, *Transcript*, 23 October 2009, p. 27.

Physical and spatial Infrastructure investment

7.42 The PC noted the role that government plays in the provision of physical capital infrastructure in Australia:

Largely because of their natural monopoly characteristics and widespread community benefits, the majority of economic or 'network' infrastructure assets in Australia – our roads, bridges, railways, ports and airports, electricity generation and distribution networks, and telecommunication networks – have traditionally been owned and operated by governments.³⁴

7.43 It went on to describe how in recent years the private sector has become more involved in physical capital, and how the adequacy of investment requires rigorous and ongoing analysis:

An assessment of the 'adequacy' of investment in public infrastructure therefore requires consideration of government investment in these industries, private sector investment, and the regulatory environment that influences investment decisions.³⁵

7.44 In 2008 the Australian Government established Infrastructure Australia to:

...provide advice on nationally significant infrastructure and urban systems which promote Australia's productivity, with a particular focus on the quality and efficiency of transport, water, energy and communication infrastructure and the development and liveability of major cities across Australia.³⁶

7.45 Major infrastructure challenges identified by Infrastructure Australia include developing more effective ports and associated land transport systems, developing a National Freight Network and improving transport within major cities.³⁷

7.46 Current infrastructure initiatives are outlined below under relevant headings.

Ports

7.47 DIISR noted the land side supply-chain issues concerning Australia's five main container ports:

34 PC, *Submission no. 20*, p. 31.

35 PC, *Submission no. 20*, p. 31.

36 Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG), *Supplementary submission no. 29.1*, p. 6.

37 DITRDLG, *Supplementary submission no. 29.1*, p. 7.

For businesses that export and import through these ports, efficient port services and associated supply chains are crucial to their international competitiveness. DIISR undertook some initial consultations with stakeholders about the opportunities and challenges in providing efficient sea freight supply chains to support business competitiveness now and in the future. This confirmed that there are concerns about inefficiencies in the land-side freight supply chains, which it is estimated impose millions of dollars per year of unnecessary costs on businesses.³⁸

7.48 To address this concern:

DIISR recently commissioned two pilot studies to obtain data about inefficiencies in the land-side supply chain corridors for two of Australia's major container ports, Sydney and Melbourne. DIISR is investigating whether there is a need for the further work in this area.³⁹

7.49 ACCI also noted the infrastructure bottlenecks which occur at Australian ports.⁴⁰

7.50 Infrastructure Australia is also developing a National Ports Strategy and National Freight Strategy, to be provided to COAG in 2010. These will outline the Government's plan to deliver efficient ports and transport links, enhancing productivity and export capacity.⁴¹

Land transport

7.51 In its submission, ACCI noted the importance of an efficient and cost effective freight network to Australian businesses and households. This network would be best delivered through both road and rail, to create:

...an Australian freight transport system that encourages an efficient mix of transport modes and provides a seamless movement of freight along the entire logistics chain.⁴²

7.52 To address this need, the Government is investing almost \$36 billion on land transport infrastructure over the next six years as part of its Nation

38 Department of Innovation, Science and Research (DIISR), *Submission no. 26*, p. 21.

39 DIISR, *Submission no. 26*, p. 21.

40 Mr G Evans, ACCI, *Transcript*, 23 October 2009, pp. 30-1.

41 DITRD LG, *Submission no. 29.1*, p. 7.

42 ACCI, *Submission no. 7*, p. 55.

Building Program,⁴³ investments which will help ease the congestion issues noted in Chapter 5.⁴⁴

7.53 Key road investments as part of the Nation Building Program include the Ballina and Tarcutta Bypasses and upgrade of the Great Western Highway in New South Wales; the Pacific and Ipswich Motorways and Bruce Highway in Queensland; and the Western Ring Road upgrade in Victoria.⁴⁵

7.54 Regarding rail, Dr Philip Laird submitted that:

...rail productivity needs to improve in Australia and this will require effort on many fronts. This will include...the upgrading of infrastructure.⁴⁶

7.55 In a supplementary submission, the Australian Rail, Tram and Bus Union argued that rail infrastructure has been neglected by governments and private operators:

Rail infrastructure, with few exceptions, has suffered from years of underinvestment. This lack of investment has effectively 'come home to roost' in recent years, including a number of privatised rail networks reverting to government ownership after a lack of investment by their private sector operators (whether foreign or Australian owned).⁴⁷

7.56 Key rail investments as part of the Nation Building Plan include works between Sydney and Newcastle; upgrades between Melbourne and Adelaide; a dual track link between West Werribee and Southern Cross in Melbourne;⁴⁸ and funding for the planning, development and construction of nine metropolitan public transport projects across Australia.⁴⁹

7.57 Dr Laird noted that despite a 1945 study recommending that Victoria and South Australia convert their railways to standard gauge, this has not yet occurred throughout both states. The existence of different gauges between states is a major impediment to railway productivity.⁵⁰

43 DITRDLG, *Submission no. 29.1*, p. 1.

44 Ms P O'Connell, DITRDLG, *Transcript*, 26 November 2009, p. 4.

45 DITRDLG, *Submission no. 29.1*, pp. 2-3.

46 Dr P Laird, *Submission no. 15.1*, p. 1.

47 Australian Rail, Tram and Bus Union, *Submission 30.1*, p. 2.

48 DITRDLG, *Submission no. 29.1*, p. 9.

49 Ms P O'Connell, DITRDLG, *Transcript*, 26 November 2009, p. 4.

50 Dr P Laird, *Transcript*, 4 December 2009, pp. 25-7.

City planning

- 7.58 Rapid urban growth in Australia's major cities places pressure on city planning. The Australian Government, through COAG, has announced long term reform to the planning of cities, to enhance productivity and sustainability. This will link infrastructure funding to national criteria.
- 7.59 The Department of Infrastructure, Transport, Regional Development and Local Government described the benefits which will flow from a national approach to city planning:
- National criteria for capital city planning systems will ensure cities have strong, transparent and long term plans in place to manage population and economic growth; plans which will address climate change, improve housing affordability and tackle urban congestion.⁵¹
- 7.60 Considerations in strategic city planning include:
- ...construction and upgrade of national significant infrastructure, such as transport corridors, intermodal connections and communications and utilities networks. To encourage investment of private capital in these projects, an effective framework for private sector investment and innovation in urban infrastructure must be provided, thus also easing fiscal constraints on all levels of government.⁵²
- 7.61 COAG agreed that all states will have plans which meet the national criteria⁵³ in place by 2012, to be independently reviewed by the COAG Reform Council.⁵⁴

Communications and the digital economy

- 7.62 The digital economy can be defined as:
- ...a global network of economic and social activities that are enabled by information and communications technologies, such as the internet, mobile phones, sensor networks et cetera.⁵⁵

51 DITRDLG, *Submission no. 29.1*, p. 9.

52 DITRDLG, *Submission no. 29.1*, p. 10.

53 Includes integration across functions (i.e. land use, transport and infrastructure) and levels of government, priorities for future spending and policy and effective implementation arrangements.

54 COAG, *7 December 2009 Communiqué*, p. 8.

55 Mr R Windeyer, Department of Broadband, Communications and the Digital Economy (DBCDE), *Transcript*, 25 February 2010, p. 2.

7.63 The Department of Broadband, Communications and the Digital Economy (DBCDE) stated that a focus on the digital economy is critical to Australia's future productivity:

The position we have put is that the digital economy is the key to Australia's future economic prosperity and wellbeing and the task of transforming Australia's economy and society into a successful digital economy is a significant one that requires long-term focus.⁵⁶

7.64 DIISR note that improved telecommunications infrastructure provides a springboard for innovation :

The availability of an advanced telecommunications infrastructure enables innovations such as flexible manufacturing systems, just-in-time management systems, distributed data networks, advanced services, improved intra- and inter-corporate information flows, greater access to customers and faster flows of information inputs to innovation.⁵⁷

7.65 With ICT considered essential to enable productivity growth, DBCDE stated that:

...when you start looking at ICT use then there are questions about both the infrastructure availability and the capacity of it. In the Australian context the national broadband network is the next stage of investment in the next level of capacity of our communications infrastructure, which will then provide a platform for a whole lot of innovation and new services and applications to emerge.⁵⁸

7.66 The National Broadband Network (NBN) was announced on 7 April 2009, and involves investment of up to \$43 billion over eight years to provide 90 per cent 'fibre to the premises' coverage, delivering speeds of 100 megabits per second. Remaining coverage will be through wireless and satellite services. The Government established NBN Co Ltd to roll out the network simultaneously in metropolitan, regional and rural areas.⁵⁹

7.67 The Tasmanian Government Department of Treasury and Finance noted that the NBN would:

56 Mr R Windeyer, DBCDE, *Transcript*, 25 February 2010, p. 2.

57 DIISR, *Submission no. 26*, p. 20.

58 Mr R Windeyer, DBCDE, *Transcript*, 25 February 2010, p. 7.

59 Prime Minister, Treasurer, Minister for Finance, Minister for Broadband, *Joint Media Release: New National Broadband Network*, 7 April 2009.

...lead Tasmania to a higher productivity growth path. It will provide optic fibre to over 200 000 homes and businesses across Tasmania over the next five years, and transform electronic communication and access to information in the State.⁶⁰

7.68 The NBN addresses concerns that current ICT infrastructure is insufficient to satisfy demand for affordable broadband in metropolitan and non metropolitan areas.⁶¹

7.69 While the fixed line services provided by the NBN will assist firm productivity, DBCDE commented that a combination of high-speed fixed line and wireless services is important for a mobile workforce.⁶²

7.70 Radio spectrum is a finite resource which is required to operate wireless communication services. The Australian Mobile Telecommunications Association (AMTA) described the infrastructure challenges facing the wireless broadband and telecommunications industry:

To put it simply, spectrum is what carries mobile signal. The more activity on spectrum; the more congestion. We are, in another feature of this digital world, seeing a huge increase in appetite for vision, not just voice. People want to see things as well as hear them. That has got a capacity impact on networks. Bandwidth hungry applications are common. This all means essentially that we are anticipating constraints on our infrastructure, and that is our level of spectrum access.⁶³

7.71 Dr George Barker argued that access to spectrum is an area where the government could make a significant impact upon productivity growth:

...the way in which the incentives are created for people to trade in spectrum rights is very important. Spectrum rights get allocated to the parties that value them the most. At the moment, even with the parts of the spectrum that are in the marketplace, some of them are locked up in specific uses and are not tradeable. The ability to use spectrum more intensively is growing... I think that spectrum reform is certainly an area in the ICT sector where you could see considerable contribution is to growth at low cost.⁶⁴

60 Tasmanian Government, Department of Treasury and Finance, *Submission no. 24*, p. 9.

61 Government of South Australia, *Submission no. 22*, p. 3.

62 Mr R Windeyer, DBCDE, *Transcript*, 25 February 2010, p. 4.

63 Mr C Althaus, Australian Mobile Telecommunications Association (AMTA), *Transcript*, 20 November 2009, p. 4.

64 Dr G Barker, Centre for Law and Economics, ANU, *Transcript*, 30 October 2009, p. 38.

- 7.72 With the switch from analogue to digital-only television transmission due to be completed by 2013, radiofrequency spectrum will be freed up. The Government released a Digital Dividend Green Paper in January 2010, seeking comments on potential uses for the 126MHz of UHF spectrum which will become available.⁶⁵
- 7.73 The AMTA submitted that a significant portion of this spectrum should be allocated to the mobile telecommunications industry, arguing that this is the highest value use for the spectrum, and:
- ...any alternate use would not generate the same economic and social benefits to the community.⁶⁶
- 7.74 In addition, the 2.5 GHz band of spectrum is being considered for reallocation. This spectrum is currently used primarily by free-to-air TV broadcasters for electronic news gathering. As this spectrum has been identified internationally as being suitable for wireless internet services, the Australian Communications and Media Authority (ACMA) is currently identifying other spectrum which might be suitable for electronic news gathering. A discussion paper on this issue was released by ACMA in January 2010.⁶⁷

Innovation and R&D

- 7.75 Public support for R&D comes in two forms. First, publicly funded R&D in universities and government research agencies, and second, the R&D Tax Concession.
- 7.76 The R&D Tax Concession commenced in 1985, and is the largest single innovation expenditure by government – over \$500 million per annum. It provides an increased deduction (150 per cent in the period 1985–96, 125 per cent thereafter) to be claimed on the volume of R&D expenditure, and this then reduces tax payable with tax loss firms entitled to carry the additional deduction forward.⁶⁸
- 7.77 Trend analysis suggests a strong correlation between business expenditure on research and the R&D Tax Concession. However, it has been argued

65 Australian Government, *Digital Dividend Green Paper*, January 2010.

66 AMTA, *Submission no. 4*, p. 10.

67 Australian Communications and Media Authority, *Review of the 2.5 GHz band and long-term arrangements for ENG: Discussion paper*, January 2010.

68 Cutler & Company, *Venturous Australia*, August 2008, pp. 101-102.

that other factors such as the internationalisation of the Australian economy are also responsible for increased R&D spending by firms.⁶⁹

7.78 In the 2009-10 Budget, the government announced a simplified R&D Tax Credit to replace the Tax Concession.

7.79 DIISR noted three aspects of government support for innovation capacity: research in the public sector can support productivity through enhancing innovation; there are spill over benefits from government support; and improved management in firms can increase productivity.⁷⁰

7.80 The PC noted the distinction between R&D with a direct commercial aim and R&D as a public good:

While the Commission has found little evidence to support fears of underinvestment in research with direct commercial applications, there are potential benefits from public support for more basic or strategic research, where the returns can be difficult for an organisation to adequately appropriate.⁷¹

7.81 The Manufacturing Alliance argued that public investment in innovation has been neglected, and contributed to the productivity slowdown:

At the end of the day (like the case of infrastructure investment), sub optimal investments in the nation's innovation system, a lack of attention to successful strategies for the diffusion and take up of advanced technologies such as ICT, and lack of attention to the role of public policy in encouraging innovation at the firm level all played some part in the slowing of economy wide productivity growth.⁷²

7.82 In addition, the Australasian Institute of Mining and Metallurgy argued that future capacity within its industry depends on relatively speculative R&D work being conducted. Accordingly, it advocated strengthening the R&D Tax Concession.⁷³

7.83 The 2008 Review of the National Innovation System, *Venturous Australia*, led by Dr Terry Cutler, called for an increase in public funding levels for research in universities and government research agencies, transformation

69 Cutler & Company, *Venturous Australia*, August 2008, pp. 103-104.

70 Mr T Lowndes, DIISR, *Transcript*, 23 October 2009, p. 43.

71 PC, *Submission no. 20*, p. 42.

72 Manufacturing Alliance, *Submission no. 14*, p. 10.

73 Australasian Institute of Mining and Metallurgy, *Submission no. 13*, p. 22.

and rationalisation of the R&D Tax Concession and management assistance for innovative firms.⁷⁴

7.84 *Powering Ideas: An Innovation Agenda for the 21st Century* was prepared in response to the Cutler Review, and outlines the Government's innovation agenda. Initiatives designed to enhance innovation capacity includes: grant and tax incentives to overcome market failures that discourage innovation, support for industries undergoing structural change; funding of vital research that would not be done by the private sector; and supporting the identification and implementation of innovative changes in business.⁷⁵

7.85 The 2009-10 budget provided \$8.58 billion for science and innovation, an increase of 25 per cent on the previous budget.⁷⁶

7.86 The PC noted the benefits that government assistance can provide in supporting R&D, particularly for more basic or strategic research where results of the R&D are shared across the sector. However, it stressed the importance of policy design:

But, again, careful design and evaluation are needed to ensure that support measures actually give rise to additional R&D activity, such that the benefits to society exceed the costs (PC 2007a). It seems unlikely that the extension of tax concessions will induce sufficient additional R&D to warrant the revenue forgone, and the costs of raising it elsewhere.⁷⁷

7.87 The Treasury agreed that government support measures should be carefully developed:

On the other hand, increased funding or tax concessions for specific R&D will not necessarily have a significant impact on productivity (PC 2007). Specific R&D will only increase productivity up to the point at which the cost of encouraging additional innovation exceeds the benefits to the economy of that innovation.⁷⁸

74 Cutler & Company, *Venturous Australia*, August 2008, pp. 4-8.

75 DIISR, *Submission no. 26*, p. 8.

76 DIISR, *Submission no. 26*, p. 8.

77 PC, *Submission no. 20*, pp. 42-3.

78 The Treasury, *Submission no. 10*, p. 12.

Workplace capacity

7.88 At a public hearing, Professor Roy Green discussed how there is a strong link between management capability and the productivity of firms. His research has found that Australian management is not best practice, especially in smaller firms.⁷⁹

7.89 Professor Green went on to discuss various programs that have been run by government in the past to improve what he terms workplace development, which involves improving the performance of whole organisations. He called for more investment in this area:

Certainly we know from experience overseas that this is one of the most cost-effective ways of improving the productivity performance of organisations to invest in workplace development, including innovation capability. The kinds of programs that do this are those that connect companies to services that can make improvements to their capacity as well as to the general level of workplace and management skill.⁸⁰

7.90 To improve capability in small to medium enterprises to operate at best practice, the Enterprise Connect program provides business reviews addressing technology and management. This program, focused on firms with turnover of \$2 million to \$100 million, identifies areas which would enable these firms to improve their productivity, and assists them to implement changes in those areas.⁸¹

Regulatory reform, harmonisation and reducing red-tape

7.91 Excessive and inappropriate regulation places time and cost burdens in business, reducing their ability to be adaptable, responsive and innovative.⁸² The PC in 2006 estimated that the compliance costs of regulation in Australia could be as high as 4 per cent of GDP.⁸³

7.92 The productivity benefits of an improvement in regulatory quality were described by Mr Banks of the PC:

It is very clear that there is a big payoff to productivity from reducing the drag on enterprise performance. It has two sides to it.

79 DIISR, *Exhibit no. 11*.

80 Professor R Green, *Transcript*, 11 March 2010, p. 4.

81 Mrs J Zielke, DIISR, *Transcript*, 23 October 2009, p. 44.

82 PC, *Submission no. 20*, p. xiv.

83 PC, *Potential Benefits of the National Reform Agenda*, p. 153.

One is just the deadweight cost of the paperwork and secondly is the inhibition of innovation and flexibility, particularly for small enterprises where you are often tying up the decision maker in doing red tape kind of work.⁸⁴

- 7.93 The Government's Better Regulation Agenda encompasses regulatory reforms at the Commonwealth level, and a National Partnership Agreement through COAG at the inter-jurisdictional level. This is a component of the third wave of reforms, continuing microeconomic reforms which have taken place since the 1980s.

Commonwealth level regulatory reform

- 7.94 The Department of Finance and Deregulation aims to reduce the level of poorly designed and unnecessary regulation. It assists government agencies and departments to comply with Regulatory Impact Analysis requirements, and provides policy advice on ways to reduce the costs of regulation.⁸⁵
- 7.95 The Minister for Finance and Deregulation is using Better Regulation Ministerial Partnerships with portfolio ministers to progress enhancements to substantive areas of Commonwealth regulation. Partnerships include the Health Technology Assessment Review, to improve regulation around assessment processes for medical technology; and improving Product Disclosure Statements for financial services, to present information in an uncomplicated manner without compromising investor protection.⁸⁶
- 7.96 As announced in the February 2009 *Updated Economic and Fiscal Outlook*, the Government is undertaking a review of pre-2008 Commonwealth subordinate legislation and other regulation, to document those regulations which impose net costs on business and identify scope to improve regulatory efficiency.⁸⁷

84 Mr G Banks, PC, *Transcript*, 23 October 2009, pp. 10.

85 Department of Finance and Deregulation (Finance), *2008-09 Annual Report*, p. 29.

86 Finance, *2008-09 Annual Report*, p. 29.

87 The Hon W Swan MP and The Hon L Tanner MP, *Updated Economic and Fiscal Outlook*, February 2009, p. 26.

National Partnership Agreement to Deliver a Seamless National Economy

7.97 Inconsistency and duplication of regulation across the federation is an impediment to productivity growth. Mr Banks of the PC elaborated on this point:

Another point we have made is that there is still some scope to reduce some of the red-tape burdens and regulatory inflexibilities....A federation has benefits but it also has costs. One of the costs is where you get regulation that passes its use-by date because it was designed for a particular jurisdiction when we now need national regulation in a global economy.⁸⁸

7.98 In a 2005 position paper, ACCI described the problem of inconsistent regulation:

Increasing mobility and flow of Australian businesses and workers has raised concerns about separate, overlapping and conflicting regulation between state jurisdictions. This ad hoc regime increases the costs of complying with regulation without any associated increase or change in economic activity.⁸⁹

7.99 To progress reforms in areas of Commonwealth and state responsibility, in 2007 COAG agreed to a National Partnership Agreement to Deliver a Seamless National Economy (NPA). This encompasses 27 areas of regulatory reform known as deregulation priorities, 8 areas of competition reform, and improving processes for regulation making and review.⁹⁰

7.100 Regulatory reform includes harmonising regulation across the Commonwealth, states and territories through coordinated national approaches, and national regulatory schemes administered by the Commonwealth. This will deliver more consistent regulation across jurisdictions and reduce compliance costs to business.

7.101 Of these reforms, the Department of the Prime Minister and Cabinet (PM&C) stated that occupational health and safety (OH&S) stands out for its importance to productivity:

Certainly the OH&S was one of the key ones. There was a lot of priority put on to OH&S...if you talk to firms – there is a lot of engagement, a lot of liaison with business in Australia – one thing that they will talk about is how important it is to them to have

88 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 7.

89 ACCI, *Holding Back the Red Tape Avalanche: A Regulatory Reform Agenda for Australia*, p. 33.

90 COAG, *National Partnership Agreement to Deliver a Seamless National Economy*, February 2009.

consistency in the application of their workplace safety across jurisdictions.⁹¹

7.102 Mr Banks of the PC agreed that OH&S represents a crucial reform:

...I have in the past described OH&S as a bit of a litmus test for our capacity as a nation to come up with regulatory reforms that will help build the national economy.⁹²

7.103 Progress on the agenda is monitored by the COAG Reform Council (CRC). The NPA includes provision for 'facilitation' and 'reward' payments of up to \$550 million to the states and territories, to be paid by the Commonwealth following advice from the CRC as to the achievement of key milestones.⁹³

7.104 The PC saw regulatory reform as a leading area to maintain an economic environment conducive to private sector investment, in order to boost productivity growth in a fiscally constrained environment:

Notably, governments' initiatives to boost productivity growth will need to be attentive to fiscal resource costs; initiatives with low fiscal cost, such as regulatory reforms, would seem particularly attractive in an era of fiscal consolidation.⁹⁴

Continuing competition frameworks

7.105 Third-party access regimes enable efficient use of essential infrastructure by preventing monopoly providers from overcharging. This provides for greater competition than would otherwise be the case. Competition policy reforms over the past two decades are examined in Chapter 3.

7.106 DIISR noted the potential productivity benefits of expanding third-party access regimes.

While NCP reforms are now largely complete, DIISR's research indicates that there remain opportunities in infrastructure services where productivity improvements can be attained.⁹⁵

7.107 However, the PC suggested that the Government should exercise caution in this area:

91 Dr G de Brouwer, Department of the Prime Minister and Cabinet (PM&C), *Transcript*, 4 February 2010, pp. 15-6.

92 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 7.

93 COAG, *National Partnership Agreement to Deliver a Seamless National Economy*, February 2009.

94 PC, *Submission no. 20*, p. 36.

95 DIISR, *Submission no. 26*, p. 20.

There is obviously a trade off between making it too easy for a third-party to access a facility that another investor has outlaid a lot on and ensuring that whoever has invested in that is not exploiting that monopoly position. Getting that balance right is quite hard....In broad terms the test should be that there would be a clear improvement in efficiency or welfare through that access rather than just a potential improvement in competition at the margin.⁹⁶

7.108 It went on to outline the risk of overzealous competition policy:

...we have to keep vigilant that what is ostensibly a pro-competitive or pro-competition set of regulations does not inadvertently actually compromise investment and innovation.⁹⁷

Maintaining flexibility in workplaces

7.109 With the domestic and international economy constantly changing, flexibility in workplace arrangements enables employers to react quickly to changing demands. Inflexible arrangements have a detrimental impact on firm productivity.⁹⁸

7.110 The PC outlined the importance of such flexibility to productivity:

...it is important to preserve the ability of organisations to engage effectively with employees to change work arrangements in response to commercial imperatives. As the economy changes, different firms and industries will come under divergent pressures in a way not amenable to enforcement of common employment conditions.⁹⁹

7.111 In a speech in Melbourne on 5 November 2009, the Chairman of the PC said:

...legitimate concerns for workers' rights need to be balanced against the flexibility that firms need to implement the organisational changes and other innovations on which productivity growth ultimately depends.¹⁰⁰

96 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 12.

97 Mr G Banks, PC, *Transcript*, 23 October 2009, pp. 12-3.

98 ACCI, *Submission no. 7*, pp. 72-5.

99 PC, *Submission no. 20*, p. 43

100 Mr G Banks, *Back to the Future: Restoring Australia's Productivity Growth*, 5 November 2009, p. 9.

7.112 At a public hearing of the House Economics Committee in February 2010, the Governor of the RBA, Mr Glenn Stevens, noted that the flexibility in workplace arrangements limited the rise in unemployment in Australia during the Global Financial Crisis. When asked to comment on the impact of the Fair Work Australia laws on unemployment, Mr Stevens said:

...of course the new arrangements are just coming in. So the test is whether the flexibility is retained. I am not saying it will not be. I cannot judge, but the question being asked is whether that is a potential risk. As I say, it is important to retain flexibility and it is very important that all the parties involved do that.¹⁰¹

The importance of careful policy selection

7.113 The Secretary to the Treasury, in a recent speech on the role of fiscal policy, discussed the dilemmas in measuring the productivity outcomes in public sector services, such as health (this will be discussed further in Chapter 8). He noted the difficulty in measuring quality and quantity of these services, but went on to say:

Even if we could solve these dilemmas we would still be left with a third: the difficulty in identifying the impact of changes in government expenditures on outcomes that are also heavily influenced by individual decisions and behaviours.¹⁰²

7.114 This point highlights the difficulty in estimating productivity returns from investment in certain public policies. It also shows the difficulty in influencing behaviour at the firm-level. However, Dr Henry stressed that despite the 'lack of evidence of a clear relationship between increased expenditure and better outcomes it is not to say that more expenditure will not improve outcomes'. The caveat he noted was that:

It is also clear that good program design and delivery are important for getting value for the public's money.¹⁰³

101 Mr G Stevens, RBA, *Transcript*, House of Representatives Standing Committee on Economics, p. 12.

102 Dr K Henry, *Fiscal policy: more than just a national budget*, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 23.

103 Dr K Henry, *Fiscal policy: more than just a national budget*, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 23.

7.115 Similarly, the South Australian Government's submission stressed the importance of careful examination of policy areas purported to bring productivity growth:

In prioritising future initiatives it is important that Governments are well informed about the benefits likely to be obtained from each activity or investment to achieve the highest payoff to Australia's productivity and living standards.¹⁰⁴

7.116 Mr Banks of the PC emphasised the fact that public investment in raising productivity growth requires a long term agenda and thus the public's support:

Let us face it, some of these human capital investments could take 20 years to pay off, so it is a long-term investment. Investments in education for young people and so on – improving the quality of teaching, for example, which is something we highlight – are really going to be very important for the longer term. The challenge for public policy is things with really long-term payoffs, in a sense, are politically more difficult because any change will involve some short-term disruption et cetera. If the payoffs are a decade hence – things are a little bit out of kilter.¹⁰⁵

7.117 Public policy investments to boost productivity growth are targeted at reaping longer-term returns. Thus there is a significant opportunity cost of investing more intensively in a given area than in another. It therefore follows that where there is a heavy emphasis on public investment in certain policy areas that it is prudent to model the expected outcomes.

7.118 PM&C noted that the current PC estimates on the potential returns from COAG's human capital agenda could be strengthened by modelling analysis:

In that report, the Productivity Commission, as I recall it, was much more confident about the estimates it was making on microeconomic reform compared with the human capital agenda, because it was the first time it had really gone there. I presume in the work that COAG has asked it to do in the future it will refine a lot of the work, particularly on the human capital side, and as it gets more familiar with the initiatives that governments are taking

104 Government of South Australia, *Submission no. 22*, p. 4.

105 Mr G Banks, PC, *Transcript*, 23 October 2009, p. 7.

will be better able to model that and come to some sort of conclusion about the impact.¹⁰⁶

7.119 As discussed in Chapter 4, Australia can learn from the successful policy platforms introduced in other developed countries to drive productivity in relevant areas of the Australian context. In particular it can learn from analysis of 'cause and effect' of public policy on productivity outcomes. It is, however, important to remember that Australia faces unique challenges for long-term productivity growth and operates in a distinct economic, geographic, political and cultural environment distinct from other nations.

7.120 It is critical that policy-makers ensure that the desired outcome from investment in productivity growth enhancing measures is not higher productivity growth per se, but the wellbeing of Australians. As the PC stated in evidence:

Serious policy errors can arise if we lose sight of the ultimate objective of raising living standards.¹⁰⁷

Committee conclusions

7.121 The committee believes that public policy to boost the aggregate productivity growth rate should be primarily directed at maintaining competition in the economy and allowing firms flexibility in their workplace arrangements. Additionally, all levels of Australian government should continue to pursue reductions in red-tape, regulatory burdens on business and to strengthen regulatory consistency.

7.122 Complementing these policies which improve the macroeconomic and microeconomic environment that firms operate in, the Australian government's role in supporting productivity growth should be through assisting to strengthen firm capabilities. This can be achieved indirectly by investing in areas which improve Australia's aggregate capabilities.

7.123 Australia's aggregate capabilities include its human capital stock, which can be improved by investing in a better educated, creative, skilled and healthy workforce. The other key area is enabling firms to utilise evolving technology by ensuring there is appropriate infrastructure for these new platforms; for example providing reliable and sufficient access to radio-spectrum for fourth generation wireless applications. Once firms have appropriate and reliable access to new technology there is a higher

106 Mr R Perry, PM&C, *Transcript*, 4 February 2010, p. 17.

107 PC, *Submission no. 20*, p. xi.

likelihood that innovation in production processes will flow from this. The committee believes innovation within firms is a key driver of aggregate productivity growth.

- 7.124 The committee notes that significant investment in information technology and communications, infrastructure and R&D will contribute to future productivity growth. The committee also recognises that measures to increase workforce participation are also essential for future economic growth.
- 7.125 The committee also notes that improving firms' management and organisational capabilities is important, especially in Australia, where small scale firms and family owned businesses predominate. Federal and state governments can support this capability in firms by ensuring appropriate education of the future workforce and by government support agencies interacting with the business community to provide networking opportunities and life-long learning.
- 7.126 Improving Australia's productivity growth rate is a broad nationwide challenge which should involve all levels of government. The committee therefore believes a summit represented by all levels of Australian government, together with relevant business, union and non-government organisation representation, be convened by the federal government to discuss and lead the establishment of a specific and integrated productivity growth agenda.

Recommendation 3

- 7.127 **That at the commencement of the 43rd parliament the federal government convenes a national forum represented by all levels of government, business, unions and non-government organisations to discuss the key ingredients of a national productivity growth agenda.**
- 7.128 The committee supports the development of a specific national productivity agenda to be agreed by COAG which incorporates aspects of the current COAG reform agenda but which extends upon this. The committee believes this would bring national prominence to productivity growth as the major determinant of strong economic growth in the long-term.

Recommendation 4

7.129 That COAG adopts a specific national productivity agenda. This agenda should be guided by the outcomes of the national forum outlined in Recommendation 3.

7.130 The need for fiscal discipline provides a challenge in itself, as investment in climate change mitigation and providing for an ageing and growing population cannot be ignored. This means that public policy to boost aggregate productivity must be carefully considered, especially given it is extremely difficult to estimate the impact that policies will have on productivity with any accuracy. There is also little international research on cause and effect from public policy designed to boost productivity growth rates. This is partly because the productivity impact of policy depends on how it affects the behaviour of firms and individuals – and this can take time.

7.131 The committee therefore believes investment in an ambitious long-term human capital agenda is not only important to boost Australia's capabilities but that it will automatically feed into the inputs of all firms in all sectors with no overt decisions on their part. This workforce improvement will also feed into government service provision, which ultimately contributes to the inputs of firms in the economy.

7.132 The committee recognises that prioritising a long-term broad human capital agenda over other public policy investments has opportunity costs. This is exacerbated by the fact that the benefits of this agenda will only be realised in the medium to long-term.

7.133 The committee recognises the recent paper by Forbes et al on the *Effects of education and health on wages and productivity* provides analysis on the productivity of individuals in the workforce. However modelling of the impact of human capital investment on aggregate productivity in the Australian economy has not yet been undertaken.

7.134 The committee agrees that estimates undertaken during the PC's analysis of the *Potential benefits of the National Reform Agenda* could be strengthened by a research report which contains modelling, rather than estimates, of the return on investment in human capital in terms of aggregate productivity and ultimately GDP improvements.

7.135 The committee therefore believes more accurate modelling of potential human capital investments, and likely returns, should be undertaken to ensure Australia's investment in its aggregate capabilities is optimised.

Recommendation 5

7.136 **That in the next eighteen months the Productivity Commission undertakes modelling on various aspects of human capital investment on productivity outcomes in the Australian economy and the likely time-line for returns.**

Beyond official productivity statistics

Productivity is not a perfect measure for evaluating policy

- 8.1 As highlighted in Chapter 2 and by the major economic departments advising the Australian Government, the official productivity estimates do not measure the wellbeing or living standards of the community. This section outlines the issue from a policy perspective and considers possible ways that the government can respond.
- 8.2 Productivity should be seen as a means to an end, rather than an end in itself. The ultimate objective of public policy is to promote community wellbeing and quality of life.
- 8.3 It is important to acknowledge that whilst productivity can contribute to community wellbeing; it is not the sole determinant. As the Productivity Commission notes, wellbeing has many dimensions that includes:
- environmental capital (amenity, biodiversity and air quality);
 - social capital (social attachments, community involvement and safety); and
 - per capita income (consumption and saving, funding of social activities and funding of institutions, such as law and order).¹
- 8.4 Productivity only directly contributes to improvements in wellbeing by increases in per capita income. This is important because increases in per capita income allow individuals to achieve a higher material standard of

1 Productivity Commission (PC), *Submission no. 20*, p. 5.

living and for society, through taxation revenue, to fund a range of government services and support facilities. The Treasury noted that:

Productivity improvements will also be important in helping Australia adapt to the challenges of an ageing population and climate change.²

- 8.5 So whilst productivity improvements will play an important role in ensuring that Australia has the resources to maintain living standards and community wellbeing in the face of future (financial) challenges, it is important to note that the ultimate objective of government policy is community wellbeing and not productivity. The Department of Education, Employment and Workplace Relations remarked that:

There is an increasing movement of international economic thinkers pointing us to the importance of a wider measure of capacity as a measure of the aggregate capacity of an economy and the wellbeing of the society, rather than simply as a measure of outputs over inputs.³

The non-productivity determinants of wellbeing

- 8.6 When evaluating policies to improve productivity it is important to understand what impact the policies will have on all factors that affect community wellbeing.
- 8.7 Policies that improve productivity can help to achieve other government objectives and improve community wellbeing. It is possible that human capital policies to improve the skills of disadvantaged members of society, such as the unemployed could lead to improvements in productivity and increased job satisfaction for these individuals.
- 8.8 However, policies aimed at improving productivity can hinder the achievement of other government objectives and compromise community wellbeing.
- 8.9 It is possible for productivity improvements to come at the expense of other means of achieving economic growth. As highlighted by the Treasury and the Productivity Commission (PC) the sources of economic growth are productivity, participation and population.⁴ It is possible that
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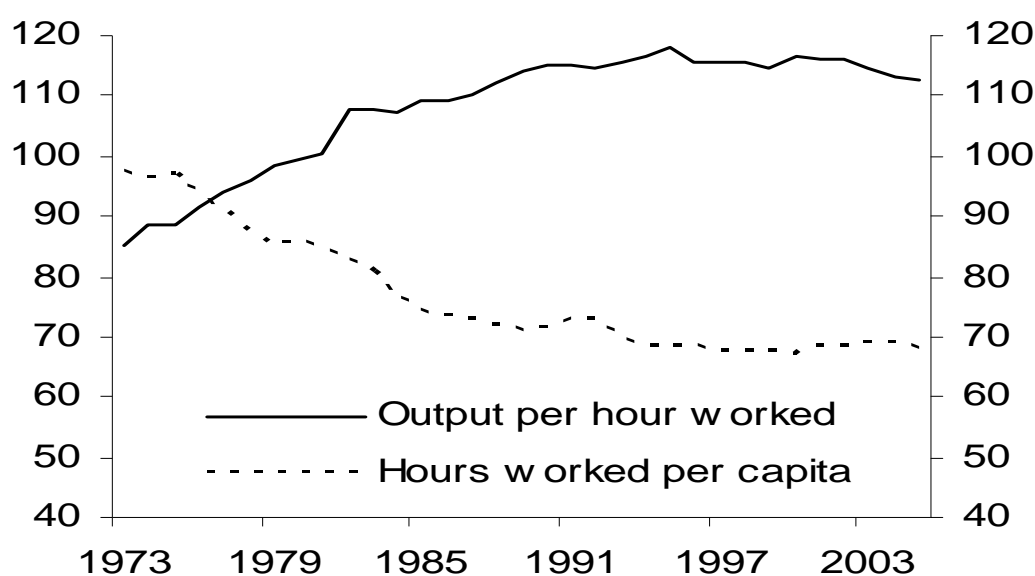
2 The Treasury, *Submission no. 10*, p. 3.

3 Mr R Griew, Department of Education, Employment and Workplace Relations, *Transcript*, 30 October 2009, p. 14.

4 The Treasury, *Intergenerational Report 2010*, p. xii and PC, *Economic Implications of an Ageing Australia*, March 2005, p. xviii.

some policies that increase productivity will lower either workforce participation or population growth. PC researchers found that France's productivity improvement, was accompanied by a significant reduction in labour utilisation, as shown in Figure 8.1.

Figure 8.1 Labour productivity and utilisation in France



Source Dolman, B, Parham, D, and Zheng, S, *Can Australia Match US Productivity Performance? Productivity Commission Staff Working Paper, March 2007, p. 9.*

8.10 Within Australia The Treasury highlighted the potential conflict between improving productivity and workforce participation:

Some people who are not currently in the labour force, if you brought them into the labour force, may be less productive than the current average worker. So, if you took a strict measure, you could say they may reduce labour productivity through reducing the average. That might be a nice technical point but it would be a pretty silly conclusion. Given that there are a range of disincentives for participation, removing those and improving overall workforce participation outcomes clearly enhances wellbeing overall.⁵

8.11 Productivity objectives can also conflict with other government objectives, such as minimising the risk borne by individuals. It is possible that government policies aimed at increasing productivity could actually

5 Mr T McDonald, *The Treasury, Transcript*, 23 October 2009, pp. 69-70.

increase the risk borne by individuals. Dr Ken Henry, analysing the impact of structural reforms, noted that:

To put this (retrospectively) into our wellbeing framework, structural reforms have often involved increasing risk to some parts of the community in order to benefit Australian society in some aggregate sense.⁶

8.12 One specific policy example that impacts on productivity and the risk borne by individuals is occupational health and safety (OH&S) laws. To a certain extent, OH&S laws designed to protect the safety of workers can lower productivity, for example, the requirement to erect scaffolding around a roof on a construction site will increase the safety of construction workers, but will require more resources to complete the construction activity.

8.13 The PC, in its submission, identified reforms to State OH&S laws that prevent workers from bearing more risk as a potential policy area to improve productivity:

For example, innovation in occupational health and safety practices based on workers assuming responsibility for risks they are best placed to manage, is prevented by regulation in some jurisdictions.⁷

8.14 As the PC notes, this policy that could promote productivity is based on workers bearing the cost of extra risk. From a Government perspective it is important to evaluate whether the gains in productivity will outweigh the costs to workers from bearing greater risk.

8.15 Policies aimed at promoting productivity may also impact on the government's objectives in relation to the distribution of income and wealth. PC researchers outlined how the policies on working hours and minimum wages in some European countries had:

...excluded the low skilled from the work force.... These same policy and institutional factors also affected productivity outcomes. They shifted labour demand towards the relatively skilled... and shifted factor demands toward capital and away from labour.⁸

6 Dr K Henry, *Fiscal policy: more than just a national budget*, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 24.

7 PC, *Submission no. 20*, p. 44.

8 Dolman, B, Parham, D, and Zheng, S, *Can Australia Match US Productivity Performance?* PC Staff Working Paper, March 2007, p. 10.

- 8.16 This highlights the fact that policies to promote productivity may reduce the incomes of the disadvantaged in society with a negative impact on the distribution of income and wealth.

Committee conclusion

- 8.17 The committee has found that productivity measures alone are not a good measure for evaluating public policy because productivity is not the sole determinant of community wellbeing and that policies aimed at improving productivity can have positive or negative impacts on the non-productivity determinants of community wellbeing.
- 8.18 The committee also notes that economic growth is not only stimulated by productivity growth; it may increase when productivity growth declines if income growth is strong, yet the growth is at a slower rate than the growth in inputs. The aim of public policy is to improve living standards, and productivity growth is one way of achieving this.

The need for a policy evaluation framework

- 8.19 One possible response to evaluating policies aimed at improving productivity is to consider these policies in a cost benefit analysis framework. The evaluation criteria used within cost benefit analysis is the net social benefit to the community, thus providing a policy criterion consistent with improving community wellbeing. The Department of Finance and Deregulation Cost Benefit Analysis handbook states that:

Cost-benefit analysis is a procedure for comparing alternative courses of action by reference to the net social benefits that they produce for the community as a whole.⁹

- 8.20 The cost benefit approach has been adopted by Infrastructure Australia for assessing all infrastructure proposals¹⁰, which is particularly relevant because infrastructure projects have the potential to impact on productivity, as well as having other impacts. The Australian Government also mandates cost benefit analysis for regulatory proposals.¹¹

9 Australian Government, *Handbook of Cost Benefit Analysis*, January 2006, p. 2.

10 The Treasury, *Submission no. 10*, p. 11.

11 Australian Government, *Best Practice Regulation Handbook*, August 2007, p. 5.

8.21 The Australian Chamber of Commerce and Industry (ACCI) supported the use of cost benefit analysis:

Thus it is important that infrastructure investment decisions are made after thorough cost benefit analyses to examine the economic, environmental and social consequences, with the information available in public domain.¹²

8.22 ACCI also highlighted the importance of cost benefit analysis for assessing regulatory proposals¹³ and the Master Builders of Australia also supported the use of cost benefit analysis.¹⁴

Committee conclusion

8.23 The potential for policies aimed at improving productivity to have a positive or negative impact on other government objectives highlights the need for a policy evaluation framework that will consider all of the impacts of a policy aimed at improving productivity.

8.24 In addition, the criteria to evaluate policies must be based on community wellbeing, and using productivity as the sole policy evaluation criteria is limited because it is only one determinant of community wellbeing.

8.25 One option for the Government is to mandate cost benefit analysis for all policies aimed at improving productivity. This would be consistent with the Government's approach to assessing infrastructure and regulatory proposals.

8.26 The committee believes extending the use of cost benefit analysis to public policy aimed at productivity improvements would ensure the optimum mix of productivity and wellbeing enhancing measures are employed.

Recommendation 6

8.27 **The Australian Government mandates cost benefit analysis for all policies aimed at improving aggregate productivity growth.**

12 The Australian Chamber of Commerce and Industry (ACCI), *Submission no. 7*, p. 12.

13 ACCI, *Submission no. 7*, p. 30.

14 Master Builders Australia, *Submission no. 17*, p. 12.

Government Service Provision

8.28 The official productivity estimates do not cover all industries within the economy and it is important in considering Australia's future productivity challenge that attention be given to those industries for which productivity is not officially measured. As noted by the PC:

While estimates of output and hours worked are published for the whole economy, productivity is only well-measured in that part of the economy the ABS calls the 'market sector' - this is all the economy except health, education, defence, government administration, property and business services and personal and other services.¹⁵

8.29 Whilst many government services are not captured in the official productivity statistics, the quality and efficiency of these services can have a substantial impact on productivity. The impacts can be twofold;

- government services as an input into the production processes of businesses covered in the market sector; and
- the efficiency of government service provision itself as a form of productivity improvement.

8.30 Dr Ken Henry outlined the consequences of not measuring productivity for government services or measuring it only based on reference to inputs:

An immediate consequence of [using inputs to measure these services] is that productivity change for government-provided services is ignored, because outputs are taken to move at the same rhythm as inputs. It follows that if there is positive productivity growth in the public sector, our measures under-estimate growth.¹⁶

8.31 An indication of the size of government service provision is provided in the *Report on Government Services 2010*, which includes: education; policing; courts; corrective services; emergency, health and community services, and housing. These government services are valued at approximately \$132 billion or 13 per cent of GDP.¹⁷

15 PC, *Submission no. 20*, p. 2.

16 Dr K Henry, *Fiscal policy: more than just a national budget*, Address to the 2009 Whitlam Institute Symposium, 30 November 2009, p. 23.

17 Steering Committee for the Review of Government Service Provision, *Report on Government Services 2010*, January 2010, p. 16.

8.32 An alternative measure of the size and contribution of government services is provided by the employees employed in the public service. The Australian Bureau of Statistics (ABS) estimates that 1.8 million people were employed in the public sector as of June 2009, or approximately 17 per cent of the employed Australian workforce.¹⁸ At the average wage for these staff, this equates to a total employee cost of \$108 billion each year for public service provision.¹⁹

8.33 Based on the annual wages cost of government service provision, a two per cent improvement in labour productivity for government services could deliver a benefit of \$2.2 billion to the Australian community.²⁰

8.34 Government service provision can also play an important role in promoting productivity as an input into the production processes of other businesses. The PC argued:

There is an imperative for the range of human services to be delivered more efficiently as well as more effectively. Services in the areas of education, health, childcare and aged care are all important to Australia's future productivity and the wellbeing of the community generally. Businesses are also subject to the processes involved in Government service provision that can impact on their productivity.²¹

8.35 Governments also impose regulations on business that incur a compliance cost that reduces their productivity. The PC has reported evidence that the compliance cost of regulations could be as high as 1.5 per cent of GDP.²² The Government has identified regulation as a potential source of productivity improvement.²³

8.36 With government service provision consisting of such a large proportion of economic output and of employed workers, there is scope for productivity improvements in this sector to have a substantial impact. The Treasury stated:

18 Australian Bureau of Statistics (ABS), *Employment and Earnings, Public Sector, Australia*, Cat. no. 6248.0, 2008-09

19 ABS, *Employment and Earnings, Public Sector, Australia*, Cat. no. 6248.0, 2008-09.

20 \$2.2 billion is 2 per cent of \$108 billion.

21 PC, *Submission no. 20*, p. xvi.

22 Lattimore, R, Martin B, Madge, A, and Mills J, *Design Principles for Small Business Programs and Regulations*, PC Staff Research Paper, August 1998, p. 188.

23 Hon Lindsay Tanner MP, Minister for Finance and Deregulation, *Better Regulation: Driving Productivity and Growth*, Address to Australian Business Foundation, 15 February 2010.

Improving productivity in the public sector and improving public sector efficiency may or may not show up in measured productivity, but it would clearly be an area where relatively little work has been done. I think that will be an important area of work, one way or another, into the future.²⁴

Committee conclusion

- 8.37 The official market sector productivity estimates do not include government services, yet the quality and efficiency of government services can have a significant impact on aggregate productivity growth.
- 8.38 The public sector represents 17 per cent of the workforce and produces output the equivalent of 13 per cent of GDP. Therefore, in its own right the public sector is an important source of national productivity growth, although this impact will not be captured directly in the official productivity estimates.
- 8.39 Additionally, government services are an input into the production processes of businesses and the quality of these services can affect the productivity of these businesses, which will be captured in the official productivity estimates.

Recommendation 7

- 8.40 **Given the size and importance of government service provision in its own right and as an input into the production processes of other businesses it is important that any national productivity agenda includes public sector service provision.**

The exclusion of the voluntary sector

- 8.41 Productivity measurement is based on economic principles and as a result only covers industries that sell products or services in a marketplace.
- 8.42 The economic output measure used for productivity estimates exclude voluntary or community work in which there is no product or service sold in a marketplace and for which the provider of the service does not receive wages in return for their efforts. The Treasury stated:

24 Mr T McDonald, The Treasury, *Transcript*, 23 October 2009, p. 70.

A broad limitation with productivity measures flows from the use of GDP in their calculation...GDP only counts market transactions which excludes a wide range of activities.²⁵

8.43 The ABS estimates that approximately 5.2 million people did voluntary work during 2006.²⁶ In terms of the economic value of voluntary work, the ABS estimates that the value of voluntary work for 1999-00 was \$8.9 billion or 4.7 per cent of GDP.²⁷ This estimate is derived by valuing voluntary work assuming that it was undertaken in the formal economy in which workers were paid for their work.

8.44 In addition to the formal voluntary work undertaken within a not-for-profit organisation, there is informal voluntary work such as the unpaid caring work of an aged relative or a young child that is not included in the ABS measures of voluntary work. The ABS estimated in 2003 that there were 2.6 million carers and that 20 per cent of those were primary carers.²⁸ The ABS found that primary carers had a lower workforce participation rate of 39 per cent compared to 68 per cent for non carers.²⁹

8.45 In response to a question about unpaid work in the economy, particularly that done by women, Mr Brunner of the PC stated:

This is a very important issue and, as you are aware, there are some efforts being made to shed some light on it, for example, through the ABS's wellbeing measures that they conduct. Just looking at those sorts of publications, you can see why it does not get into the productivity numbers – it is so very difficult to measure...The way we aggregate things together is that we tend to use revealed valuations of these things to aggregate together to form GDP or the output for productivity. Those sorts of activities are very difficult to incorporate within productivity numbers.³⁰

8.46 However, Mr Brunner went on to argue that productivity estimates:

...try to serve a particular purpose, and the particular purpose is about efficiency within business organisations. They were never really designed to give us an understanding of how well the

25 The Treasury, *Submission no. 10*, p. 4.

26 ABS, *Australian Social Trends*, 2008, Cat. no. 4102.0.

27 ABS, *Australian Social Trends*, 2008, Cat. no. 4102.0.

28 ABS, *Disability, Ageing and Carers*, 2003, Cat. no. 4430.0.

29 ABS, *Disability, Ageing and Carers*, 2003, Cat. no. 4430.0.

30 Mr G Brunner, PC, *Transcript*, 23 October 2009, p. 16.

community in aggregate is going, although they are clearly a very important ingredient to that.³¹

- 8.47 Bearing this in mind, any growth of the voluntary sector could have an impact on the size of the formal economy and measured economic output. If individuals shift out of the formal economy (that is, work that contributes to measured economic output) to the voluntary sector in which their output is not measured then the impact will be a fall in workforce participation and measured economic output.
- 8.48 The impact on productivity of such a shift in labour resources over a short time horizon is not necessarily negative, as both economic output and inputs have fallen. Indeed if the workers who shift are average contributors to productivity then their shift from the measured economy to the voluntary sector will have an inconsequential impact on aggregate productivity growth.
- 8.49 Although there may be no direct impact on productivity of such a transfer to the voluntary sector, if a reduction in economic output reduces government revenue, then this could reduce the government's ability to invest in productivity enhancing reforms, which are outlined in Chapter 7.
- 8.50 It is also possible for the voluntary sector to provide a positive impact on productivity, through contributions to the formal business sector. As an example, Professor Quiggin argued that:
- ...it is important to look beyond the enterprise sector and consider the role of non-profit enterprises and 'amateurs' in areas such as open-sources software, new media and Web 2.0 technologies, which are an important source of new innovation.³²

Committee conclusion

- 8.51 Voluntary work makes a valuable contribution to community wellbeing and if given a nominal economic value would represent a significant proportion of economic output.
- 8.52 To a certain extent any change in the amount of voluntary work can have an impact on economic activity. However, the significant impacts will be on workforce participation and economic output but the impact on measured productivity is unlikely to be significant.

31 Mr G Brunner, PC, *Transcript*, 23 October 2009, p. 16.

32 Professor J Quiggin, *Submission no. 24*, p. 3.

Mr Craig Thomson MP

Chair

27 April 2010



Appendix A – Submissions

- 1 Centre for Ideas and the Economy, Melbourne Business School, University of Melbourne
- 2 Mr Col McIntyre
- 3 Dr Boon Lee
- 4 Australian Mobile Telecommunications Association
- 5 Professor Russel Cooper & Professor Jeffrey Sheen
- 6 Centre for Law and Economics, College of Law, Australian National University
- 7 Australian Chamber of Commerce and Industry
- 8 Future Manufacturing Industry Innovation Council
- 9 Dr Judith McNeill
- 10 The Treasury
- 11 Centre for Efficiency and Productivity Analysis, School of Economics, University of Queensland
- 12 New South Wales Treasurer
- 13 Australasian Institute of Mining and Metallurgy
- 14 The Manufacturing Alliance (comprising the Australian Manufacturing Workers' Union and the Australian Workers' Union)
- 15 Dr Philip Laird
- 15.1 Dr Philip Laird (Supplementary to Submission No. 15)
- 15.2 Dr Philip Laird (Supplementary to Submission No. 15)

- 16 Australian Bureau of Statistics
- 16.1 Australian Bureau of Statistics (Supplementary to Submission No. 16)
- 17 Master Builders Australia
- 18 Australian Food and Grocery Council
- 19 Department of Education, Employment and Workplace Relations
- 19.1 Department of Education, Employment and Workplace Relations (Supplementary to Submission No. 19)
- 20 Productivity Commission
- 21 Mr Michael Rice
- 22 Government of South Australia
- 23 Australian Bureau of Agricultural and Resource Economics
- 24 Government of Tasmania
- 25 Innovation Australia
- 26 Department of Innovation, Industry, Science and Research
- 27 Mr Simon Mottram
- 28 Professor John Quiggin
- 29 Department of Infrastructure, Transport, Regional Development and Local Government
- 29.1 Department of Infrastructure, Transport, Regional Development and Local Government (Supplementary to Submission No. 29)
- 30 Australian Rail, Tram and Bus Industry Union
- 30.1 Australian Rail, Tram and Bus Industry Union (Supplementary to Submission No. 30)
- 31 The Australian Society for Medical Research
- 32 Department of the Prime Minister and Cabinet
- 33 Australian Services Roundtable



Appendix B – Public hearings

Friday, 23 October 2009 - Canberra

Australian Bureau of Agricultural and Resource Economics

Mr Peter Gooday, General Manager, Productivity, Water and Fisheries

Dr Terry Sheales, Deputy Executive Director

Australian Bureau of Statistics

Mr Michael Davies, Acting First Assistant Statistician

Mr Jason Russo, Branch Head, Economic Analysis and Reporting

Australian Chamber of Commerce and Industry

Mr Greg Evans, Director, Economics and Industry Policy

Dr Siwei Goo, Policy Adviser, Economics and Industry Policy

Department of Innovation, Industry, Science and Research

Dr Anne Byrne, General Manager, Research Funding and Policy Branch

Mr Terrance Lowndes, Principal Adviser

Mr Richard Snabel, General Manager, Industry Policy and Economic Analysis Branch

Ms Donna Valenti, Manager, Commonwealth Commercialisation Institute Team

Mrs Judith Zielke, Head of Division, Enterprise Connect

Productivity Commission

Mr Gary Banks, Chairman

Dr Donald Bruncker, Assistant Commissioner

Mr Terrence O'Brien, First Assistant Commissioner

The Treasury

Mr Tony McDonald, General Manager, Macroeconomic Policy Division

Ms Joann Wilkie, Acting Manager, Macro Dynamics Unit

Friday, 30 October 2009 - Canberra

Centre for Law and Economics, Australian National University

Dr George Barker, Director, Centre for Law and Economics

Australian Food and Grocery Council

Dr Geoffrey Annison, Deputy Chief Executive

Department of Education, Employment and Workplace Relations

Dr Nicholas Carroll, Acting Branch Manager, Strategic Policy Group

Ms Sue Dawson, Group Manager, Strategic Policy Group

Mr Robert Griew, Associate Secretary

Ms Margaret Kidd, Group Manager, Jobs Strategies Group

Ms Sandra Parker, Group Manager, Workplace Relations Policy Group

Mr Craig Robertson, Group Manager, Strategic Initiatives Group

Master Builders Australia

Mr Wilhelm Harnisch, Chief Executive Officer

Mr Peter Jones, Chief Economist

Thursday, 19 November 2009 - Canberra

Individuals

Professor John Quiggin, private capacity

Dr Boon Lee, private capacity

Friday, 20 November 2009 - Melbourne**Individuals**

Mr Michael Rice, private capacity

Australasian Institute of Mining and Metallurgy

Mr Michael Catchpole, Chief Executive Officer

Ms Monika Sarder, Manager, Policy and Professional Standards

Australian Mobile Telecommunications Association

Mr Chris Althaus, Chief Executive Officer

Thursday, 26 November 2009 - Canberra**Department of Infrastructure, Transport, Regional Development and Local Government**

Mr Gary Dolman, Acting Executive Director, Bureau of Infrastructure, Transport and Regional Economics

Mr Richard Farmer, General Manager

Ms Lyn O'Connell, Deputy Secretary

Friday, 4 December 2009 - Sydney**Individuals**

Professor Russel Cooper, private capacity

Dr Philip Laird, private capacity

Australian Manufacturing Workers' Union

Mr William Nixon Apple, Industry and Economic Advisor

Australian Rail, Tram and Bus Industry Union

Mr Andrew Thomas, National Industrial Officer

Australian Workers' Union

Mr Brad Crofts, National Economist

Thursday, 4 February 2010 - Canberra

Department of the Prime Minister and Cabinet

Dr Gordon de Brouwer, Deputy Secretary, Economic

Dr Rhondda Dickson, First Assistant Secretary, Industry, Infrastructure
and Environment Division

Mr Ron Perry, Assistant Secretary, COAG Unit

Individual

Professor Christopher O'Donnell, private capacity

Thursday, 25 February 2010 - Canberra

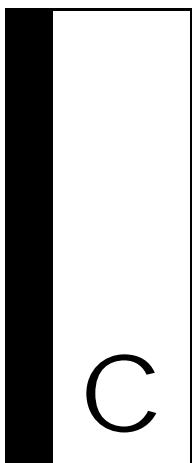
Department of Broadband, Communications and the Digital Economy

Mr Richard Windeyer, First Assistant Secretary, Digital Economy Strategy

Thursday, 11 March 2010 - Canberra

University of Technology Sydney

Professor Roy Green, Dean, Faculty of Business



Appendix C – Exhibits

- 1 Australian Rail, Tram and Bus Industry Union
Submission to the review by the national transport commission into productivity in the rail industry October 2008

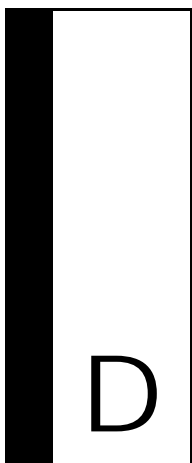
- 2 Australian Rail, Tram and Bus Industry Union
Submission - Response to the paper by the National Transport Commission - Freight Rail Productivity Review: Draft position paper April 2009

- 3 Australian Food and Grocery Council
Australian Food and Grocery Council, State of the Industry 2009 - Essential Information: Facts and Figures

- 4 Australian Food and Grocery Council
Australian Food and Grocery Council, A Growing and Sustainable Industry – The Case for a National Food and Grocery Agenda

- 5 Master Builders Australia
Infrastructure charges: Where bad taxes beget more taxes – Submission to the Treasury on Australia’s Future Tax System, October 2008

- 6 Australian Mobile Telecommunications Association
Australian Mobile Telecommunications Industry: Economic significance and contribution – Report by Access Economics Pty Limited for Australian Mobile Telecommunications Association, June 2008
- 7 Bureau of Transport and Regional Economics
Estimating urban traffic and congestion cost trends for Australian cities - Working Paper 71, , April 2007
- 8 Department of Infrastructure, Transport, Regional Development and Local Government
National Infrastructure Priorities - Infrastructure for an economically, socially and environmentally sustainable future, May 2009
- 9 Department of Infrastructure, Transport, Regional Development and Local Government
BAF Evaluation Criteria, 2008
- 10 The Manufacturing Alliance
AMWU: a country that makes things – Building a Stronger, More Prosperous Manufacturing Industry in Australia, October 2009
- 11 The Manufacturing Alliance
Management Matters in Australia, Just how productive are we? Findings from the Australian Management Practices and Productivity Global Benchmarking Project.
Report commissioned by the Department of Innovation, Industry, Science and Research, November 2009
- 12 Professor Russel Cooper
ARC Research priority goals for Discovery Projects funding commencing in the indicated year, December 2010



Appendix D — Glossary of terms

business investment. Private gross fixed capital formation for machinery and equipment; non-dwelling construction; livestock; and intangible fixed assets.

capital deepening. Changes in the amount of capital available per worker per hour worked.

employed persons. Persons aged 15 and over who, during a period of one week, worked for one hour or more for pay or worked for one hour or more without pay in a family business or on a family farm.

gross domestic product. The total market value of goods and services produced after deducting the cost of goods and services used up in the process of production but before deducting for depreciation.

gross domestic product—chain volume measure. Also known as *real gross domestic product*, this is a measure used to indicate change in the actual quantity of goods and services produced. Economic growth is defined as a situation in which real gross domestic product is rising.

gross domestic product at factor cost. Gross domestic product less the excess of indirect taxes over subsidies.

human capital. The knowledge, skills, competencies and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.

inflation. A measure of the change (increase) in the general level of prices.

inflation target. A tool to guide monetary policy expressed as a preferred range or figure for the rate of increase in prices over a period. In Australia, the inflation target is between 2 and 3 per cent per annum on average over the course of the business cycle.

information and communications technology. Tools which enable users to find, explore, exchange, analyse and present information.

innovation. The introduction of new or improved goods and services and the implementation of better processes.

labour force participation rate. The number of persons in the labour force expressed as a percentage of the civilian population aged 15 years and over.

labour productivity. Gross domestic product (chain volume measure) per hour worked in the market sector.

macroeconomy. The economy looked at as a whole or in terms of major components measured by aggregates such as gross domestic product, the balance of payments and related

links, in the context of the national economy. This contrasts with microeconomics which focuses upon specific firms or industries.

market sector. Industries which are included in the market sector are those which have satisfactory estimates of the growth in the volume of output. Three industries are excluded from the market sector because their outputs are not marketed. These industries are: public administration and safety; education and training; and health care and social assistance. In addition the special category of ownership of dwellings is excluded.

monetary policy. The setting of an appropriate level of the cash rate target by the Reserve Bank of Australia to maintain the rate of inflation in Australia between 2 and 3 per cent per annum on average over the business cycle.

multifactor productivity. The volume of output from a bundle of both labour and capital inputs. In simple terms, it involves the construction of three separate indexes for labour, capital and output. The contributions of labour and capital are weighted according to their respective input contributions, usually measured in value of payments to the factors of production.

natural increase. Excess of live births over deaths.

net overseas migration. Net permanent and long-term overseas migration plus an adjustment for the net effect of 'category jumping'.

production possibility frontier. Represents the maximum amount of output that can be produced with given inputs.

productivity. The measure of production efficiency. At a national level it captures the economy's ability to harness its physical and human resources to generate output and income.

productivity cycle. Snapshots of productivity growth between specific periods of time are referred to as productivity cycles. These are average growth rates between growth-cycle peaks, which are determined as peak deviations of the market sector multifactor productivity index from its long-term trend.

productivity growth. An increase in the value of outputs produced for a given level of inputs, over a given period of time.

research and development. Activity which increases the stock of knowledge in the economy.

seasonally adjusted estimates. Estimates in which the element of variability due to seasonal influences has been removed. Seasonal influences are those which recur regularly once or more a year.

terms of trade. The relationship between the prices of exports and the prices of imports. The usual method of calculating the terms of trade is to divide the implicit price deflator for exports by the implicit price deflator for imports.

total factor productivity. A true measure of productivity which encompasses all the factors of the productivity equation.

unemployment rate. The number of unemployed persons expressed as a percentage of the labour force.

voluntary sector. Work in which there is no product or service sold in a marketplace and for which the provider of the service does not receive wages in return for their efforts.