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Australia's Productivity Growth Demystified

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Productivity in Australia grew the fastest in the late 1990s. During that period, Australia's productivity growth outperformed most other advanced economies and exceeded the 'golden age' surge of the 1950s to 1970s (Parham 2004). However, since reaching this peak, there has been an unprecedented slowdown in recorded productivity, suggestive of the diminishing effects from technology, globalisation and the microeconomic reforms developed and implemented during the 1980s and 1990s (Eslake 2011). Even in the absence of a slowdown, but especially in such a scenario, Australia must continue to invest in productivity as this is the main vehicle for bolstering economic growth, improving living standards and raising per capita income in the long run, *ceteris paribus*. This paper analyses the possible causes of Australia's declining productivity growth since the last decade and discusses its implications before proposing solutions to avoid a long-term downtrend.

Explaining Australia's productivity growth slowdown

Productivity gains can be measured by multi-factor productivity (MFP) growth or the Solow residual, which indicates the increased efficiency of labour and capital inputs of production as they transform into outputs. Figure 1 (ABS 2013a) shows that while Australia's labour productivity (LP) has continued to record positive growth, albeit at a slower pace than during the 1990s, MFP had fallen significantly by 1.3% from 2007 to 2013 (Productivity Commission 2014) and capital productivity in 2013 was 20% lower than it was in 1990 (Productivity Commission 2013). This is caused by a slowing rate of both the economy's movement towards the production possibility frontier and the actual expansion of the frontier (D'Arcy and Gustafsson 2012).

Australia's falling MFP growth can be associated with the absence of major productivity-inducing reforms since the new millennium. This 'lost golden age' view that Australia's productivity slump is due to the fading effects of previous microeconomic reforms that had

begun since 1983¹, coupled by the absence of additional positive shocks and the enforcement of ineffective regulations (Eslake 2011) has led to weakening incentives for firms to boost their productivity, resulting in less effective resource allocation and sub-optimal efficiency improvements. The implications from the lack of new reforms could also have been aggravated by the decreasing returns from the late 1990s information and communications technology (ICT) boom, poor innovation performance (Cutler 2008) and a mediocre ability to raise education levels in comparison to other developed economies (Thomson, De Bortoli and Buckley 2014) which can reduce labour quality. Moreover, an 'infrastructure deficit' (OECD 2010, p. 16) may also have played a role. Factors such as a historical underinvestment in transport infrastructure, poor coordination within government levels, as well as between public infrastructure development and macroeconomic management have created bottlenecks which restrain productivity and population growth. During cyclical low-growth periods such as the global financial crisis, lower investment spending and an inclination towards labour hoarding have restricted productivity growth. A labour market resistant to work intensification and longer working hours have also contributed to Australia's productivity concerns (Quiggin 2011).

Alternatively, the productivity slump has been linked to the continued poor performances of the utilities, mining, manufacturing and agricultural industries as modelled in Figure 2 (ABS 2011, ABS 2013a). It is estimated that the agriculture, utilities and mining sectors accounted for 80% of the fall in MFP growth during the 1998-1999 to 2003-2004 and 2003-2004 to 2007-2008 cycles (Eslake and Walsh 2011). Droughts and reduced runoff in Australia, along with increasing energy demands from a growing population, has influenced the MFP decline in the agricultural and utilities industries, with the water and electricity subsectors most affected (Productivity Commission 2014). The declining productivity growth in the mining industry since the mid-2000s is reflected by increases in capital and labour inputs but without proportionate gains in real output. This is partly due to resource depletion resulting in increased extraction costs and decreased output quality (Fairhead et al. 2006), exacerbated by the short-term and inefficient production of minerals during the mining boom.

¹ This includes privatisation, financial deregulation, labour market decentralisation, pro-competition policies, taxation reform and protection reductions.

Australia's recent productivity slowdown is predominantly perceived to be associated with the lack of productivity-raising reforms, rather than being due to sectoral weaknesses in the economy. If such reforms were implemented, GDP could increase by 2% in the long term (Productivity Commission 2006). Apart from the financial industry, Australia's deteriorating MFP growth has been largely broad-based across the economy, as illustrated in Figure 3 (ABS 2013a), and cannot be sufficiently explained by the productivity plunge of the few aforementioned industries alone. In those industries, gains in productive efficiency could have been understated by distorted MFP estimates from variations in unmeasured inputs and outputs, such as climate variability and lower-grade mineral deposits (Productivity Update 2013). More importantly, adjustment lags between investment and full production in mining (Topp et al. 2008), as well as in extra capacity for utility supplies, have undermined short-term MFP growth. It should be noted that the implications of slower productivity rates may not necessarily be undesirable if it meant that the economy is approaching full employment or signified declining unemployment levels through the increased employment of people with lower skills and productivity (Parkinson 2011).

Implications of slowing productivity

Australia's productivity slowdown has negative implications for economic growth, competitiveness and real per capita incomes growth. Australia requires MFP to grow by 0.7% annually to meet a sustained gross domestic product (GDP) growth rate of 3% (IMF 2014). A paralysed productivity crisis would slow Australia's growth as a result of higher transaction and production costs (Forsyth 2000) whilst decreasing output volumes and national income due to the less efficient use of inputs. The lack of adequate competitive pressures can cause inflation to rise which would increase the possibility of contractionary macroeconomic policies. This would lead to declining income levels and will lower Australia's standard of living. From a fiscal strategy perspective, the international competitiveness of Australia's local firms and export industries will be adversely impacted, leading to a widening current account deficit and a rise in net foreign liabilities, rendering the government less able to spend on priority expenditures.

However, Australia's terms of trade rose rapidly by 80% from 2003-2004 to 2011-12 (Plumb, Kent, and Bishop 2013) as shown in Figure 4 (Bullen, Kouparitsas and Krolkowski 2014). This has prevented the economy from experiencing a decline in real incomes growth as presented in Figure 5 (ABS 2013b), but the effects of higher commodity prices and a stronger domestic currency have slowed MFP growth (Bullen, Kouparitsas and Krolkowski, 2014). A declining productivity trend should be complemented by moderating demand and nominal income growth, or will risk accelerating inflation (Yellen 2005). This would pre-empt a tighter monetary stance, preventing firms from taking advantage of lower interest rates to invest in productivity. Additionally, a productivity slowdown will worsen the fiscal pressures of Australia's ageing population and declining participation rate, which affects GDP growth over the long-run. On the other hand, the implementation of reforms crucial for boosting productivity levels would result in a short-term rise in structural unemployment that will affect certain regions and industries.

Australia's slowing productivity growth has significant repercussions and must be addressed urgently. The productivity slowdown could have had more harmful effects on Australia's economy if not for the momentary terms of trade boom, underlining the importance of productivity as a less volatile source of incomes growth. The extent of Australia's future productivity growth will be embedded in the decisions of today. Reforms should be implemented quickly where their long-run benefits outweigh the short-run losses. A recovery in productivity growth will ease upward pressure on inflation, allowing stronger growth in profits and real incomes. The government will need to further assist workers impacted by structural reforms to re-orientate their employability skills. Strengthened labour market programmes, social welfare and tax systems instead of the market mechanism should be utilised to aid needy Australians.

Government Policies

As a developed economy, Australia should not only focus on demand-based economic growth; supply-side technical change is equally vital. Economic growth can be endogenised with greater investment in social and economic infrastructure, supplemented by microeconomic reforms and policies that enhance technical efficiency, stimulate innovation

and foster entrepreneurship (Fu, Huang and Lovell 1999). Macroeconomic stability can also lift productivity by reducing uncertainty in decision-making (Swan 2010).

Although the benefits of microeconomic reforms may appear to be short-lived and delayed (Quiggin 2011), the replacement of inefficient regulations in the operating environments of many Australian industries, notably in telecommunications, utilities and transport, have led to higher productivity growth in the 1990s. New reforms should be implemented to embolden productive entrepreneurship and increase competition in the factor markets. Protected domestic industries that have traditionally enjoyed high artificial competition restrictions, such as agriculture and manufacturing, should be deregulated to become more exposed to foreign competition while underperforming publicly owned assets can be privatised to increase productivity². Enhanced microeconomic flexibility, which promotes the process of creative-destruction (Caballero et al. 2013), reduced costs from regulation and taxation reforms (Australian Treasury 2010) can also influence aggregate productivity growth. The government's adoption of new regulations should require collective and prudent decision-making as their unintended costs could hamper productivity advances.

Expanding on the Solow-Swan model, perhaps the most crucial enablers of lasting productivity growth are progresses in technology and human capital (Solow 2005). Australia can develop 'smart cities' by investing more in these areas to extend its production frontier. The need for sustainable innovation requires Australians to embrace the development and diffusion of technology. Domestic companies, particularly larger ones, must be encouraged to utilise and produce more innovative products as they undertake new research and development. Simultaneously, the government should stimulate Australia's ICT uptake rates by providing incentives and reducing financial barriers to invest in technology that can reduce work intensity and improve green productivity.

Human capital accumulation can be derived from improvements in education and health (Schultz 1961). Reforms in Australia's education and public healthcare systems are inevitable in order to provide a more equitable and inclusive access to such quality services.

² For example, the Royal Australian Mint, the National Broadband Network and Australia Post.

Improvements in education, training and research supplemented by wider applications of distance learning will equip prospective employees with better employment and management skills (Puentes and Tomer 2014). The consequential knowledge spillovers and enhanced labour mobility will similarly benefit productivity (Arrow 1962). As the returns from investments into education will be optimised by working *smarter* (Ashenden 1990), Australia's government must prioritise further investments in digital infrastructure to foster long-term productivity gains and espouse policies that will enable a broader access to computing capabilities, including the mandatory learning of programming across schools.

Finally, upgrades reinforcing the quality of Australia's infrastructure markets will drive up productivity in the medium run. The government must commit to farsighted nation-building to address urban issues that undermine Australia's productivity growth, for example ineffective transportation networks, congestion and housing affordability. The easing of infrastructural bottlenecks would strengthen Australia's position as a creative knowledge-based economy and would raise the international competitiveness of the nation's cities.

Conclusion

As the saying goes, 'All good things must come to an end'. Australia's productivity boom during the 1980s and the 1990s ended sooner than many economists anticipated. The absence of continued microeconomic reforms, abetted by cyclical factors and measurement errors, are just a few of the many explanations of Australia's deceleration in measured productivity growth during the last decade. It is still uncertain whether Australia's productivity crisis has ended, and indeed questions have been raised as to whether it had actually existed (Foster 2014). In any case, further structural reforms, supported by the Government's vision to encourage technological adoption and innovation with complementary investments in developing social-overhead, physical and human capital are needed to guard against complacency in order to ensure that there will be future progress in Australia's living standards through further productivity growth.

Appendix

Figure 1: ABS productivity estimates

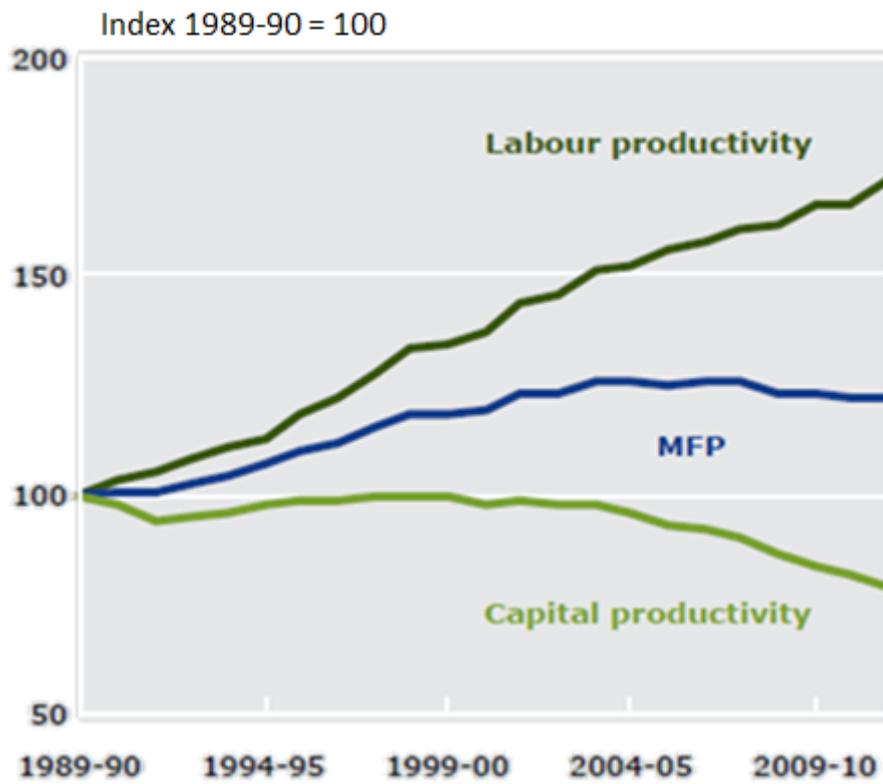


Figure 2: Productivity by sector

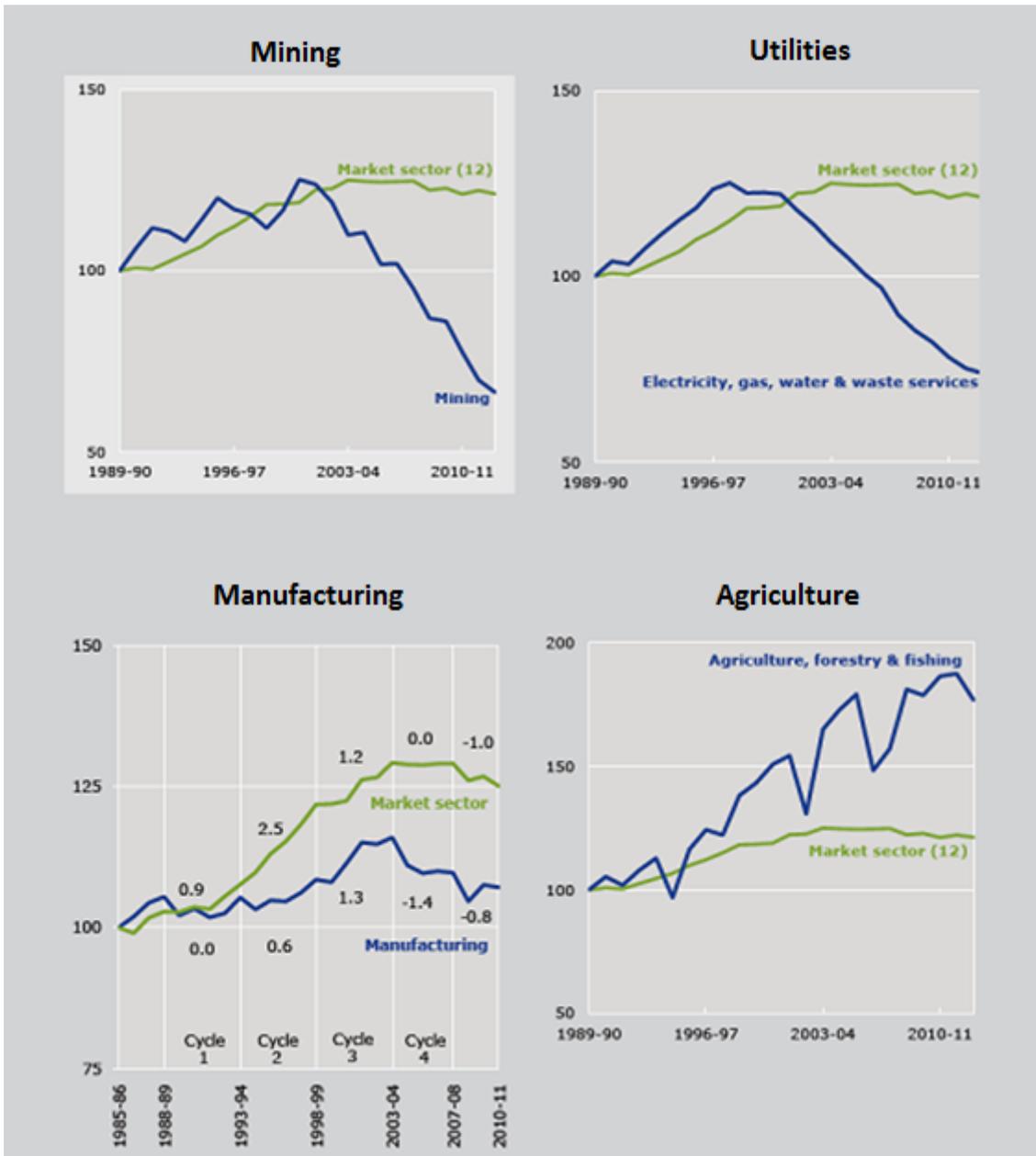


Figure 3: Multifactor productivity growth

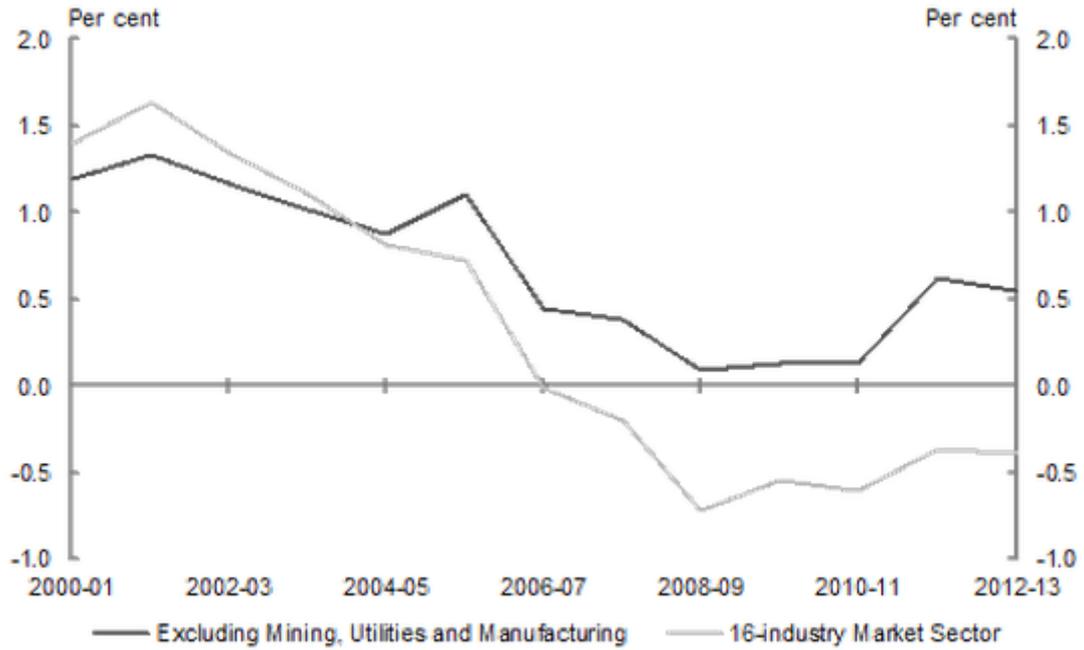


Figure 4: Terms of trade history, forecasts and projections

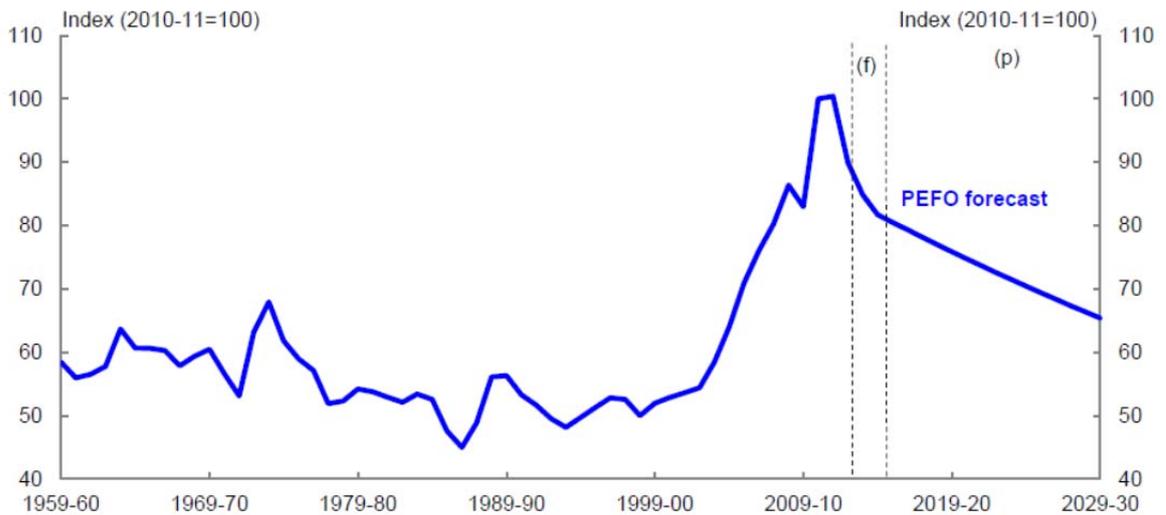
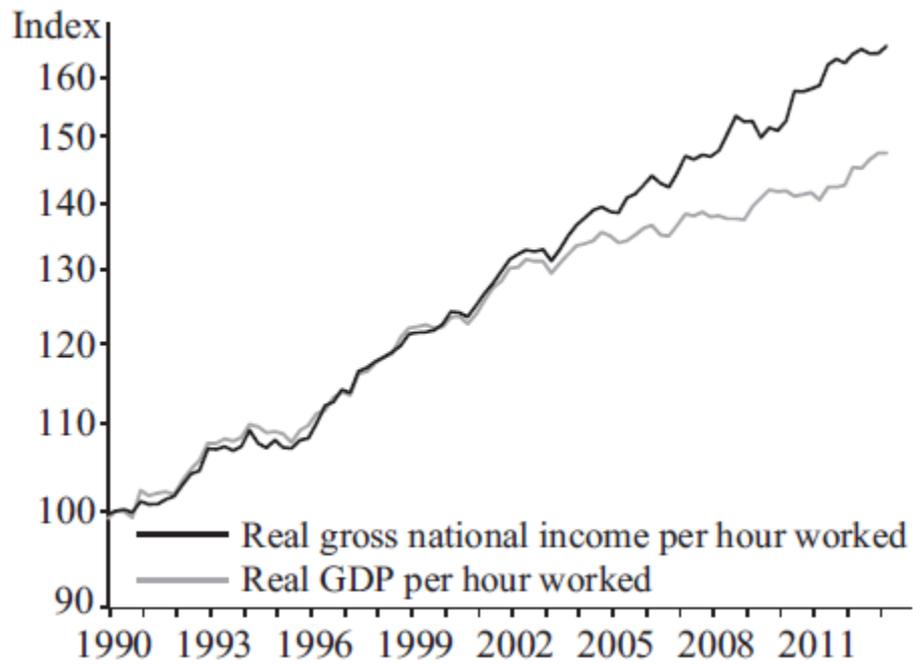


Figure 5: Productivity and Income



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