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Australia's Productivity Challenge

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Overview

'Productivity' is what a workplace, a business or government agency, an industry, a region or a nation 'gets' by way of goods and services for what it 'puts in', in terms of labour, capital and other factors of production.

Economists (and others) have long recognized that productivity *growth* (that is, increases in the *level* of productivity over time) is the only *sustainable* source of improvements in a community's, or a nation's, material well-being, and that of its citizens in the long run – and that improvements in material well-being can help make possible and sustainable improvements in the non-material aspects of individual, community and national well-being.

In Australia's case, productivity growth can help us to deal with the challenges of demographic change, to reconcile potential conflicts between environmental constraints on economic growth and widely-held aspirations for further improvements in living standards, and to assist in coping with some of the side-effects of the current 'resources boom'.

Despite the apparent simplicity of the concept, measuring productivity is in practice a complex business.

Australia's rate of productivity growth accelerated dramatically during the 1990s, playing a vital role in lifting Australia's macro-economic performance, and Australian standards of living, during that decade and since.

There has been a no less dramatic deterioration in Australia's productivity performance over the past decade, with the broadest measure of productivity growth actually having turned negative over the past five years.

However, the consequences of this reversal for Australia's economic performance, and for Australians' material living standards, have been obscured by the substantial income gains generated by the rise in our 'terms of trade' over the same period, and by our success in weathering global shocks.

Contrary to the view widely held in 'official' circles, the slowdown in Australia's productivity growth rate cannot be largely attributable to sharp declines in the level of productivity in the mining and utilities sectors.

It is instead more likely due to the fading of the effects of previous reforms, and the comparative lack of any new productivity-enhancing reforms since the turn of the century; the increase in productivity-stifling regulation and legislation over the same period; the impact of Australia's ongoing economic success on the appetite for productivity-enhancing change among governments, businesses and voters; the effect of 'capacity constraints' as the Australian economy has approached 'full employment'; and some apparent slippage (relative to other countries) in Australia's take-up of productivity-enhancing technologies.

Australia's economic prospects beyond the end of the current 'resources boom' will deteriorate significantly (as they did in the 1970s and 1980s) if the decline in our productivity growth performance is not reversed.

Reversing the decline in Australia's productivity performance calls for a re-invigorated economic reform effort, improvements to education and training, improved governance of infrastructure investment, and a heightened innovation effort.

1. Why productivity matters and when it doesn't

1.1 Why does productivity matter?

'Productivity' is, at its simplest, a measure of how effectively or efficiently a workplace, a business or government agency, a region or a nation as a whole uses the resources at its disposal to produce goods and services which are in turn valued, in some way, by those who consume or use them. Measuring productivity in individual workplaces can be quite simple, or complex, depending on the nature of the work and how easy it is to enumerate or value whatever is created. Measuring productivity across multiple workplaces, which is required in order to derive measures of productivity for a region or a nation, is inherently a complex task, and one to which this report devotes a fair amount of attention.

But why should those with an interest in public policy – policy-makers, advisers, commentators and citizens – be concerned about productivity? Because, as Nobel Prize-winning economist and (more recently) newspaper columnist Paul Krugman famously put it some 18 years ago, productivity 'isn't everything, but in the long run it's nearly everything' (Krugman 1992, p. 9). More recently the Governor of Australia's central bank, Glenn Stevens, declared that productivity was 'the only real basis for optimism about future income' (Stevens 2009).

Economists take this view of productivity not out of a desire to maximize corporate profits but rather because, in the words of Michael E Porter (1991), 'Productivity is the prime determinant in the long run of a nation's standard of living, for it is the root cause of per capita national income. High productivity not only supports

high levels of income but allows citizens the option of choosing more leisure instead of longer working hours. It also creates the national income that is taxed to pay for public services which again boosts the standard of living. The capacity to be highly productive also allows a nation's firms to meet stringent social standards which improve the standard of living, such as in health and safety, equal opportunity and environmental impact'. Or, as Blinder and Baumol put it in their standard textbook (1993, p. 778), 'nothing contributes more [than productivity growth] to reduction of poverty, to increases in leisure, and to the country's ability to finance education, public health, environment and the arts'.

In other words, high *levels* of productivity and/or high *rates* of rapid productivity growth are desirable because they enable societies to achieve not only higher *material* standards of living but also to make other (individual and collective) choices which enhance some of the *non-material* factors affecting the quality of people's lives.

1.2 Higher productivity growth can assist in dealing with three of the major challenges confronting Australia

Going beyond this perspective, which has long been held by the majority of economists, we believe that a renewed focus on achieving high rates of productivity growth will help Australia deal with three of the more important economic and social challenges which it will face over the next few decades:

- First, the challenge of *demographic change*: the inevitability that, as Australia's population ages, the contribution of two of the three Ps (population growth and participation in employment) to Australia's rate of economic growth will inevitably decline. According to projections presented in the Australian Treasury's most recent *Intergenerational Report* (Treasury, 2010), demographic change will subtract around $\frac{3}{4}$ pc point from the average annual growth rate of real gross domestic product or GDP (a broad measure of the total volume of goods and services produced by the Australian economy) over the next four decades compared with the average for the past four decades, and around $\frac{1}{2}$ pc point from the average annual rate of real GDP per capita (a broad measure of average material living standards) over the next four decades compared with the past four decades. Raising productivity growth offers the best means of minimizing the adverse impact of demographic change on Australia's economic performance and on the rate at which average material living standards improve.
- Second, improved productivity growth offers the most plausible means of reconciling any potential conflict between *environmental or ecological constraints on economic growth* (including those associated with mitigating or adapting to climate change), and the desire felt by the overwhelming majority of humans, throughout human history, for improvements in their own living standards and those of their descendants. It isn't our purpose in this report to canvass how close Australia, or the world as a whole, is to those limits. However, we do assert that, to the extent that Australia's, or the world's, growth prospects are constrained by limited supplies of finite natural resources (such as crude oil), or by the need to reduce CO₂ emissions, higher productivity (which by definition means producing more goods and services from a smaller quantity of inputs) offers a means of reducing the adverse impacts on economic growth and material living standards that might otherwise result, especially for a natural resource- and carbon-intensive economy such as Australia's.
- Third, higher productivity growth offers the best means of ensuring the survival of businesses and jobs in sectors of the economy likely to be adversely affected over the next decade by some of the *side-effects of the present 'resources boom'*. Although the resources boom will generate substantial income and wealth for Australia, and Australian citizens, it is also likely to result in a higher exchange rate for the Australian dollar, which will undermine the competitiveness of trade-exposed sectors of the Australian economy, such as manufacturing, tourism, higher education and parts of the agricultural sector. And although the retail sector is usually regarded as a beneficiary of a stronger Australian dollar (by virtue of being able to source imported goods at lower prices), many retailers are also facing heightened competition from online retailers located in other countries. There is not a great deal that public policy can or should do directly to shelter these sectors from the pressures arising from the stronger Australian dollar: on the contrary, the stronger dollar is part of the means by which the adjustments required to accommodate the expansion of the resources sector can be achieved in a non-inflationary way. The best way that these sectors can cope with these pressures is by achieving higher productivity, so that they can remain viable whilst 'making do' with fewer factor inputs.

1.3 However productivity 'isn't everything'

Although we strongly believe that higher productivity, and faster productivity growth, provide the most sustainable means of delivering ongoing improvements in standards of living and the quality of life, and represent at least part of the solution to some of the more important medium- to longer-term challenges confronting Australia today, it is not our intention to suggest that the goal of attaining faster productivity growth should override all other economic and social objectives.

In other words, while we agree with Krugman that in the long run productivity is 'nearly everything', we also agree with him that it 'isn't everything'.

This is partly because, at the aggregate level, productivity is defined as real gross domestic product (GDP) per unit of inputs of factors of production (labour and capital); and we know that GDP is an inadequate and incomplete measure of 'well-being' in its broadest sense. As Robert Kennedy famously said in 1968,

"the Gross National Product [as it was then called] includes air pollution, and ambulances to clear our highways from carnage. It counts special locks for our doors and jails for the people who break them. It grows with the production of napalm and missiles and nuclear warheads.... And if the Gross National Product includes all this, there is much that it does not comprehend. It does not allow for the health of our families, the quality of their education, or the joy of their play. It is indifferent to the decency of our factories and the safety of our streets alike. It does not include the beauty of our poetry, or the strength of our marriages, the

intelligence of our public debate or the integrity of our public officials... the Gross National Product measures neither our wit nor our courage, neither our wisdom nor our learning, neither our compassion nor our devotion to our country. It measures everything, in short, except that which makes life worthwhile" (Kennedy 1968).

Much the same point (and others) were made more recently by the Commission on the Measurement of Economic Performance and Social Progress established by French President Nicholas Sarkozy (Stiglitz, Sen and Fitoussi 2009).

Although economists are often accused of ignoring or down-playing these concerns, in truth they have been aware of them from the time measures such as GDP first began to be used in analysing economic performance. Simon Kuznets and Colin Clark (and Australian), the pioneers of national accounting, themselves cautioned against the use of measures of aggregate economic activity as 'catch-all' indicators of well-being.

Given the weaknesses in the numerator of most measures of economy-wide productivity, we are not suggesting that the goal of lifting the rate of productivity growth as conventionally measured should always take precedence over other public policy objectives.

Indeed we acknowledge that there may well be occasions when the pursuit of other objectives *should* take precedence over that of faster productivity growth.

As an example, policy initiatives aimed at enhancing the participation in the labour market of people who have low skill

levels and who have historically encountered significant barriers to finding employment will typically have the effect of lowering measured labour productivity¹, at least initially. However, it would seem quite wrong to argue against such initiatives on those grounds.

Similarly, it would in theory be possible to boost aggregate productivity by encouraging the movement of labour and capital from industries in which productivity is typically low (such as retailing or hospitality) to industries in which productivity is typically high (such as mining, or finance and insurance). However, that only makes sense if there is sufficient demand to absorb the increased output from those sectors. Households and businesses want the output of low-productivity industries as well as high-productivity ones, and there is thus a trade-off between productivity and 'allocative efficiency' (producing the goods and services which people want to buy, directly or indirectly through public provision).

Thirdly, there will be other occasions where governments regard particular objectives as important to pursue notwithstanding the adverse impact which pursuit of them will have on productivity. Obvious examples include measures aimed at enhancing 'national security' or standards of corporate governance.

¹ This is how many European countries are able to report apparently high levels of labour productivity compared with (for example) the US whilst also having significantly lower levels of per capita income: people with limited skills are often excluded from employment by a combination of relatively high minimum wages and generous unemployment benefits, boosting measured labour productivity (since relatively fewer unskilled workers are included in the denominator) whilst simultaneously lowering income per head (by lowering labour force participation).

Nonetheless, acknowledging that there are weaknesses in the measurement of productivity, or that there will inevitably be occasions when other priorities will take precedence over the objective of lifting the rate of productivity growth, does not detract from the fact that achieving a higher rate of productivity growth does represent the most sustainable path towards attaining rising living standards and an improving quality of life for Australian citizens, and can also contribute to meeting three of the more important medium- to longer-term challenges facing Australia in the first half of the 21st century.

1.4 What productivity is *not*

At the risk of stating the obvious to informed readers, it is perhaps worth emphasizing a few things that are often *incorrectly* associated with productivity growth.

In particular, productivity growth is *not* achieved by *working longer hours*. It is possible, as Quiggin (2001) has suggested, that some of the improvement in Australia's recorded productivity growth rate was attributable to unmeasured increases in hours worked. To the extent that this was the result of the spread of devices enabling people to continue working when they might otherwise be idle (e.g., in taxis or airports), then this still represents a genuine increase in productivity. However, to the extent that it was the result of people actually being 'at work', or 'on the job' whilst not in their places of work, then this represents an increase in hours worked (or in labour supply), not in labour productivity. (Labour) productivity growth is attained by working *smarter*, not by working *harder* or *longer*.

2. Measuring productivity: a tricky business

2.1 Some conceptual issues

'Productivity', as defined at the beginning of the previous section, sounds a simple enough concept: 'what you get out for what you put in'. And in many individual workplaces or businesses, measuring productivity is a fairly simple task. Farmers, for example, will be interested in tons of grain per hectare sown, or litres of milk per cow; miners in grams or kilograms of metal recovered per ton of ore extracted; hospital managers in 'weighted inlier equivalent separations' (a fancy term for medical or surgical procedures completed after adjusting for their complexity and excluding extremes at either end) per occupied bed day; call centre managers in calls answered per operator per hour; and so on.

Measures such as these are usually quite specific to the type of activity or business being analysed, and typically focus on only one particular input: they cannot be used across very different activities or businesses.

To measure productivity across industries, or for an entire regional or national economy, therefore, statisticians and economists use measures of aggregate output denominated in monetary units (typically, 'chain volume' measures denominated in Australian dollars of a base year which shifts annually, to abstract from the impact of price changes on dollar-based measures of output); and divide these by estimates of the volume of 'factor inputs' (such as labour and capital) in order to obtain estimates of output per unit of input(s) or productivity.

Strictly speaking, estimates of *total factor productivity* or *TFP* would include, in their denominator, not only labour and capital but also other factors of production such as land and energy. To date, such comprehensive measures of factor inputs have proved elusive, and measurement of productivity has typically been confined to output per unit of just two factors of production, namely labour and capital².

Labour input is relatively simple to measure. Desirably, it should be measured as total hours worked ('hours'), rather than persons employed ('heads') because of differences in the number of hours worked by different individuals. Data on aggregate hours worked is now published by the Australian Bureau of Statistics on a monthly basis for the Australian workforce as a whole; and on average hours worked for the middle month of each quarter for the States and Territories and for the 19 industry sectors into which the ABS divides the Australian economy.

With some interpolation and extrapolation, these can be used to derive estimates of aggregate hours worked which can then be divided into published estimates of quarterly or annual gross domestic or State product, or gross value added (for individual industry sectors), in order to derive estimates of *labour productivity*³.

² An example of attempts to include energy and materials as factors of production in productivity calculations can be found at Timmer et al (2008).

³ For a more detailed description of how this is done, see ABS (2000), pp. 365-367.

The ABS also publishes measures of 'quality-adjusted' labour inputs which take account of changes in educational attainment and length of experience in the workforce, which can then be used to derive 'quality-adjusted' labour productivity⁴. Needless to say, these 'quality-adjusted' measures are, at best, approximations.

The measurement of capital inputs is rather more complex. The ABS derives estimates of 'capital services' based on estimates of the *productive value* of the capital stock (of plant and equipment, non-residential buildings, livestock, computer software, artistic originals and capitalized exploration expenditure), which take account of the fact that the efficiency of an asset in production typically declines with its age⁵. These estimates can then be divided into estimates of output to derive estimates of capital productivity. Note, however, that whereas labour input is included in measures of labour productivity only to the extent that labour is actually used (i.e., hours worked), the measure of capital services used in calculating capital productivity reflects the capital stock which is available to be used, whether it is actually used or not.

Labour and capital productivity are *partial* productivity measures. Separately, they do not take account of the contribution of other factors of production. For example, labour productivity will typically increase as a result of the application of more, or newer, capital (and indeed this was the source of much of the observed increase in productivity in command economies such as that of the former Soviet Union, or in many Asian economies during the early stages of their industrialization).

⁴ For a more detailed explanation see ABS (2001), pp. 13-15.

⁵ For more detail see ABS (2000), pp. 138-9 and ABS (2007), pp 6-7.

For this reason, a purer measure of productivity is provided by *multi-factor productivity* or MFP, which is obtained by dividing a measure of value added by a combined measure of labour and capital inputs⁶. Conceptually, multi-factor productivity growth reflects *all* of the sources of increases in output or value added other than increases in the input of labour and capital. In practice, MFP growth reflects 'technological change, as well as a range of non-technological factors such as industry and firm-level adjustment, economies of scale and cyclical effects' (Australian Treasury 2009).

2.2 Some practical problems in measuring productivity

As will be apparent from the above discussion, measures of labour, capital and multi-factor productivity are subject to all the conceptual weaknesses and flaws in the measurement of output (gross product for the entire Australian economy, or of the economies of individual States and Territories, or gross value added for industry sectors) and in the measurement of labour and capital inputs. Being derived as a residual, they are also in practice subject to any errors in the measurement of output or inputs.

An additional, but particularly important problem, is that measures of productivity are not available for what the ABS terms the 'non-market' sectors of the Australian economy, that is, public administration and defence, education and training, and health care and social assistance sectors, which together account for just under 15% of GDP and over 20% of total employment.

⁶ Again, for a more detailed explanation see ABS (2000), pp. 362 and 368-375; and ABS (2007), pp. 3-4.

For these sectors, data on labour and capital inputs are used as measures of output, which in effect imposes an assumption of zero productivity growth in these sectors. Yet, clearly, from a public policy perspective, the efficiency with which labour and capital are used in these sectors is of critical importance.

The ABS does publish estimates of labour productivity for the economy as a whole (as an index of gross value added per hour worked). But estimates of multi-factor productivity and labour productivity by sector are only available for the 16 sectors which together currently comprise what the ABS defines as the 'market sector' of the Australian economy.

It is also important to note that measures of productivity show significant variation from any one period in time to the next in response to economic shocks, and as a result of the well-established tendency for changes in employment to lag changes in output (since employers tend to wait for confirmation of apparent changes in sales revenue before increasing or reducing the size of their workforces). It is thus preferable to draw inferences about trends in productivity growth over a number of years, rather than from quarterly or year-to-year changes. The ABS recommends that productivity trends be measured between 'MFP growth cycle peaks', typically around five-year intervals⁷.

A further problem which is of particular relevance to the analysis which we undertake in this report is that ABS productivity measures are published as *indices* (with the value in the year serving as the base year for the latest chain-volume estimates set to 100.0).

This is consistent with international practice, and reflects the fact that, traditionally, the primary use of productivity estimates has been to measure productivity *growth* (which when using chain-volume data is most appropriately undertaken using indexes). It also results from the fact that estimates of capital services inputs used to calculate measures of capital and multi-factor productivity can only be derived as indices.

However, the presentation of productivity measures in index number form precludes direct answers to some of the questions which we seek to answer in this and subsequent reports, such as to what extent can changes in Australia's overall productivity growth be attributed to developments in productivity in specific sectors of the economy, or to what extent do differences in Australia's overall level of productivity compared with that of other countries be attributed to differences in the productivity of specific sectors.

Hence, in section 4 of this report we derive dollar-denominated estimates of labour productivity for Australia as a whole, and by sector, by dividing estimates of hours worked into published estimates of GDP or gross value added by industry. Although these are at best rough approximations, movements in them turn out to be sufficiently close to movements in the ABS' index number estimates to give us confidence in the results which we derive from them.

⁷ See, eg, ABS (2010), p. 42, or ABS (2007), p. 9.

3. Trends in Australia's productivity performance over the past two decades

3.1 A 'three Ps' dissection of Australia's growth trends

The analytical framework popularized by outgoing Treasury Secretary Ken Henry (see, eg, Henry 2002, p. 19) and used in successive Intergenerational Reports (see, eg, Australian Treasury 2007 pp. 10-11 and 2010a pp. 1-4) decomposes growth in real GDP into three components – population, [labour force] participation and [labour] productivity – popularly known as the '3 Ps'. Expressed mathematically:

$$\text{GDP} = \text{population} \times \frac{\text{employment}}{\text{population}} \times \frac{\text{hours worked}}{\text{employment}} \times \frac{\text{GDP}}{\text{hours worked}}$$

where GDP is in real terms. Note that all of the terms on the right hand side of the above equation cancel out algebraically, ie the expression is true by definition. This equation can alternatively be expressed as:

$$\begin{aligned} \text{GDP} &= \text{population} \times \frac{\text{employment}}{\text{labour force}} \times \frac{\text{labour force}}{\text{population}} \times \text{average hours worked} \times \text{labour productivity} \\ &= \text{population} \times [1 - \text{unemployment rate}] \times \text{participation rate} \times \text{average hours worked} \times \text{labour productivity} \end{aligned}$$

Australia's real GDP growth rate averaged 3.4% per annum during the 1990s (that is, from 1990-91 through 1999-2000).

Of that, as shown in Chart 1 below, population growth accounted for 1.4 percentage points per annum (or about two-fifths of the total); and labour productivity growth 2.1 percentage points per annum (or just over three-fifths of the total); while 'participation' or labour supply detracted 0.1 of a percentage point per annum (the result of the large rise in unemployment during the recession at the beginning of that decade, which had not been fully unwound by the end of it)⁸.

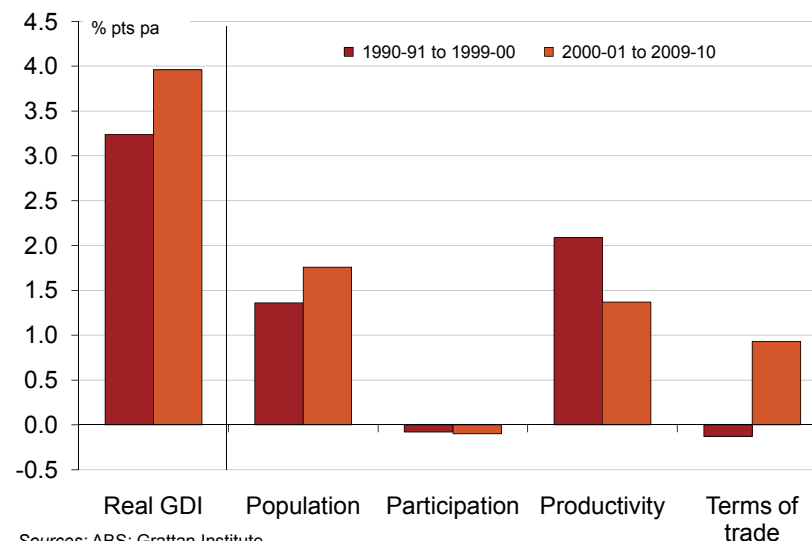
⁸ Note that the comparisons made here are over consecutive decades, rather than over MFP growth cycles identified by the ABS.

Over the past decade, Australia's real GDP growth rate has averaged 3.1% per annum, just ¼ pc point per annum less than during the 1990s. However, the sources of that growth have changed significantly: population growth accounted for 1.8 pc points pa (or just under three-fifths), while labour productivity growth accounted for 1.4 pc points pa (or about 45% of the total). Participation or labour supply growth detracted almost 0.3 of a pc point per annum from real GDP growth, as falling average hours worked more than offset the decline in the unemployment rate and the rise in the labour force participation rate over the course of the decade.

The declining contribution of labour productivity growth to improvements in Australians' material living standards is even more apparent if the latter is measured by growth in *real gross domestic income* (GDI) rather than GDP, as shown in Chart 2. Real GDI is GDP adjusted for changes in the ratio of the prices of Australia's exports to those of Australia's imports (the *terms of trade*). During the 1990s, a decline in Australia's terms of trade (most of which occurred during the first half of the decade) subtracted 0.1 of a pc point per annum from growth in real GDI. Over the past decade, by contrast, terms of trade gains have boosted real GDI growth by 0.9 of pc point per annum.

Looking forward, Australia will not be able to rely on population growth or further gains in the terms of trade to drive economic growth as strongly as they have over the past decade. The most recent Intergenerational Report projects Australia's population growth rate to slow to 1.5% pa during the current decade and to 1.3% during the 2020s (Australian Treasury 2010, p. 10). Moreover, as the population ages, both the labour force participation rate and average hours worked are likely to decline.

Chart 2: Sources of growth in Australian real GDI, 1990-2010



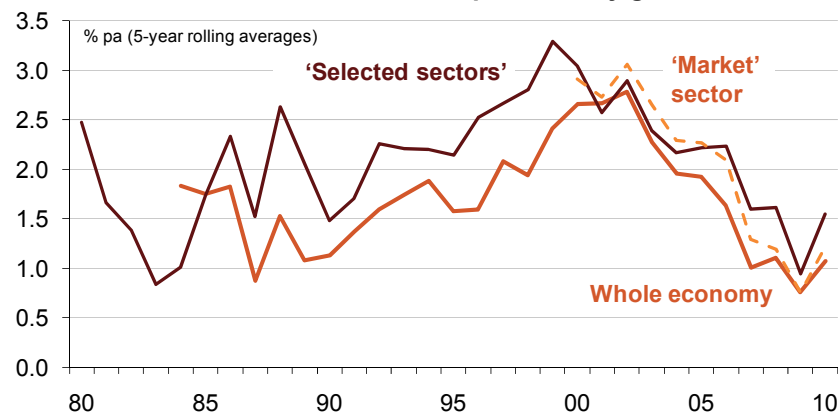
Likewise, most forecasters expect that, although Australia's terms of trade will remain elevated by historical standards for as long as the industrialization and urbanization of China and India continues apace, they are not expected to continue rising but instead to 'soften over the medium term' (Reserve Bank of Australia 2010, p. 61). Hence, favourable movements in Australia's terms of trade are not considered likely to add to growth in Australia's real GDI over the next two decades and may detract slightly from it.

In other words, prospects for future growth in both real GDP and GDI, and hence in Australians' material standards of living, will become increasingly dependent on Australia's productivity performance.

3.2 Trends in Australian aggregate productivity growth

The decade-averages mentioned in the foregoing discussion actually mask the extent to which Australia's labour productivity growth performance has deteriorated over the past decade. This is more readily apparent from Chart 3, which shows three different measures of labour productivity growth (for the economy as whole, for the 16 sectors which comprise the 'market' sector as defined in section 2.2 above, and for the 12 sectors which comprised the market sector prior to the adoption of the current definition in 2009), expressed over rolling five-year periods (in order to abstract from short-term and cyclical fluctuations).

Chart 3: Trends in Australian labour productivity growth



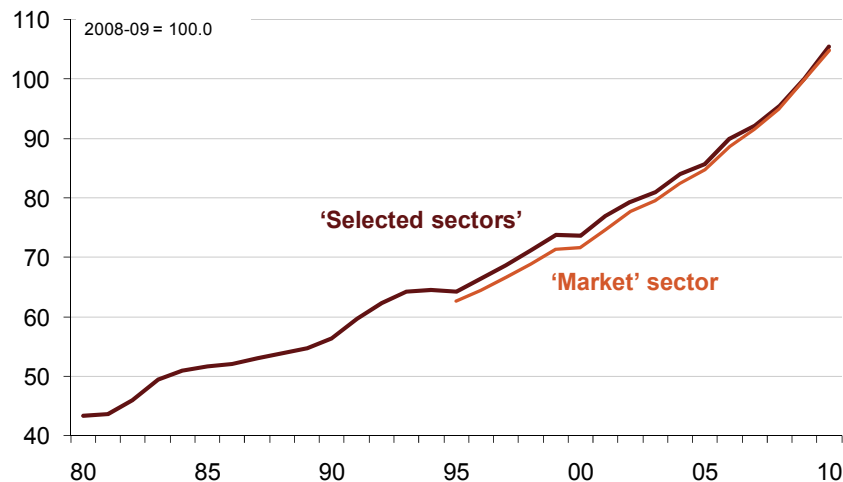
Note: 'Selected sectors' are agriculture, forestry & fishing; mining; manufacturing; electricity, gas, water & waste services; construction; wholesale trade; retail trade; accommodation & food services; transport, postal & warehousing; information, media & telecommunications; financial & insurance services; and arts & recreation services. 'Market sector' comprises these sectors plus rental, hiring & real estate services; professional, scientific & technical services; administrative & support services; and other services. Data are for financial years ended 30 June. *Sources:* ABS; Grattan Institute.

Chart 3 shows that, for the economy as a whole, labour productivity growth rose steadily during the 1990s to peak at 2.8% pa over the five years ended 2001-02, well above the long-run average rate of 1.6% pa; but slowed dramatically during the ensuing decade, reaching a low of just 0.8% during the five years ended 2008-09. A similar slowdown is apparent for the 'market' sector (as currently defined by ABS); while for the 12 'selected sectors' which formerly comprised the 'market sector', labour productivity growth peaked at 3.3% pa over the five years ended 1998-99, before slowing to 0.9% pa over the five years to 2008-09.

As noted in section 2.1 above, labour productivity is a partial measure, which makes no allowance for (among other things) changes in the amount of capital with which each worker works (referred to by economists as *capital deepening*). The capital stock rose much more strongly during the 2000s than it did during the 1990s (reflecting the fact that non-residential fixed investment expenditure accounted for some 4½ percentage points more of GDP in the decade just ended than in the preceding decade). As a result, the capital-labour ratio increased by nearly twice as much during the 2000s as it did during the 1990s (see Chart 4, on the following page).

The corollary of this is that slowdown in *multi-factor* productivity growth during the 2000s was even more marked than the slowdown in labour productivity growth (see Chart 5, also on page 15).

Chart 4: Trends in the Australian capital-labour ratio



Note: For definitions of 'market sector' and 'selected sectors' see footnote to Chart 3. Data are for financial years ended 30 June. Sources: ABS; Grattan Institute.

Multi-factor productivity growth across the 12 sectors for which data are available going back to the mid-1970s peaked at 2.1% pa over the five years ended 1998-99, but from then on slowed to the point of turning negative during the second half of the 2000s. Much the same trend is evident for the 16 sectors now comprising the 'market sector' of the economy as defined by the ABS.

One way of interpreting these results is that the increase in labour productivity over the second half of the past decade, small as it was compared with that achieved over the previous five years or during the 1990s, was *more than fully accounted for* by the increase in the average amount of capital available per person employed; and that once this is accounted for, the efficiency with

which labour and capital were combined (including through the take-up of new technologies) actually *went backwards* during this period.

At first glance, it would seem surprising that such a dramatic deterioration in Australia's productivity performance has attracted so little public concern. It thus perhaps bears repeating that the effects on Australians' [material] living standards of this trend have thus far been obscured by the rapid increase in the capital stock; a faster rate of population growth; and (in terms of real gross domestic income) the substantial improvement in Australia's 'terms of trade' (export prices relative to import prices).

Chart 5: Trends in Australian multi-factor productivity growth



Note: For definitions of 'market sector' and 'selected sectors' see footnote to Chart 3. Data are for financial years ended 30 June. Sources: ABS; Grattan Institute.

3.3 Some international comparisons

Australia is not unique in experiencing a decline in labour productivity growth over the past decade. Indeed, across the OECD area as a whole, labour productivity growth averaged just 0.4% pa over the five years to 2010, less than have the Australian rate, and down from an average of 1.5% pa over the first half of the decade (see Chart 6). This slowdown would appear largely to reflect the extent of 'labour hoarding' in Europe and Japan during the sharp economic downturns induced by the global financial crisis (in contrast to the more abrupt labour-shedding which occurred in the United States).

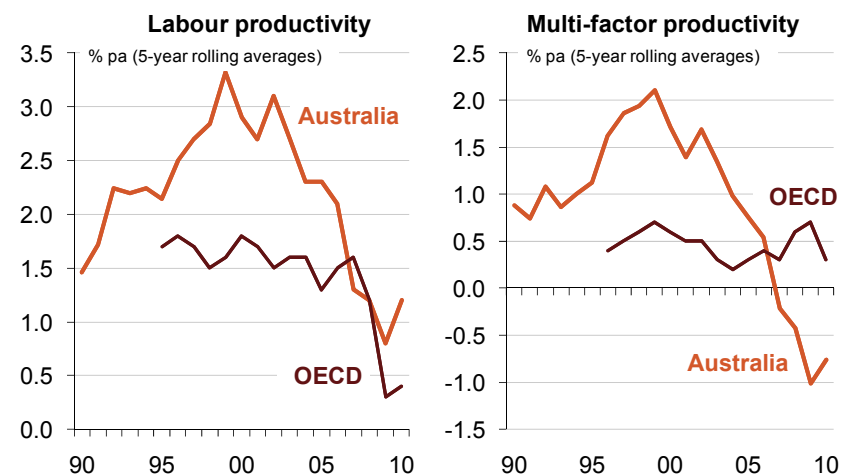
Nonetheless, the OECD singles out Australia as one of four countries to have experienced a 'particularly strong deceleration in labour productivity growth' between 1995-2000 and 2001-06⁹.

Australia has experienced a much more pronounced deterioration in multi-factor productivity than the OECD as a whole. Indeed, across the OECD as a whole multi-factor productivity growth has not deviated much from its long-term average of 0.4% pa since the late 1990s, whereas (as noted in the previous section), Australian multi-factor productivity growth has slowed from a peak of over 2% pa in the second half of the 1990s to a negative rate in the second half of the 2000s¹⁰.

⁹ The others were Ireland, Mexico and Portugal: OECD (2008), p. 7.

¹⁰ Note that there are some differences between the way in which the OECD computes MFP growth and the methods used by the ABS: see OECD (2008), pp. 81-82. It seems doubtful, however, that these differences can explain the stark divergences between Australian and OECD average MFP growth over the past decade.

Chart 6: Australian and OECD productivity growth



Note: OECD labour inputs measured as persons employed (as opposed to hours worked).
Sources: ABS; OECD; The Conference Board.

Another instructive comparison comes from examining trends in the *level* of Australian labour productivity relative to that of the United States (taking the latter as a crude proxy for 'best practice'¹¹).

It would be unrealistic to expect Australia to attain or exceed US productivity levels, given (among other things) our considerably smaller population and greater distance from major markets (including, in Australia's case, the US itself) (Battersby 2006; Dolman, Parham and Zhang 2007).

¹¹ GDP per hour worked is higher in the US than in any other OECD country except for Norway and Luxembourg, two relatively small economies in which an unusually large share of GDP is accounted for by intrinsically high labour-productivity activities (oil production and financial services, respectively).

In addition, the US has historically had a 'more educated' workforce, in the sense that throughout the post-war period a higher proportion of the American workforce has an upper- or post-secondary qualification than of the Australian workforce, although this gap has been narrowing steadily over the last two decades (Davis and Rahman 2006, pp. 10-11) and can be expected to disappear altogether over the next 15-20 years (Dolman et al, pp.47-48).

Notwithstanding these factors, Australian labour productivity (measured here as GDP converted to US dollars at purchasing power parities per hour worked) as a proportion of the equivalent US measure rose from less than 86% in the late 1980s to 91.6% in 1998 (Chart 7). Over the ensuing decade, however, Australian labour productivity as a proportion of the US level declined to 84.2% by 2010 – the lowest since the early 1970s.

Dolman et al (2007, p. 5), although recognizing that 'to focus on the US productivity level as a policy target would not be appropriate', nonetheless concluded that it seemed 'feasible for Australia to aspire to keep up with rapid US productivity growth over coming decades' and that it also appeared 'feasible for Australia to go further and close part of the gap in productivity levels'.

Clearly, over the period since their research was published, Australia has not only failed to meet those aspirations, but has actually lost ground. To be fair, Dolman et al noted that 'changes in the policy and institutional environment may be needed' in order to narrow the gap between Australian and US productivity levels; and later in this report we consider the extent to which such changes have occurred or might be needed.

Chart 7: Australian labour productivity relative to the US



Sources: The Conference Board Total Economy Database, January 2011, www.conference-board.org/data/economydatabase/; Grattan Institute.

It again bears repeating in the context of these international comparisons that the adverse consequences for Australians' material living standards relative to those of people living in other advanced economies which might otherwise have flowed from this deterioration in relative labour productivity performance have been offset by the enormous improvement in Australia's terms of trade over the past decade¹² and, more recently, by Australia's success in avoiding the deep economic downturns experienced by most other advanced economies in the aftermath of the GFC.

¹² Australia's terms of trade improved by almost 80% over the decade to mid-2010; by contrast, New Zealand's and Canada's improved by 20% and 16% respectively, the EU's were roughly unchanged, while the US' and Japan's deteriorated by 4.5% and 27%, respectively.

4. Why has Australia's productivity performance deteriorated over the past decade?

In the previous section we showed that Australia's productivity performance has deteriorated markedly over the past decade, both relative to the experience during the 1990s, and also relative to contemporaneous experience in other advanced economies. In this section, we turn our attention to an exploration of the reasons for this poor performance.

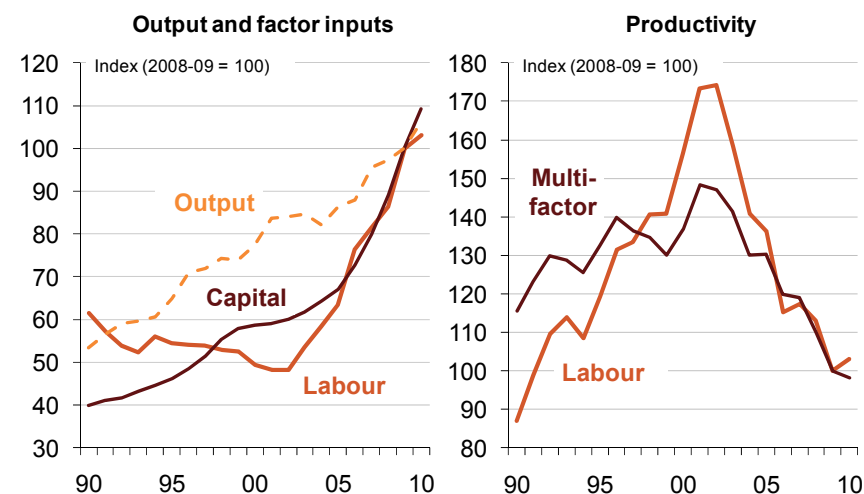
4.1 Perverse trends in mining, utilities and agriculture

Official explanations of the deterioration in Australia's productivity performance over the past decade have emphasized the role played by sharp declines in productivity in three sectors of the economy: mining; agriculture; and electricity, gas, water and waste services (which we shall henceforth refer to as 'utilities'). The Productivity Commission (2010, p. 68) estimates that these three sectors account for almost 80% of the decline in multi-factor productivity growth between the 1998-99 to 2003-04 and 2003-04 to 2007-08 growth cycles, a conclusion which has been endorsed by the Australian Treasury (2009, pp. 51-52).

The productivity performance of the mining and utilities sectors looks peculiar, to say the least.

The mining sector has been gearing up for a huge expansion in response to the demand for energy and minerals (particularly those associated with steel-making) from China and India. To this end, hours worked in mining have more than doubled over the past decade, while the real value of the sector's productive capital stock has increased by almost 80%.

Chart 9: Mining sector output, factor inputs and productivity



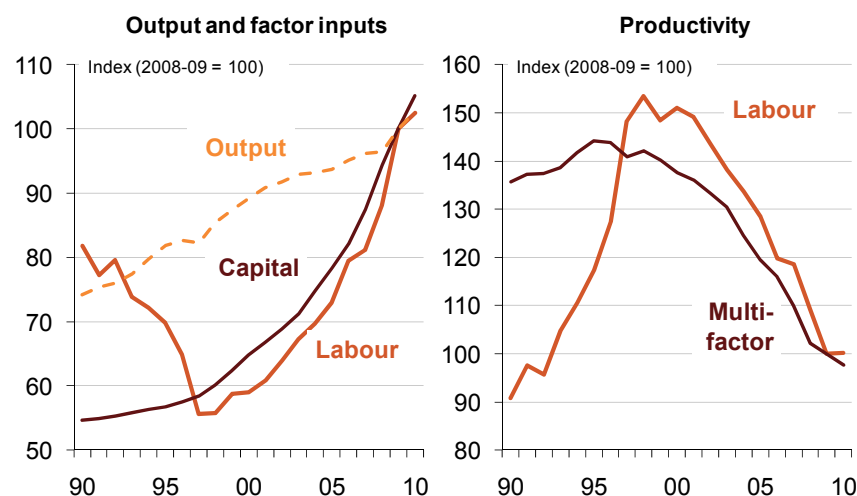
Source: ABS.

Yet, largely reflecting the long lead times entailed in bringing modern mining projects to full production, the output (gross valued added) of the mining sector has risen by only 37% over this period. As a result, the level of labour productivity has declined at an average annual rate of 6.2% since 2001-02 (or by 41% in total); while the level multi-factor productivity has fallen at an average annual rate of 4.5% since peaking in 2000-01 (or by 34% in total). Once these projects reach full production, measured labour and multi-factor productivity should rebound strongly, reversing much of their decline over the past decade.

Another, possibly less transitory, drag on measured mining industry productivity arises from the fact that historically high prices for many metals has made it profitable to extract and refine low-grade deposits, which (by definition) require the application of more labour and capital in order to produce a given volume of mineral ores or metals. This inevitably detracts from measured productivity, even though it represents logical and profitable business for mining companies. This drag will persist for as long as metal prices remain high by historical standards.

A different set of factors have resulted in similar trends in productivity in the utilities sector (Chart 10).

Chart 10: Utilities sector output, factor inputs and productivity



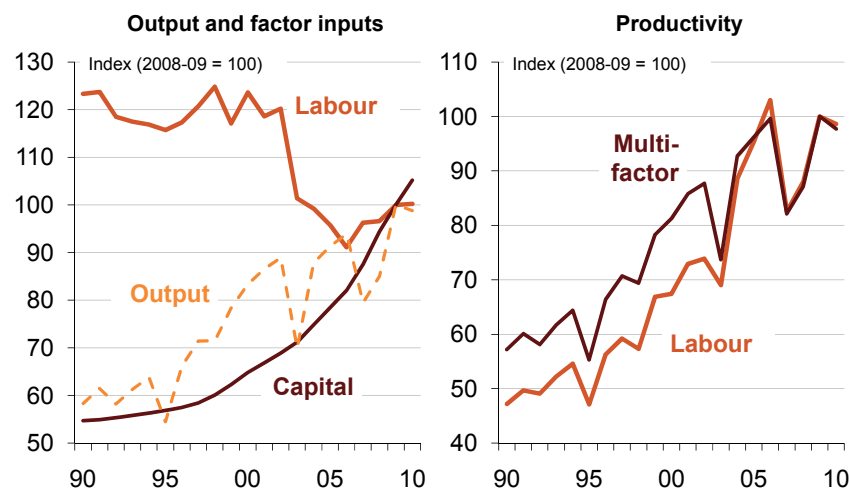
Source: ABS.

This was a sector which recorded substantial productivity gains in the 1990s, largely as a result of reforms engineered by State Governments. During the past decade, however, electricity and gas businesses have had to invest heavily in response to continued growth in demand, to replace ageing transmission infrastructure, and to meet government-mandated renewable energy targets. Likewise governments have undertaken significant investments in water infrastructure (including desalination plants in five States), with a view to guaranteeing security of supply in drought conditions. Drought conditions also prompted governments in most States to impose restrictions on the use of water, which detracted from the output of water businesses without commensurate reductions in factor inputs.

Thus, in this sector, hours worked have increased by 73% over the past decade, and the real value of the productive capital stock by 35%, whereas output has risen by only 15%: correspondingly, labour productivity has fallen by 34% (an average annual rate of decline of 4.0%) and multi-factor productivity by 31% (3.6% pa).

The output of the agriculture sector has obviously been affected by drought during the past decade, but it's not obvious that agricultural sector productivity has detracted from Australia's overall productivity performance over the past decade (see Chart 11 on page 20). On the contrary, partly as a result of substantial labour-shedding in the early years of the decade, agricultural sector productivity rose at an average annual rate of 3.9% over the 2000s, the second-fastest of any of the 16 industries making up the market sector, while multi-factor productivity in agriculture rose at an average annual rate of 1.9%, a more rapid rate than any other sector.

Chart 11: Agriculture sector output, factor inputs and productivity



Source: ABS.

What effect have these sectors had on Australia's overall productivity performance?

As discussed in the foregoing section, both labour and multi-factor productivity have declined sharply in the mining and utilities sectors over the past decade. However, these two sectors between them accounted for an average of just 11.3% of GDP, and 13.2% of gross value added in industry¹³. Is it possible that these sectors could have accounted for almost all of the deterioration in Australia's overall productivity performance since the turn of the century?

¹³ 'Gross value added in industry is GDP less net indirect taxes and the gross value added imputed to the ownership of dwellings.

This is not a question which can be answered from the productivity data published by the Australian Bureau of Statistics, since (as noted earlier in section 2.2), these are published as indices, set to 100.0 for the base year of the latest set of annual national accounts for each industry, rather than as dollar-denominated figures which can be used to compare the level of productivity in different industries in any one period, or to derive estimates of productivity across a group of industries – including, for example, all market sectors excluding mining and utilities.

In order to get around this problem, we have constructed dollar-denominated estimates of labour productivity for each of the sectors of the Australian economy (including, for completeness, those outside the 'market sector'). We do this in two steps:

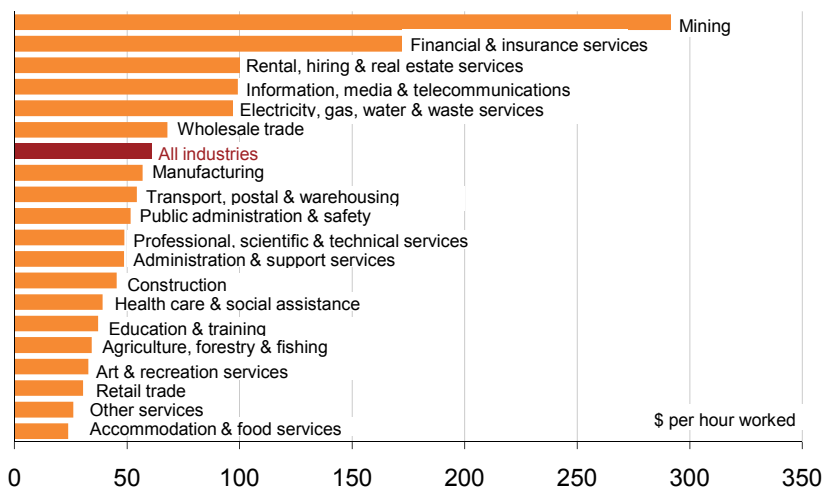
First, deriving estimates of actual hours worked by industry by multiplying the published figures for average weekly hours worked in each industry by those for employment in each industry, both of which are available for the middle month of each quarter. We then average those for each financial year, and multiply the resulting number by 52 to derive an estimate of annual hours worked in each industry¹⁴.

These estimates of aggregate hours worked are then divided into the published estimates of gross value added (GVA) by industry to derive estimates of GVA per hour worked, or labour productivity.

¹⁴ To the extent that the hours worked in the survey week of the middle month of each quarter are unrepresentative of that quarter as a whole, the resulting estimates of total hours worked may be inaccurate; but as we shall see, in practice the behaviour through time of the resulting productivity estimates does not appear to be significantly different from that of the ABS' index numbers.

These estimates are shown in Chart 12 below. The ordering of sectors by output per hour worked accords, in most cases, with what one would expect intuitively – that is, sectors which are intensive in their use of capital and/or skilled labour (such as mining, financial services, IT and telecommunications and utilities) have higher-than-average output per hour worked; while sectors which are relatively intensive in their use of unskilled labour (such as retailing, or accommodation and food services) have well-below average output per hour worked. There are a few apparent anomalies, such as education and training, or health care and social assistance, although as noted in section 2.2 above output in these sectors is in part measured by reference to labour and capital input so these need to be interpreted more cautiously.

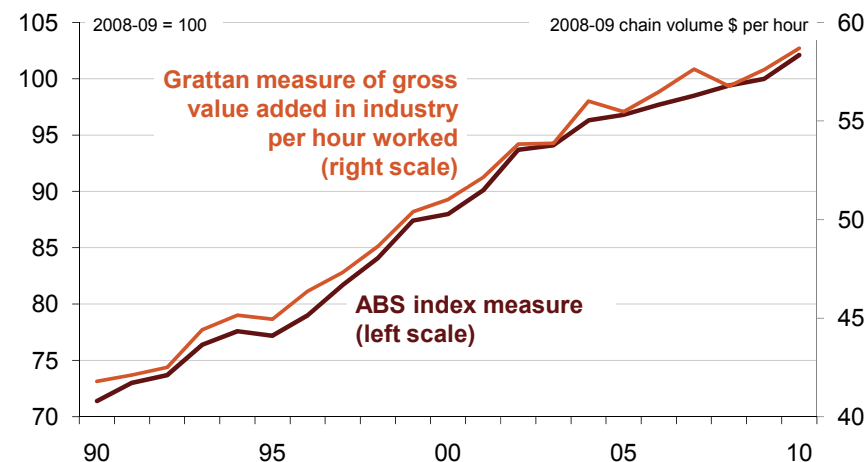
Chart 12: Gross value added per hour worked



Sources: ABS and Grattan Institute calculations.

Encouragingly, the aggregate measure of labour productivity constructed in this way tracks the ABS index measure quite closely over time (Chart 13).

Chart 13: Index and dollar-denominated measures of aggregate output per hour worked



Note: left and right scales are equi-proportional.
Sources: ABS; Grattan Institute calculations.

We can therefore with some confidence use the dollar-denominated measures of labour productivity depicted in Chart 12 (and the corresponding estimates for earlier years) to derive estimates of labour productivity excluding the mining and utilities sectors.

These are shown in Chart 14 on the next page.

Chart 14: Labour productivity growth excluding the mining and utilities sectors



Note: for definitions of 'market' and 'selected' sectors see footnote to Chart 3 (on page 14).
Sources: ABS; Grattan Institute calculations.

Chart 14 strongly suggests that although the sharp declines in labour productivity in the mining and utilities sector has detracted from Australia's overall labour productivity performance, there has still been a substantial deterioration in overall labour productivity growth even when these two sectors are excluded.

For the 'market sector' (as presently defined by ABS) as a whole, labour productivity growth declined from a peak of 3.1% pa over the five years to 1999-00 to 1.7% pa over the five years to 2009-10, a decline of 1.4 percentage points. Excluding the mining and utilities sectors, market sector labour productivity declined from 3.2% pa to 1.9% pa over the same interval, a decline of 1.3 percentage points.

For the larger group of 'selected sectors', labour productivity growth declined from a peak of 3.0% pa over the five years to 2001-02 to 1.2% over the five years to 2009-10, a decline of 1.8 percentage points. Excluding the mining and utilities sectors, labour productivity growth for this group declined from 3.2% to 1.4% over the same interval, a decline also of 1.8 percentage points.

This suggests that the decline in labour productivity in the mining and utilities sectors accounts for less than 10% of the decline in overall market sector productivity growth over the past decade – a considerably smaller contribution than suggested by the Productivity Commission's analysis referred to earlier (Productivity Commission, 2010).

Given the rough-and-ready nature of our estimates we do not suggest that too much precision be attributed to this numerical conclusion. However, we do believe that it strongly suggests that the slow-down in Australian productivity growth has been more broadly-based than has been recognized thus far. This conclusion is supported by the observation that both labour and multi-factor productivity growth have slowed in all but three of the 16 sectors for which the ABS produces index-based estimates between the 1990s and 2000s (see Charts 15 and 16 on the following page). Those three sectors – construction; administration and support services; and arts and recreation services – account for 9.6% of GDP and 11.2% of gross value added in industry.

This conclusion also implies that it may be dangerously complacent to assume that the decline in productivity growth over the past decade will be 'automatically' reversed at some point during the coming decade.

Chart 15: Labour productivity growth by sector, 1990s and 2000s

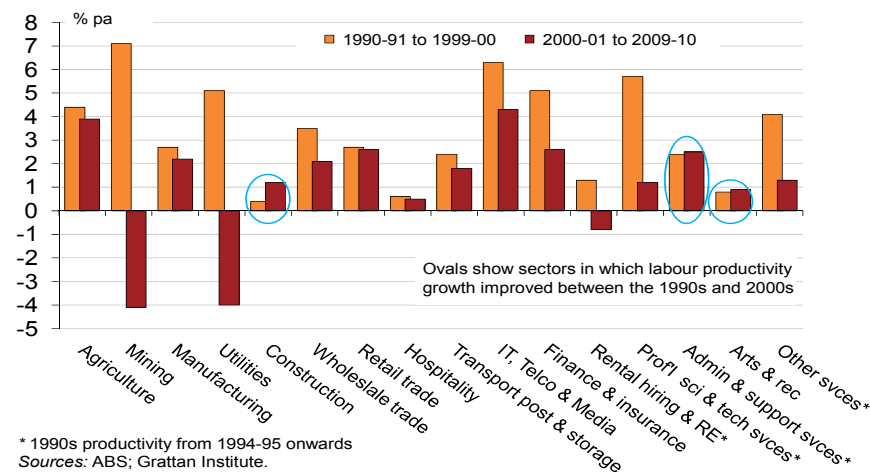
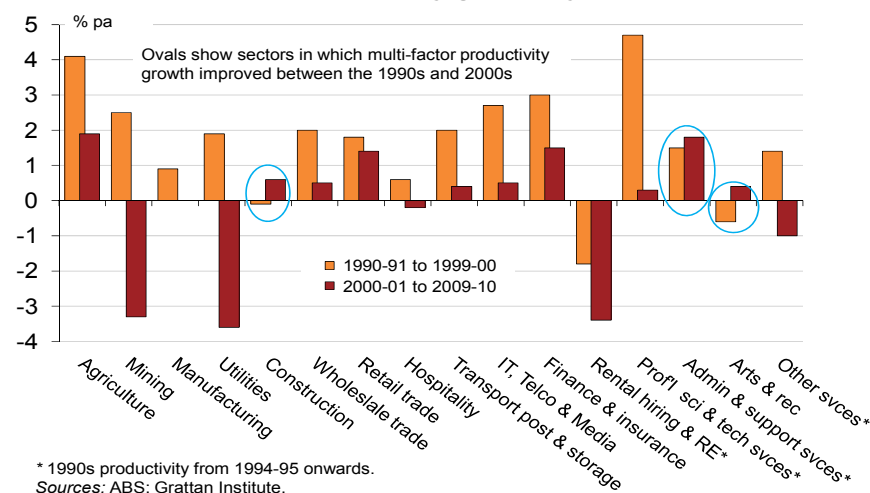


Chart 16: Multi-factor productivity growth by sector, 1990s & 2000s



4.2 From productivity-enhancing reforms to productivity-stifling regulation and legislation

If, as we argued in the previous section, the deterioration in Australia's productivity performance over the past decade was not primarily the result of 'phenomena peculiar to a few key industry sectors' (as the Productivity Commission, 2010, p. 62, put it), then what other factors may be responsible for it?

One obvious starting point is the Productivity Commission's conclusion (2010, p. 62) that 'the reforms of the latter part of the 1980s and the 1990s were the 'prime candidate' for the 'most likely causes of the surge in productivity' during the 1990s¹⁵. This conclusion has been endorsed by, among others, the IMF, which found that trade liberalization, labour market reform and increased competition had 'lifted Australia's trend MFP growth rate in the 1990s by between 0.5 and 0.9 of a percentage point' (Salgado, 2000) and by the OECD (2010a, p. 14), which concluded that 'increased exposure to international trade and product market liberalization contributed to an impressive surge in productivity in the 1990s'¹⁶.

By contrast with the late 1980s and early 1990s, there has been relatively little reform directed at further enhancing competition in Australian product or factor markets.

¹⁵ For an excellent account of these reforms and the reasons for their success, see Banks (2010), pp. 7-13.

¹⁶ A contrary view is that of Quiggin (2010, p. 3), who argues 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'.

As Ross Garnaut has observed,

'there has been no successful major step in productivity-raising reform since the tax changes associated with the introduction of the GST in 2001(sic) Economic policy since the introduction of the GST has been characterised by change rather than productivity-raising reform. The use of independent analysis and transparent discussion of policy reform has become rare [A]ttempts at major reform that had the potential to raise productivity and incomes, but failed comprehensively poisoned the soil for further reform for a considerable while' (Garnaut 2010 pp. 7-8).

Australia has fallen back in the OECD's integrated product market regulation indicator ranking from an above-average 5th in 2003 to a below-average 13th in 2008, due to 'the rate of reform, relative to comparator countries, having slowed in recent years' (Australian Treasury 2010, p. 4-32).

Instead of productivity-enhancing reform, Australia has since the early 2000s experienced a significant increase in productivity-stifling legislation and regulation, much of it in pursuit of 'national security' (in the aftermath of the terrorist attacks of September 11, 2001 and subsequently) and improved standards of corporate governance (following a series of 'scandals' in the US and Australia in the late 1990s and 2000s).

Much of this legislation or regulation has required the employment of additional staff and (particularly in the context of measures directed towards enhancing 'security'), additional capital equipment, in order to reduce inherently unquantifiable risks.

But the pursuit of these outcomes has, inevitably, taken a toll in terms of productivity – in terms of the low productivity of many of the personnel involved, and the diversion of both time and money from more productive activities in order to comply with procedures required under legislation and regulation of this nature.

Legislation and regulation of this sort is rarely, if ever, subject to any kind of cost-benefit analysis; proponents of such measures, if challenged to justify them in terms of their impact on productivity, implicitly argue that they represent an example of where, in Krugman's phrase, productivity 'isn't everything'¹⁷.

4.3 The paradoxical 'downside' of economic success

Another plausible set of explanations for the deterioration in Australia's productivity performance over the past decade is found, perhaps paradoxically, in Australia's economic success. This has two distinct dimensions.

First, Australia's extended run of economic success – the period since the early 1990s being the longest without a recession (in the commonly used sense of consecutive quarters of negative real GDP growth) in Australia's history, in the face of external shocks such as the Asian financial crisis, the 'tech wreck' of 2000-01 and the global financial crisis – appears to have lessened the sense of urgency associated with the reforms of the 1980s and 1990s.

¹⁷ Anthony Giddens, an adviser to former UK Prime Minister Tony Blair, has written that the main purpose of many of the more visible 'security' measures introduced in the aftermath of the terrorist attacks of September 11, 2001, was to create a climate in which people would accept erosions of civil liberties and other measures that they would otherwise find repugnant (Giddens 2005).

Garnaut (2005, p. 3), refers to this as 'a Great Complacency that descended upon the country after a decade of exceptional economic growth as a community we accepted the excellent economic performance as evidence that we had changed enough'.

But to the extent that Australia's economic achievements have induced 'complacency', it is not confined to policy-makers. As the profit share of Australia's national income has increased to unprecedented levels during the past decade (apart from the period immediately after the global financial crisis), business has in general attached less urgency to the pursuit of productivity gains at the enterprise or workplace level (which is, after all, where productivity growth actually occurs). A survey conducted by Telstra (2010) found that, among over 300 organizations each with over 200 employees:

- only 42% measure their productivity, have specific productivity targets and know what they are, while 25% don't measure their productivity at all;
- only 22% believe that they can accurately measure productivity benefits when considering investment decisions;
- only 34% of firms assign individual responsibilities for productivity improvements.

It is possible that the competitive pressures which many parts of the Australian economy are likely to come under as a result of some of the 'side-effects' of the resources boom (in particular, a stronger Australian dollar) may lead to a greater focus on the part of individual businesses on seeking out productivity improvements, but this has yet to become apparent.

The second way in which Australia's extended period of economic success has detracted from our overall productivity performance is that, as the Australian economy has moved closer to 'full employment' of labour and other factors of production (both in the years leading up to the onset of the global financial crisis and, more recently, as the 'resources boom' has resumed), it has increasingly encountered 'capacity constraints', particularly in the form of shortages of skilled labour and 'bottlenecks' in transport and other infrastructure.

To some extent, skills shortages can be (and in the recent past have been) alleviated by increased immigration. However, net immigration has been declining (from a very high level) since early 2009 and the 2010 election campaign was notable for the apparent emergence for the first time of a cross-party consensus in favour of lower rates of immigration. In these circumstances, the importance of enhanced rates of domestic skills formation through education and training is further heightened; otherwise, as Treasury warned in the 2008 Budget Papers, 'the costs [of skill shortages of more lasting duration] to productive capacity can be substantial and ongoing' (2008, p. 4-16).

Infrastructure bottlenecks have also detracted from Australia's productivity performance. The OECD's most recent survey of the Australian economy noted that Australia had 'an important infrastructure deficit', due in part to 'underinvestment in the 1980s and 1990s', but also to 'weak co-ordination between public infrastructure and development and fiscal management' and a 'lack of co-ordination between the various levels of government, and between jurisdictions at the same level', so that 'infrastructure decisions are frequently taken with no regard for national priorities' (OECD 2010b, pp. 91-95).

4.4 A lessening in the take-up of ICT

The importance of information and communications technology (ICT) as a driver of productivity growth is well documented in overseas research¹⁸.

Australian evidence is less compelling, in part because Australia produces very little ICT itself and thus has not shared in the very substantial gains in ICT equipment manufacturing experienced in those economies which are significant ICT producers (although Australia has of course gained substantially from the dramatic declines in the prices of ICT equipment over the past two decades). Productivity Commission research into the causes of Australia's productivity acceleration in the 1990s suggests that while the take-up of ICT contributed to labour productivity growth by increasing the capital-to-labour ratio, it had very little role in the acceleration in MFP growth during this period (Parham, Roberts and Sun 2001; Productivity Commission 2010). However, research commissioned by Telstra (2009) cites Australian studies showing 'significant productivity impacts from ICT at the firm level'.

Whatever the precise impact of ICT investment on Australia's productivity performance, it is apparent that Australia's relative position in this dimension has slipped over the past decade. In the late 1990s, Australia ranked 4th among OECD countries in expenditure on ICT as a proportion of GDP, and typically ranked behind only the United States and the Nordic countries in various indicators of the take up of ICT (such as those compiled by the

World Economic Forum or IMD of the number of computers or internet hosts per capita).

However, towards the end of the 2000s, Australia typically ranked behind not only the US and Nordic countries, but also a growing number of continental European and Asian economies on scales such as these. In 2008, for example, Australia ranked 25th out of 132 countries in descending order of internet users per 100 of population, and 17th out of 127 in order of fixed broadband subscribers per 100 of population; while Australian businesses ranked themselves only 16th (behind not only the US and all five Nordic countries but also Japan, Korea, Taiwan, Singapore, Switzerland, Austria, Germany and the UAE) for absorption of new technology (World Economic Forum 2009).

¹⁸ For a useful summary of this research see Telstra (2009).

5. Policy priorities for reversing Australia's deteriorating productivity performance

In the previous section we argued that the deterioration in Australia's productivity performance could not be attributed overwhelmingly to peculiar trends in the mining and utilities sectors, but instead was due to a combination of a dearth of productivity-enhancing reforms (and their replacement by productivity-stifling regulation and legislation); the paradoxically adverse consequences for productivity growth of Australia's extended run of economic success; and possibly by a decline (at least relative to other nations) in Australia's take-up of productivity-enhancing technologies.

Yet, as we have also noted in previous sections, there have to date been few if any obvious adverse consequences of this deterioration in Australia's productivity performance for Australia's broader economic performance, or for the material living standards of individual Australians.

This is because the consequences which would otherwise have become readily apparent over time – in particular, an observable decline in Australian material living standards relative to those in other countries and, over time, slower economic growth and rising unemployment – have been obscured by the gains in national income accruing from the substantial rise in Australia's terms of trade (in turn driven almost entirely by events beyond Australia's direct influence or control, in particular the industrialization and urbanization of China and India), and by Australia's ability to weather the global financial crisis far more successfully than the countries with which we are normally compared (something which reflects good luck as well as good management).

This in some way echoes Australia's experience during the 1950s, 1960s and early 1970s, when the consequences of Australia's relatively poor productivity performance were masked by the post-war population surge, the emergence of Japan as a global economic power (and the impact which that had on the development of Australia's iron ore and coal industries), and our ability for some time to shelter behind rising barriers to international trade (the costs of which were not to become apparent for some time).

However, from the mid-1970s onwards, as Australia's population growth began to slow, Japan's industrialization phase had been completed, and in the aftermath of the mid-1970s and early 1980s international recessions Australia's terms of trade began declining sharply, the consequences of Australia's poor productivity performance over the preceding three decades became increasingly apparent.

We do not (and can not) know when China's (or India's) phase of rapid growth will end, nor when Australia's terms of trade will peak and begin to decline. What we do know from history is that, at some point, they will; and that if the deterioration in Australia's productivity performance is not reversed before or by then, its consequences will become more apparent to Australians than they have been up to this point.

In the final pages of this report, we point to some of the areas where public policy could contribute to reversing the decline in Australia's productivity growth rate.

5.1 A re-invigorated economic reform agenda

We argued in section 4.2 above that one of the reasons for the decline in Australia's productivity growth rate since the turn of the century was that the appetite of Australian governments, and indeed the Australian people, for productivity-enhancing reform had diminished significantly.

We do not seek here to assert that Australian governments should embark upon another program of reforms reminiscent of those of the 1980s and 1990s: apart from anything else, most of those reforms were inherently 'one off' in their nature: that is, barriers to international trade, once reduced to negligible levels, cannot be significantly reduced further; domestic markets, once opened to competition, cannot be re-opened; and government monopolies cannot be privatized twice.

As Gary Banks has suggested, 'the productivity enhancing reforms that deserve some priority now are those that can reduce business costs and enhance the economy's supply-side responsiveness, while being fiscally parsimonious' (Banks 2010 p. 15). In this context, Banks points to areas such as:

- government assistance to industry 'not justified by genuine market failures';
- government procurement, including defence procurement favouring high-cost local production without any obvious social benefit;
- infrastructure projects that do not demonstrably yield a social benefit;

- human services programs where benchmark data suggest scope for more cost-effective delivery; and
- regulatory constraints on adaptability and flexibility at the enterprise level, particularly those impacting on the markets for labour and capital, and key infrastructural inputs such as transport, energy, telecommunications and water.

Banks lays particular emphasis on industrial relations and the labour market, pointing out that ,

'Whether productivity growth comes from working harder or working smarter, people in workplaces are central to it. The incentives they face and how well their skills are deployed and redeployed in the multitude of enterprises that make up our economy underpins its aggregate performance. It is therefore vital to ensure that regulations intended to promote fairness in Australia's workplaces do not detract unduly from their productivity. If we are to secure Australia's productivity potential into the future, the regulation of labour markets cannot remain a no-go area for evidence-based policy making' (Banks 2010 p. 16).

We do not interpret this as a criticism of the present Government's changes to workplace relations legislation. It is too early to ascertain what impact, if any, those changes have had on the flexibility and adaptability of workplaces to changing economic circumstances. However, we do endorse Banks' intimation that the further changes to the workplace relations framework should be considered if it becomes apparent that the capacity of firms to cope with changing economic circumstances has been materially affected.

Of course the scope for regulatory reform extends well beyond the workplace relations framework. The OECD's recent review of Australian regulatory practices describes Australia as 'one of the front-running countries in the OECD in terms of its regulatory reform practices' and observes that 'in general the Australian States demonstrate regulatory management practices that are among OECD best practice' (OECD, 2010a, pp. 16-17).

Nonetheless, the Business Council of Australia (BCA) argues that 'significant reforms are needed in all jurisdictions to improve their regulatory processes' (2010, p. 9), and the OECD itself notes in a separate publication the need for further reforms in infrastructure regulation, and also that Australia's barriers to foreign direct investment are the 7th highest in the OECD (2010b, p. 99 and 47).

Policymakers and regulators have continued to respond to new social or economic issues with 'knee-jerk regulatory solutions', as the Regulation Taskforce reported to the Howard Government (2006, p.148). Hence, as the BCA urges, 'there needs to be a comprehensive model that incorporates both prospective and retrospective reforms to prevent bad regulation from being made in the first place (2010, p. 4).

There are also still examples where outright deregulation ought to be more actively considered. For example, Abelson (2010) demonstrates that the removal of restrictions governing entry into the Sydney taxi industry (for which there are 'few efficiency or social reasons') could produce benefits 'in the order of \$250 million per annum', with even greater productivity and service benefits if accompanied by reform of the 'anti-competitive control of the taxi radio networks over all taxi operators'.

Other sectors of the Australian economy, including newsagents, pharmacies, service professions (such as law, medicine and architecture), international aviation, and agricultural marketing have been largely exempted from the competition-enhancing reforms to which other (larger) sectors have been exposed.

And there have been at best half-hearted attempts to lift productivity in areas of services provision dominated by public sector agencies, such as health, education, public transport and policing.

Indeed in these areas, 'service quality' is widely seen, both by the public at large and by Governments and oppositions, as being positively correlated with staffing levels (and hence inversely correlated with productivity).

Finally, tax reform could play an important role in improving Australia's productivity growth performance. The Henry Review of Australia's tax system urged that 'Australia should configure its tax and transfer architecture to promote stronger economic growth through participation and productivity'. It presented modelling suggesting that its four major proposed reforms (reducing company income tax, improving the taxation of non-renewable resources and land, replacing a range of narrow product taxes with a broad-based cash flow tax, and improving the structure of other taxes aimed at improving social outcomes) could lift output by 2-3 percentage points, or \$25-40 billion in 2010-11 prices (Henry 2009, pp. xviii and 74).

5.2 Improvements in education and training

There would appear to be significant potential for productivity gains from improvements to Australia's education and training systems. As noted in last year's Budget Papers, 'a more highly educated workforce is likely to be more productive and better able to adapt to changing circumstances', something which 'requires not only increasing the number of people with higher level qualifications but also ensuring that all Australians have strong foundation skills' (Australian Treasury 2010b, p. 4-28).

Yet there is some evidence that this is not happening. Australia's upper secondary attainment rates are lower than several other OECD countries (Australian Treasury 2008, p. 4-19). It has been recognized for some time that younger Australians from lower socio-economic backgrounds tend to lag at least one year behind the Australian average, and more than two years behind students in the highest socio-economic quartile (OECD 2010b, p. 139). The results from the latest OECD Program for International Student Assessment (PISA) suggest that the performance of Australian 15-year old students has declined significantly over the past decade, despite a 33% real increase in public expenditure, and a 54% real increase in private expenditure, on education during this period (Jensen 2010b).

In a Grattan Report released last year, our colleague Ben Jensen shows that if Australia improved the effectiveness of teachers by 10 per cent, the resultant increase in student learning and productivity would boost real GDP growth by 0.2 percentage points per annum, or by \$90 billion by 2050 (Jensen 2010a, p. 19).

By comparison with schools and higher education, the vocational education and training (VET) sector attracts little public attention. Yet there is evidence that the effectiveness of the training provided by this sector is variable, and that this sector is characterized by low completion rates in occupations that regularly appear on national skills shortages lists (Australian Treasury 2008, p. 4-20).

We intend to make a further study of the VET sector with a view to making more specific recommendations as to the role it could play in improving Australia's productivity performance.

5.3 Better infrastructure

In section 4.3 we highlighted evidence pointing to Australia having an 'infrastructure deficit'. As the US Treasury argued last year, 'well designed infrastructure investments can raise economic growth, productivity and land values, while also providing significant positive spillovers to areas such as economic development, energy efficiency, public health and manufacturing' (US Treasury 2010).

Yet simply expending more public funds on infrastructure does not, of itself, necessarily lead to productivity improvements: 'it is important to distinguish investments in public goods which add to the productive capacity of the nation as a whole from those that simply provide advantages to some places over others' (Haughwout 1998). Infrastructure investment needs to be effectively targeted through rigorous and transparent appraisal processes, appropriately regulated for access, and governed by effective and meaningful price signals (Australian Treasury 2009, p.58; OECD 2009).

The geographic reallocation of various infrastructure investment budgets in the aftermath of the 2010 election highlights that these objectives are still some considerable distance from being met.

We intend to release later this year a more detailed study of the ways in which public policy can ensure that infrastructure investments are made at the right time, in the right place, and at the right price, in order to maximize their contribution to improving Australia's productivity performance.

5.4 Improving Australia's innovation effort

Innovation - the introduction of new goods and services, new ways of producing or distributing existing goods and services, or new ways of managing existing processes for producing or distributing goods and services – has long been recognized as a critically important source of productivity growth. The Cutler Review of Australia's National Innovation System concluded that the rate of improvement in Australia's innovation effort had 'stalled over the past decade and some indicators suggest that there has been an absolute decline recently' (Cutler 2008, p. 2).

However, Australia's 'stalling' innovation effort will not necessarily be revived simply by the provision of more tax breaks or other subsidies for research and development expenditures. As Mark

Dodgson et al (2009, p. 33) have argued, 'modern innovation policy has to recognize, explicitly, that market mechanisms can be used effectively as devices that permit flexibility, selection and change in a complex evolutionary economic system'.

It is widely recognized that the weakest link in Australia's innovation chain is the commercialization stage.

It may be that this is a direct result of the low level of collaboration among Australian firms, something that could in turn be an unintended consequence of Australia's trade practices laws, and which may be made worse by proposed legislation against 'price signalling'.

As with vocational education and training, and the governance of infrastructure investment, we intend to publish during the next 12 months a more detailed investigation of the potential for public policy reforms to improve Australia's innovation effort.

6. References

- Abelson, Peter (2010), 'The High Cost of Taxi Regulation, with Special Reference to Sydney', *Agenda*, Vol. 17, No. 2, ANU College of Business & Economics, Canberra, pp. 41-72.
- ABS (2000), *Australian System of National Accounts: Concepts, Sources and Methods* (catalogue no. 5216.0), ABS, Canberra.
- ABS (2001), 'Further Developments in the Measurement of Productivity Growth in Australia', in *National Income, Expenditure and Product* (catalogue no. 5206.0), September quarter 2001, pp. 12-19, ABS, Canberra.
- ABS (2007), *Information Paper: Experimental Estimates of Industry Multi-Factor Productivity* (catalogue no. 5260.0.55.001), ABS, Canberra.
- ABS (2010), *Australian System of National Accounts* (catalogue no. 5204.0), 2009-10, ABS, Canberra.
- Australian Treasury (2007), *Intergenerational Report 2007*, Commonwealth of Australia, Canberra.
- Australian Treasury (2008), 'Statement No. 4: 'Boosting Australia's Productive Capacity: the Role of Infrastructure and Skills'', *Budget Strategy and Outlook*, 2008-09 Budget Paper No. 1, Commonwealth of Australia, Canberra
- Australian Treasury (2009). 'Raising the Level of Productivity Growth in the Australian Economy', Submission to the House of Representatives Standing Committee on Economics, published in *Round-Up*, August, pp. 47-66.
- Australian Treasury (2010a), *Australia to 2050: Future Challenges*, Commonwealth of Australia, Canberra.
- Australian Treasury (2010b), 'Statement No. 4: Benefiting from Our Mineral Resources: Opportunities, Challenges and Policy Settings', *Budget Strategy and Outlook*, 2010-11 Budget Paper No. 1, Commonwealth of Australia, Canberra.
- Banks, Gary (2010), 'Successful Reform: Past Lessons, Future Challenges', Address to the Annual Forecasting Conference of Australian Business Economists, Sydney, 8 December; downloadable at <http://www.pc.gov.au/speeches/successful-reform>.
- Battersby, Bryn (2006), *Does Distance Matter: the Effect of Geographic Isolation on Productivity Levels*, Treasury Working Paper 2006-03, Canberra, April.
- Blinder, Alan and William Baumol, (1993), *Economics: Principles and Policy*, Harcourt Brace Jovanovich, San Diego.
- Business Council of Australia (2010), *2010 Scorecard of Red Tape Reform*, Melbourne.
- Cutler, Terry (2008), *Venturous Australia: Building Strength in Innovation*, Culter & Company, Melbourne.
- Davis, Graham and Jyoti Rahman (2006), *Perspectives on Australia's Productivity Challenges*, Treasury Working Paper 2006-04, Canberra, September.
- Dodgson, Mark, John Foster, Alan Hughes and JS Metcalfe (2009), *Systems Thinking, Market Failure, and the Development of Innovation Policy: The Case of Australia*, University of Cambridge Centre for Business Research, Working Paper No. 397, December.
- Dolman, Ben, Dean Parham and Simon Zheng (2007), *Can Australia Match US Productivity Performance*, Productivity Commission Staff Working Paper, Canberra, March.
- Garnaut, Ross (2005), 'Breaking the Australian Great Complacency of the Early Twenty First Century', Paper presented at the 2005 Economic and Social Outlook Conference, Melbourne Institute and *The Australian*, 31 March; downloadable at <http://www.rossgarnaut.com.au/AustralianEconomy.html>.
- Garnaut, Ross (2010), 'Climate Change, China Booms and Australia's Governance Struggle in a Changing World', 2010 Hamer Oration, Melbourne, 5 August; downloadable at <http://www.rossgarnaut.com.au/AustralianEconomy.html>.
- Giddens, Anthony (2005), 'Scaring people may be the only way to avoid the risks of new-style terrorism', *New Statesman*, 10 January; downloadable at <http://www.newstatesman.com/200501100020>.

- Haughwout, Andrew (1998), 'Aggregate production functions, interregional equilibrium, and the measurement of infrastructure productivity,' *Journal of Urban Economics*, Vol.44, No.2, pp 216-228.
- Henry, Ken (2002), 'On the Economy and Fiscal Policy', Address to the Australian Business Economists, Sydney, 21 May; downloadable at <http://www.treasury.gov.au/documents/313/PDF/21May2002.pdf>.
- Henry, Ken (chair) (2009), *Australia's Future Tax System – Report to the Treasurer*, Commonwealth of Australia, Canberra, December.
- Jensen, Ben (2010a), *Investing in Our Teachers, Investing in Our Economy*, Grattan Institute, Melbourne.
- Jensen, Ben (2010b), 'Future Compromised by Failures in Education System', *The Australian*, 10 December, p. 12.
- Kennedy, Robert F (1968), Address to University of Kansas, 18 March.
- Krugman, Paul (1992), *The Age of Diminished Expectations: US Economic Policy in the 1980s*, MIT Press, Cambridge MA.
- OECD (2008), *Compendium of Productivity Indicators 2008*, OECD, Paris.
- OECD (2009), *Economic Policy Reforms: Going for Growth*, OECD, Paris.
- OECD (2010a), *Towards a Seamless National Economy*, OECD Reviews of Regulatory Reform: Australia 2010, OECD, Paris.
- OECD (2010b), *OECD Economic Surveys – Australia*, Volume 2010/21, OECD, Paris, November.
- Parham, Dean, Paul Roberts and Haishun Sun (2001), *Information Technology and Australia's Productivity Surge*, Staff Research Paper, Productivity Commission, Canberra.
- Porter, Michael E (1991), *The Competitive Advantage of Nations*, The Free Press, New York.
- Productivity Commission (2010), *Annual Report 2009-10*, Canberra.
- Quiggin, John (2001), 'The Australian productivity 'miracle': a sceptical view', *Agenda*, Volume 8, No. 4, pp. 333-348.
- Quiggin, John (2010), *Submission to the House of Representatives Standing Committee on Economics Inquiry into Raising the Productivity Growth Rate of the Australian Economy*, House of Representatives, Canberra.
- Regulation Taskforce (2006), *Rethinking Regulation: Report of the Taskforce on Reducing Regulatory Burdens on Business*, Report to the Prime Minister and Treasurer, Canberra, January.
- Reserve Bank of Australia (2010), *Statement on Monetary Policy*, RBA, Sydney, November.
- Salgado, Ranil (2000), 'Australia: Productivity Growth and Structural Reform', in IMF, *Australia – Selected Issues and Statistical Appendix*, Country Staff Report 00/24, Washington DC.
- Stevens, Glen (2009), 'Challenges For Economic Policy', Address to the Anika Foundation, 27 July.
- Stiglitz, Joseph E, Amratya Sen and Jean-Paul Fitoussi (2009). *Report by the Commission on the Measurement of Economic Performance and Social Progress*, Paris.
- Telstra (2009), *ICT as a Driver of Productivity*, Melbourne, January.
- Telstra (2010), *The Telstra Productivity Indicator 2010*, Melbourne, February; downloadable at <http://www.telstraenterprise.com/SiteCollectionDocuments/Whitepapers/Productivity2010.pdf?inref=TPIR>.
- Timmer, Marcel, Mary O'Mahony & Bart van Ark (2008), *The EU KLEMS Growth and Productivity Accounts: An Overview*, University of Groningen & University of Birmingham; downloadable at www.euklems.net.
- US Treasury, 'An Economic Analysis of Infrastructure Investment', Washington DC, 11 October, downloadable at http://www.treas.gov/offices/economic-policy/infrastructure_investment_report.pdf
- World Economic Forum (2009), *The Global Competitiveness Report 2009-10*, WEF, Geneva.