



**Australian Government**  
**Productivity Commission**

# PC PRODUCTIVITY INSIGHTS

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AUSTRALIA'S LONG TERM PRODUCTIVITY EXPERIENCE

## Features

COVID-19 has ended  
Australia's recession-free  
streak

Learning from past  
recessions

Working smarter not harder  
has been key

Australia's high standard of  
living is not guaranteed

The role of policy in  
Australia's shifting fortunes

Where to next?

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### **The Productivity Commission**

The Productivity Commission is the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians. Its role, expressed most simply, is to help governments make better policies, in the long term interest of the Australian community.

The Commission's independence is underpinned by an Act of Parliament. Its processes and outputs are open to public scrutiny and are driven by concern for the wellbeing of the community as a whole.

Further information on the Productivity Commission can be obtained from the Commission's website ([www.pc.gov.au](http://www.pc.gov.au)).

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## Foreword

This is the Productivity Commission's third *Productivity Insights* paper of 2020.

Australia is now experiencing its most severe economic contraction since the Great Depression. This has given rise to economic uncertainty and a complex policy landscape. The pandemic is creating new and unprecedented challenges. Some insights about how to deal with this can be gleaned by looking at past downturns and the broader history of Australia's economic performance.

The first is that the Australian economy has weathered severe recessions in the past. In most cases, the impact on economic growth was relatively brief while the impact on labour markets was longer lasting, with unemployment sometimes remaining high for more than a decade after the recession ended. As the Commission's (2020b) recent work on youth incomes has shown, not all parts of the labour market are impacted equally and the current downturn is likely no exception.

The second is that almost all of Australia's long-term increases in income are due to labour productivity growth. The average Australian worker produces in one hour what took the typical worker seven hours at Federation, and this has been accompanied by an almost proportional increase in income. While the terms of trade or labour utilisation can make a difference, it is ultimately productivity growth that will determine our future living standards.

The third lesson is that Australia's economic fortunes have waxed and waned over time. At the turn of the Twentieth Century, Australia was the highest income country in the world. For much of the following century, Australia's relative per capita incomes declined, sometimes because of modest absolute growth, and sometimes due to growth which underperformed relative to other developed economies.

In some respects, it was unsurprising that Australia's relative standing slipped. Similar fates befell both New Zealand and (to an even greater degree) Argentina. Some attribute Australia's rise and subsequent fall in relative income to 'Midas and the merino' — the prominent role of gold mining and agriculture (especially wool farming) in the world economy that diminished with the rise of manufacturing. Natural resources undoubtedly played a role, but policy settings likely did not help matters.

The fourth lesson of this paper, highlights two examples of policies that have shaped Australia's fortunes. The first is the set of policies we call 'Fortress Australia'. Born in the wake of the economic crisis of the 1890s and expanded through the turmoil of two World Wars and the Great Depression, this policy set promoted what has been described as 'protection all round' through tariffs, wage arbitration and government monopolies over key industries.

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While this policy mix was accompanied by a degree of stability at first, greater fragility became evident over time. The walls of Fortress Australia were unable to protect us from the economic turmoil of the 1970s and contributed to Australia sliding down the income ladder. By contrast, the second example, the microeconomic reforms of the 1980s and 1990s (with the aid of beneficial macroeconomic reform) laid the foundations for the past 30 years of economic prosperity. Part of the success of these policies was to move the economy away from one where special interests distorted the flow of resources to one where competition played a much greater role. The result was an end to Australia's relative income decline and nearly 30 years of continuous growth that outpaced most other advanced economies (including all of the G7).

Recessions in Australia have been rare in recent times. When they have occurred, they prompted policy shifts, such as in the early 1980s and early 1990s. The current recession will also lead to consideration of, and debate over, the appropriate policy mix to foster recovery and promote future productivity growth. Inevitably, some aspects of this future reform agenda will be new and different — reflecting changes in the economic context compared with that of the early 1980s and specific to the particular impacts of the COVID-19 pandemic. But in large part it should also reflect the principles that successfully guided policy over the last 30 years.

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# Australia's long term productivity experience

## Key points

- Australia has entered its worst recession since the Great Depression because of the COVID-19 pandemic.
  - Australia's future prosperity will be affected by the severity and length of the downturn, but also by the growth rate of productivity once the economy has recovered.
  - The policy challenge is to support a strong and rapid recovery, consistent with policy settings that can also drive faster productivity growth in the medium and long term.
- Despite a 28-year recession-free streak, this country is no stranger to recessions.
  - In the past 250 years, Australia has weathered severe recessions and recovery has usually been swift.
  - However, labour markets are often weak long after the recession has ended. In some cases, unemployment has remained high for over a decade after the initial downturn, and 'hidden unemployment' (from lower participation rates) can further exacerbate this.
- Almost all of Australia's longer-term growth in incomes and wages is attributable to labour productivity growth, with policy playing a key role in driving this growth.
- Australia's economic fortunes have waxed and waned over time.
  - At the turn of the Twentieth Century, Australia had the highest GDP per capita of any country in the world (including the United States of America).
  - For much of the next century, Australia's relative standing slipped, despite some periods of strong absolute productivity growth.
  - And although Australia has always been a high income country, it is only in the last three decades that our relative income has improved against the frontier, due to growth in GDP per capita outpacing all of the G7 countries.
- Australian policymaking has both shaped, and been shaped by, our economic environment.
  - In the decades following Federation, Australia developed a policy framework that included inward looking and protectionist elements, such as tariffs, import quotas, export controls and a highly regulated labour market.
  - This 'Fortress Australia' policy was designed to boost population growth, maintain stable economic growth, and achieve an equitable distribution of incomes. But over time the weaknesses of this model became evident and started to undermine its very purposes.
- A series of macro and microeconomic reforms dismantled Fortress Australia, gradually exposed the economy to competition and allowed resources to be allocated more efficiently.

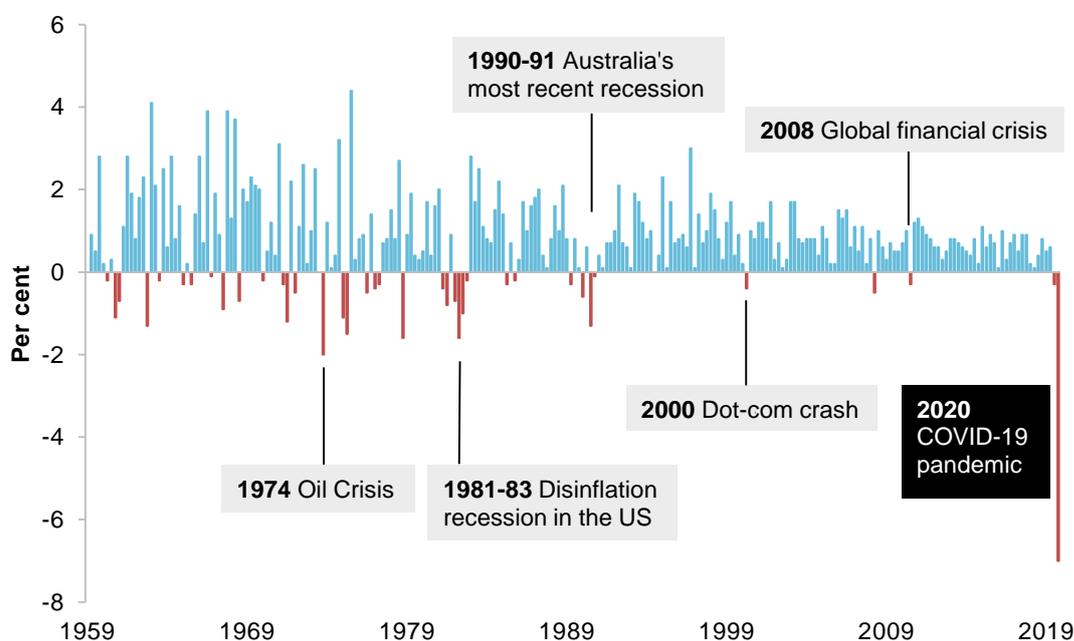
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# 1 COVID-19 has ended Australia's recession-free streak

The COVID-19 pandemic has ended Australia's 28-year recession free streak. We have already experienced the most disruptive shock to employment since the ABS has kept records, with nearly 1 million Australians losing their jobs in March as nationwide lockdowns were enforced (ABS 2020c). Household consumption fell 12.1 per cent in the June quarter and GDP fell 7.0 per cent (the largest fall since the ABS began keeping records in 1975, figure 1) (ABS 2020b).

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Figure 1 **COVID-19 caused the largest quarterly fall in GDP on record**  
Quarterly growth in GDP<sup>a</sup> between December 1959 and June 2020



<sup>a</sup> Gross Domestic Product, chain volume measures.

Source: ABS (*Australian National Accounts: National Income, Expenditure and Product, June 2020*, Cat. no. 5206.0, table 1).

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Recessions often mean that fiscal, monetary and other arms of policy are rapidly adapted to address the immediate challenge. This can make a contribution to long term living standards, because the severity of recession and the speed of recovery can make a difference to the longer term trajectory of growth, particularly given the scarring effects of major downturns (such as workers losing skills and connection with the labour market). However, long-term living standards are also affected by underlying structural policies and institutions whose effects can play out over a longer period. Past recessions have often caused a rethink of those broader policy settings.

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## 2 Learning from past recessions

In just under 250 years of European settlement, Australia has experienced many recessions.<sup>1</sup> In each case the economy has recovered, although often with long-lived, harmful effects on households due to high unemployment (figure 2). For example, during both the 1890s depression and the Great Depression, Australia's unemployment rate reached a peak of about 20 per cent (figure 2).<sup>2</sup>

Australia has experienced only three recessions severe enough to be commonly referred to as 'depressions': 1840 to 1842, 1890 to 1896, and 1930 to 1933 (Madsen 2015, p. 34). Most Australian recessions have tended to be more 'demand' driven rather than 'supply' driven (apart from the oil crisis and subsequent 'stagflation' of the 1970s). That is, they were characterised by the combination of low inflation in addition to low output growth (Fisher, Otto and Voss 1996).

Australia's only previous pandemic driven economic downturn, which followed the arrival of the Spanish Flu, appeared to be both sharp and short. Disentangling the economic effects of the war and the pandemic is difficult. Nonetheless, Bishop (2020) argues that the majority of the 3 per cent rise in 'unemployment' (which, at the time, included both those seeking work and those incapacitated from work due to illness) during the pandemic can be attributed to the effects of the Spanish Flu. This consisted mainly of people who were unable to work due to illness (2 per cent), with the remainder unable to find work due to weak demand (1 per cent). While the economic recovery from the Spanish Flu appears V-shaped at face value, Bishop notes:

Overall, the effects of the Spanish Flu on Australian GDP are very hard (if not impossible) to pin down due to the inability to control for other factors [such as the war] that influenced economic growth. (Bishop 2020, p. 14)

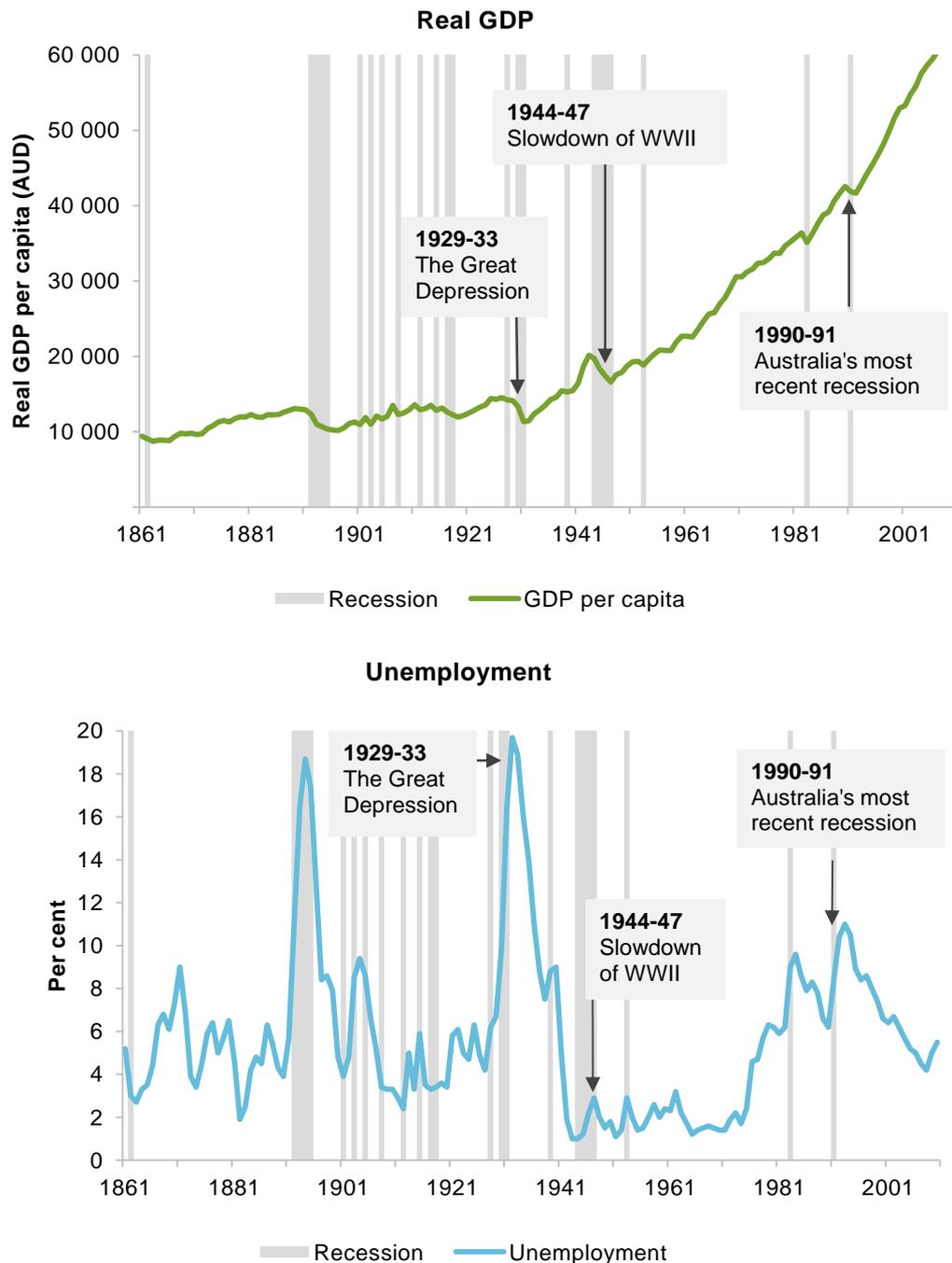
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<sup>1</sup> The actual number of recessions in Australia's economic history cannot be accurately estimated due to the absence of official quarterly data prior to the establishment of the Australian Bureau of Statistics. For pre-1960 data, this note uses a year of negative GDP growth in the Butlin, Dixon and Lloyd (2015) dataset as indicative of a recession. Different datasets give different amounts of, and severity, of downturns, though they are quite consistent in estimating long-term growth (Madsen 2015, pp. 30–31).

<sup>2</sup> There is uncertainty about the Australian unemployment rate during the Great Depression due to potential issues of underreporting, discouraged-worker effects and informal work-sharing agreements. Some sources cite a peak of up to 30 per cent (McLean 2013, p. 161).

**Figure 2 Despite weathering many recessions<sup>a</sup>, the Australian economy has always recovered**

Australian real GDP per capita and unemployment from 1861 to 2010 with recessions marked



<sup>a</sup> Due to the absence of official quarterly data, this chart defines a recession as a year of negative growth in real GDP rather than the technical definition of a recession — two consecutive quarters of negative growth.

Source: Butlin, Dixon and Lloyd (2015).

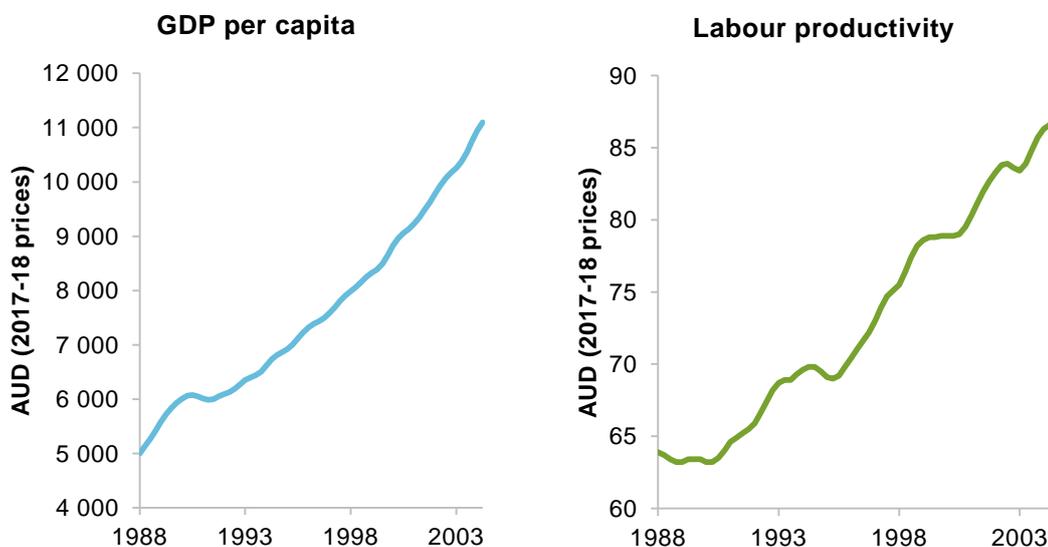
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## Employment recovery tends to lag

Australia's most recent recession (1990-91), the worst since the Great Depression, is a good example of the characteristics of previous downturns. Specifically, growth and productivity recovered relatively quickly but labour market impacts persisted, and some indicators never fully recovered (figures 3 and 4). Indeed, productivity grew so fast in the period following this recession that economists sometimes talk of Australia's 'productivity revival' of the 1990s (Parham 2004). However, employment recovered slowly during this period, with the unemployment rate only falling below pre-recession levels in 2003-04, 13 years after the end of the recession. A higher rate of underemployment has persisted, although it is doubtful that this reflects the lingering impact of the recession. Given that most of the effect was concentrated among 15–24 year olds, it is likely that persistent underemployment also reflected structural changes in the economy (Vandenbroek 2018). For example, the increase in the proportion of individuals participating in part-time work is likely to have made underemployment more prevalent than when full-time work was the norm.<sup>3</sup>

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Figure 3 **The 1990s recession had a mild effect on GDP and productivity ...**  
Real GDP per capita (left) and labour productivity (right) from 1988-89 to 2003-04

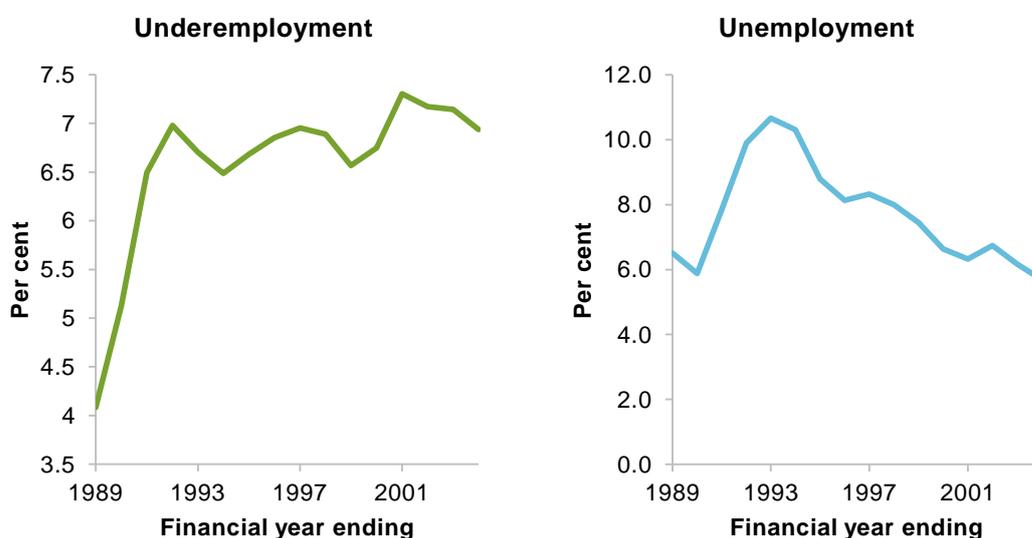


Source: ABS (*Australian National Accounts: National Income, Expenditure and Product, Dec 2019, Cat. no. 5206.0, table 1*).

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<sup>3</sup> Rising underemployment may reflect the common characteristics of part time work. Workers may be able to find either full-time work, or underemployed part-time work, but not 'fully employed' part-time work (perhaps due to the transaction costs involved with holding multiple part-time jobs). So, the longer term (largely voluntary) rise in part-time work may go some way to explain the increase in the level of underemployment. Indeed, the ratio of underemployed workers to part-time workers had mostly recovered to pre-1991 levels before the Global Financial Crisis, supporting this interpretation (ABS 2018). Therefore, rising underemployment may be due to individuals' preferences combined with increased transaction costs in finding and providing part time work rather than cyclical job losses.

**Figure 4 ... but unemployment remained higher for 13 years, and underemployment remained high throughout the period**  
 Unemployment (left) and underemployment<sup>a</sup> (right) from 1988-89 to 2003-04



<sup>a</sup> Underemployment consists of part time workers who would like to work more hours and full-time workers who have recently been forced to become part time.

Sources: Unemployment: ABS (*Labour Force, Australia, Detailed - Electronic Delivery, Nov, 2009, Cat. no. 6291.0.55.001, table 16A*); underemployment: ABS (*Labour Force, Australia, Dec 2009, Cat. no. 6202.0, table 20*).

## The COVID-19 recovery and aftermath

Will we see a V-shaped recovery?

Determining the shape and duration of the recession caused by COVID-19 is highly speculative given the unusual circumstances that brought it about. The emergence of COVID-19 would likely have had a significant adverse impact on economic growth even in the absence of government-imposed restrictions on activity, due to a voluntary reduction in economic activity out of fear of infection.

To the extent that the reduction of COVID-19 cases and the consequential removal of restrictions acts to spark recovery, the trajectory could mirror the characteristics of past, demand-driven recessions. GDP per capita and labour productivity have generally recovered quickly from these recessions. By contrast, unemployment/underemployment often persists, though in the case of the unemployment caused by the Spanish Flu, the recovery appears to have been relatively swift. Moreover, in previous recessions there have also been persistent

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falls in labour force participation, due to discouraged workers leaving the labour force, and the current economic downturn appears to also show some signs of this effect.<sup>4</sup>

This recession has some characteristics that may differentiate it from both past demand-driven recessions or even the economic downturn caused by the Spanish Flu. For example, unlike the Spanish Flu epidemic — during which herd immunity was eventually reached — at least some restrictions on economic activity could persist until a viable treatment or vaccine is widely available. That is, even if the virus is successfully suppressed, there will be an ongoing risk of virus outbreaks, and international travel (and possibly trade) will need to be restricted. This means that the severity and length of the economic crisis will be driven by how long it takes to discover a vaccine or treatment.

There are two structural changes in the economy acting in opposition to either dampen or strengthen the prospects of a swift recovery. First, many employees are able to work remotely and many consumers shop online, creating new jobs and allowing existing employees to work through the pandemic. Second, and opposing this, about 90 per cent of employment is in services, and many aspects of service delivery requires face-to-face interaction (ABS 2020d). If the pandemic persists, this may limit the employment prospects of individuals that operate in industries that require face-to-face interaction. How the greater ability to work from home will ultimately balance out the greater proportion of service sector employment remains to be seen.

### Potential productivity effects of the pandemic

In the long term, this pandemic is likely to affect productivity, but the magnitude and direction of these effects is uncertain.

On a positive note, the quick adaptability of the economy has been impressive. About 50 per cent of the workforce had moved to working from home by September 2020, with early indications of a smooth transition (ABS 2020a). Furthermore, many firms have innovated to make their services more accessible remotely (including high end restaurants resorting to takeaway, greater use of virtual exercise classes). For large portions of the year both health and education services shifted to online or remote delivery to some extent. The increased pressure on firms to facilitate both remote work and remote delivery to consumers will likely have a long-lasting increase in the tradability of services. This could result in greater capital-intensity of services and more competitive pressures that would result in greater productivity growth.

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<sup>4</sup> Labour force participation (seasonally adjusted) peaked at 63.9 per cent in August 1990 (prior to the 1990-91 recession) and steadily fell over the next three years, not reaching similar levels until December 1995 (63.7 per cent). In the initial months of the COVID-19 downturn (between March and May 2020), seasonally adjusted labour force participation fell from over 3 percentage points but has recovered about two-thirds of this initial fall as of September 2020 (ABS 2020f).

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However, a sustained reliance on remote work is a double edged sword. On the one hand, there may be an increase in leisure time (or at least flexibility for those with caring responsibilities) due to reduced commute times, and improved human capital as workers and firms adopt the technology required to work from home (Quiggin 2020). Additionally, weakening the link between geography and employment could lead to better matching of employees and employers (Zenou 2009). On the other hand, remote work has risks — both to the productivity of businesses and the divide between work and leisure. Innovation is elusive and often occurs through serendipitous person-to-person exchange. While new ideas can foster through virtual exchange, it is perhaps less likely. A prolonged period of remote work may reduce the organic development of ideas, dampening potential productivity gains had these ideas come to fruition.

The effects of pandemic are not isolated to domestic consumption and production; countries have significantly reduced international trade and travel. Multinational vertical supply chains are under threat as transaction costs increase threatening accrued productivity gains. In response, countries will likely increase the diversification of their economies to become more self-sustaining. While this may improve resilience to future shocks, it risks reducing competitive pressure and lowering the scale of production (reducing the scope for specialisation). Additionally, as cross-border labour mobility is restricted, countries may find it difficult to meet some of their more specialised labour needs.

COVID-19 represents a significant adjustment for the Australian economy. There are positive and negative effects due to the reallocation of resources; in aggregate how this effects productivity is unknown. However, we do know that facilitating adjustment will be essential to a fast recovery.

### Policy's role in supporting the efficient reallocation of resources

The COVID-19 pandemic has created significant uncertainty about the future shape and composition of the economy. The staggered lifting of restrictions, the potential for enduring changes in consumer preferences and work patterns and shifts in global trade and investment mean that recovery is unlikely to restore the economy to its pre-COVID structure.

Amidst this uncertainty, individuals and businesses will make decisions about how to best adjust to the temporary changes in the economic environment. They will do this with information (subjective beliefs and the diffuse knowledge which aggregates up into prices) that, although imperfect, is no worse than — and often better than — information available to policymakers.

Government's role is to empower not impede individuals and businesses to make efficient allocations of inputs. This is an important principle even in times of relative macro-economic stability: an economy's resources should be allocated to their highest value use. It is arguably even more important during a period of significant reallocation (such as in a recession and subsequent recovery) when the *speed* and *smoothness* of the adjustment is important as well as the *direction* of the reallocation (i.e. towards a more efficient allocation of resources).

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Legacy features of the Australian policy landscape may, unless reformed, inhibit the economy's response to COVID-19. For example, land use regulations inhibit movement of capital and labour for businesses and workers. Additionally, occupational licensing restrictions, while sometimes necessary, impose a transaction cost for workers looking to change roles. Regulatory barriers to business formation and expansion restrict the ability for companies to expand into areas which have received positive demand shocks due to COVID-19.

In order to assess how the restrictiveness of our policy landscape will affect Australia's ability to respond after a major shock, it is useful to take a historical perspective. Given that the last pandemic to affect Australia was in 1918, we review over a century of productivity evidence for insights to the current crisis.

### **3 Working smarter not harder has been the key to Australia's economic prosperity**

#### **What determines Australia's material living standards?**

Australia's material living standards depend upon our ability to produce goods and services, and the price of our export products compared to the price of our imports (the 'terms of trade'). Our ability to produce goods and services depends on our use of inputs (labour and capital) and how efficiently we use them (multifactor productivity). The terms of trade are driven by the prevailing prices on world markets and are largely out of the control of Australians. Labour input usage increases when more Australians: are of working age (high ratio of young to the old and very young), participate in the labour force (high participation rate), find it easier to gain employment (low unemployment rate) and work more hours (high hours per employee). Australians can increase their use of capital in production by saving more (choosing to forgo spending their incomes today, to consume more tomorrow) or by accessing funds from overseas, via debt or equity (foreign investment).

Finally, increases to multifactor productivity (MFP) originate from advancements in technology (for example chainsaws replacing handsaws) or changes in business practices (for example, arrangement of workspaces, inventory management, online ordering, logistics). These MFP increases can come from innovations or changes in business practices that originate in Australia, or they can be adapted from ideas originating overseas. In standard growth theory, MFP drives further increases in capital intensity.<sup>5</sup> Figure 5 summarises the components that contribute to Australian economic growth.

Although labour and capital utilisation play a key role in ensuring Australia's economic prosperity, they are ultimately exhaustible sources of growth (if population growth and technology are constant). That is, there is an upper limit to how many Australians can

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<sup>5</sup> This considers the role of MFP in the canonical Solow/Swan models, under certain assumptions, usually: perfectly competitive markets, hicks-neutral technology, exogenous savings rate amongst others (Solow 1957; Swan 1956).

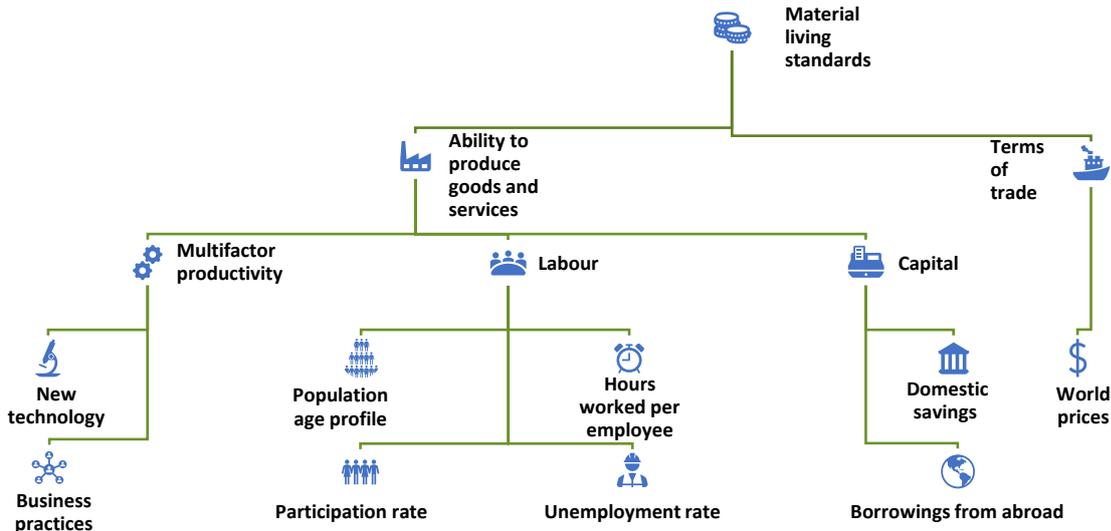
participate in the workforce, how many hours they can work and how much they can save or borrow from overseas to fund capital accumulation. Ultimately, once capital and labour are already being highly utilised, further per capita economic growth must be driven by growth in MFP.

This growth in MFP then drives increases in capital-deepening that further propels growth.

For many purposes, it is useful to discuss productivity in terms of the amount of production per hour worked (‘labour productivity’). These productivity increases are driven by the combination of capital-deepening (increasing the ratio of capital to labour) and MFP.

These observations also have policy implications. Demand stabilisation (or ‘cyclical policy’) plays a key role in ensuring labour and capital are being utilised in the short term. For this reason, it is desirable for governments and central banks to use monetary and fiscal policy to raise investment and lower unemployment in response to a negative economic shock. And in the medium term, policies that support participation in the workforce and encourage efficient investment facilitate economic growth. This might include removing regulations that distort investment or lower labour force participation. However, in the long term, if labour and capital are already being utilised, policy can only affect growth through enabling productivity gains. Indeed, over a long horizon, almost all of Australia’s growth in GDP per capita is attributable to labour productivity growth (the combination of capital-deepening and MFP).

**Figure 5**      **Determinants of Australia material living standards**  
Contributors to material living standards<sup>a</sup>



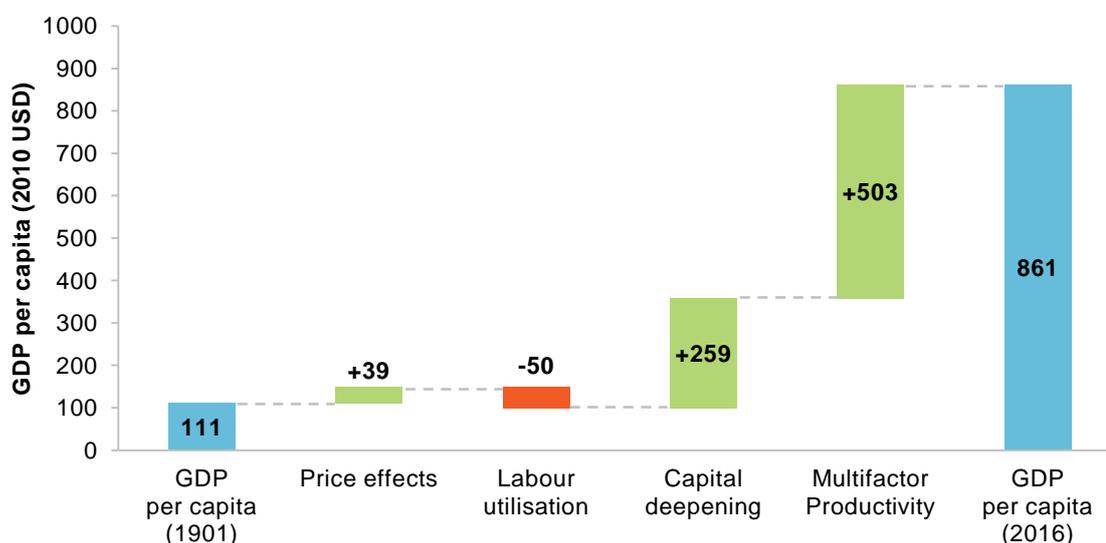
<sup>a</sup> Where material living standards are measured by Gross Domestic Income. Alternative measures, such as Net National Income or Gross National Income would require consideration of net foreign borrowing and depreciation of assets.

## Almost all of Australia’s growth in material living standards is due to labour productivity growth

Since Federation, almost all of Australia’s GDP per capita increases are attributable to labour productivity growth (the combination of MFP and capital-deepening), with terms of trade changes accounting for only a small portion and labour utilisation slightly dampening growth (figure 6). Two thirds of these labour productivity gains have come from MFP increases with the remainder being due to capital-deepening (increasing the ratio of capital to labour).

**Figure 6 Productivity explains the majority of GDP per capita growth since Federation**

GDP per capita (2010 USD) per week<sup>a</sup> in 1901 and 2016 (quoted in 2010 USD), and the dollar contributions due to price effects<sup>b</sup>, labour utilisation<sup>c</sup>, capital deepening<sup>d</sup> and MFP



<sup>a</sup> GDP per capita is quoted in weekly terms for tractability. <sup>b</sup> Price effects are the portion of growth in real GDP (when converted using current purchasing power parity (PPP)) that is not explained by growth in real GDP (when converted using constant PPP). These include the effects of the terms of trade. <sup>c</sup> The portion of GDP per capita growth not accounted for by labour productivity growth. <sup>d</sup> The portion of labour productivity growth not accounted for by MFP growth.

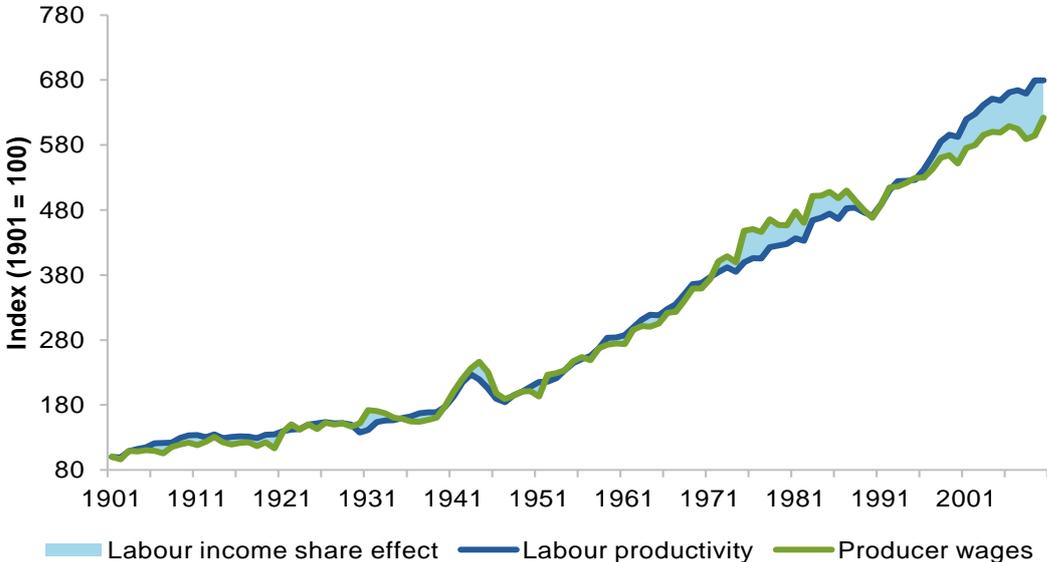
Sources: Commission estimates based on Bergeaud et al. (2017) and Bolt et al. (2018).

Decomposing the proximate drivers of growth in this way can be a little misleading in identifying the ultimate causes of prosperity. For example, capital-deepening is partially driven by growth in multifactor productivity and increases to the terms of trade (whose direct effects are not included in real GDP growth rates) can incentivise labour utilisation and capital accumulation. And below these are deeper factors. Institutional settings and the policy environment are key determinants in whether Australians can benefit from terms of trade changes or whether businesses have incentives to adopt productivity-enhancing practices.

It also worth noting that productivity not only has a strong relationship with growth in output, but growth in real wages as well (figure 7). Indeed, almost all wage growth since Federation appears to be due to labour productivity growth, with changes in the labour share of income explaining a small remainder (as labour increases or decreases its share of the pie, wages can deviate from productivity growth).<sup>6</sup> And these increases in real wages have occurred while the hours worked by the typical employee has fallen, arguably reflecting an additional dividend from rising productivity (figure 6).

**Figure 7 Productivity growth explains almost all wage increases since Federation**

Indices of labour productivity, real producer wages<sup>a</sup> (1901 = 100) and the labour income share effect<sup>b</sup> from Federation to 2010



<sup>a</sup> Real wage is deflated by the GDP deflator rather than CPI. This means that it underestimates wage growth in recent decades due to the GDP deflator growth outpacing CPI growth. <sup>b</sup> The effect of the labour income share is the portion of real wage growth not accounted for by growth in labour productivity. Note that, because total factor income and gross value added grow roughly but not exactly proportionally (the former does not include taxes and subsidies while the latter does), some of this term will be due to the difference in growth between total factor income and gross value added.

Sources: Commission estimates based on Bergeaud et al. (2017) and Butlin et al. (2015).

<sup>6</sup> In figure 7, the divergence between producer wages and labour productivity appears to be increasing but this is mainly due to use of indices, which mean more recent values seem more important than past values. If instead one looks at the labour share of income directly, it appears that the recent fall in the labour share of income (from 55 per cent to 52 per cent between June 2000 and June 2020) is relatively small compared to, say, the rise in the 1970s from 53 per cent to 62 per cent between June 1970 and June 1975 (ABS 2020e).

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## 4 Australia's high standard of living is not guaranteed

Assessing a country's economic performance, and the effect of policy, always involves a degree of judgement and even a little speculation. Ideally, Australia, at every point in time, would be compared to its performance under an alternative set of policies or circumstances. But given such an exercise is not possible, the comparison that is usually made in practice is against a benchmark economy that represents the highest attainable level of productivity. As discussed in the last *Insights* paper (PC 2020a), this benchmark is usually the United States, and this approach will be adopted here as well.

Nonetheless, it is worth cautioning that the causes of a particular countries performance may reflect factors that are unattainable (or undesirable) for Australian policymakers, and so one must be cautious in interpreting any gap in Australian-US levels of income as being a failure of policy. The extent to which domestic or external factors drive changes in relative living standards, and to the degree to which these were alterable by institutional or policy settings will be discussed, albeit with caution given the uncertainty involved.

For the last century and more, Australia has been a high income country. But in relative terms, Australia's economic fortunes have waxed and waned over time. For example, at the turn of the Twentieth Century, Australia,<sup>7</sup> along with New Zealand and Argentina, stood at the top of the world income ladder (well ahead of even the United States, figure 8). But over the following century, these leading positions were lost. Indeed, since the time that they were among the richest countries in the world, incomes in New Zealand have fallen to 64 per cent of those in the US, and in Argentina they are only 35 per cent (as at 2016, figure 8).

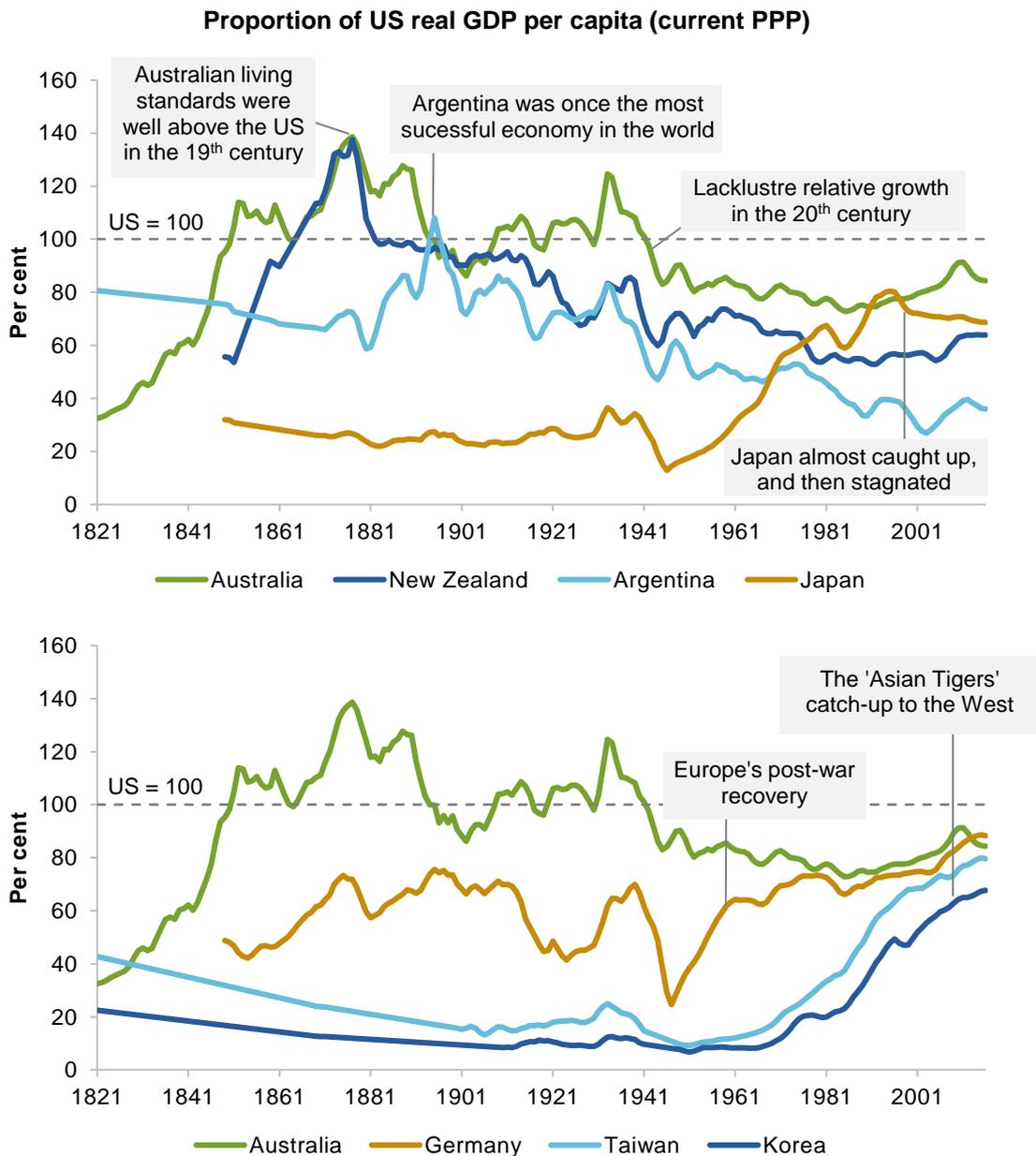
Other economies have more positive stories. Japan achieved a significant rise in per capita incomes following the Second World War. Indeed in the 1980s some commentators even thought that the Japanese economy would permanently eclipse that of the US (Phelan 2019). However, after stock and housing prices collapsed, the influence of an ageing population and other structural problems were felt, and the economy fell into the prolonged malaise of the 1990s 'lost decade'. Incomes in Japan have now fallen to 69 per cent of US levels. More recently, the 'Asian Tigers', including South Korea and Taiwan, are examples of countries that have quickly risen from relatively low levels of GDP per capita to be among the set of advanced economies in only a few decades (figure 8).

As figure 8 demonstrates, Australia's relative living standards (as measured by per capita GDP compared with the United States) fluctuated considerably from the 1820s onwards. Notwithstanding this relative performance, Australia's *absolute* income levels rose fairly steadily, subject to occasional setbacks such as recessions, war and other external shocks.

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<sup>7</sup> Being an aggregate figure, this increase in average incomes hides significant distributional differences across the community, and in the case of Indigenous Australians, statistics largely excluded them until the 1960s. This omission means that long range historical data on the Australian economy can mask the effects of colonisation on the Indigenous community.

**Figure 8 Some countries have converged, others have faltered**  
 GDP per capita as a proportion of the US (PPP adjusted, three year moving average) for select countries



Source: Commission estimates based on Bolt et al. (2018).

Like all histories, Australia’s economic history consists of a patchwork of individual chapters, rich in their complexity, which makes it hard (and risky) to generalise about large scale secular trends. Nonetheless, Australia’s relative standard of living (at least compared with that of the US) experienced a period of increase from 1820 to around 1890, going from a little over 30 per cent of the United States GDP per capita to a little under 130 per cent. This was followed by a period of declining relative incomes between 1890 and 1990 which

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saw Australian GDP per capita fall to about 75 per cent of US levels. The period from 1990 to the present has seen a partial revival where Australia's GDP per capita rose steadily to nearly 85 per cent of US levels.

## Wealth for toil

The reasons for Australia's rise to the top of the income ladder in the late Nineteenth Century are hard to quantify due to data limitations. Commission estimates show that the higher ratio of males to females in Australia<sup>8</sup> at that time, along with price effects (including favourable terms of trade), together account for about a third of this rise in relative income (figure 9). The higher ratio of males to females in Australia at this time was due to a historically high level of migration that slowly dissipated. This raised per capita incomes because labour force participation (in the formal market) was much higher among men at this time. The other two thirds of the relative income growth appears to be some combination of higher hours per male worker, higher participation of male workers and higher labour productivity (together making up real GDP per male) (figure 9). These estimates are slightly different to McLean (2007) who found about half of Australia's income advantage at this time was due to a higher ratio of males to females, with the remainder due to productivity.

Explaining Australia's apparent productivity advantage involves a degree of speculation. Some economists have argued that Australia's high growth of productivity was due to rapid expansion of the mining (due to the gold rush) and agricultural industries which in their early phases made use of the most fertile land and newly discovered (and easily accessed) mineral deposits (such as alluvial gold) (McLean 2007).

To the extent that primary production does explain much of Australia's initial productivity advantage, it should be remembered that countries are not guaranteed to benefit from their natural resource endowments. Discovering and extracting natural resources requires significant entrepreneurship and adaptation to local conditions. And this is only possible under conditions of well-enforced property rights and provision of public goods (McLean 2013).

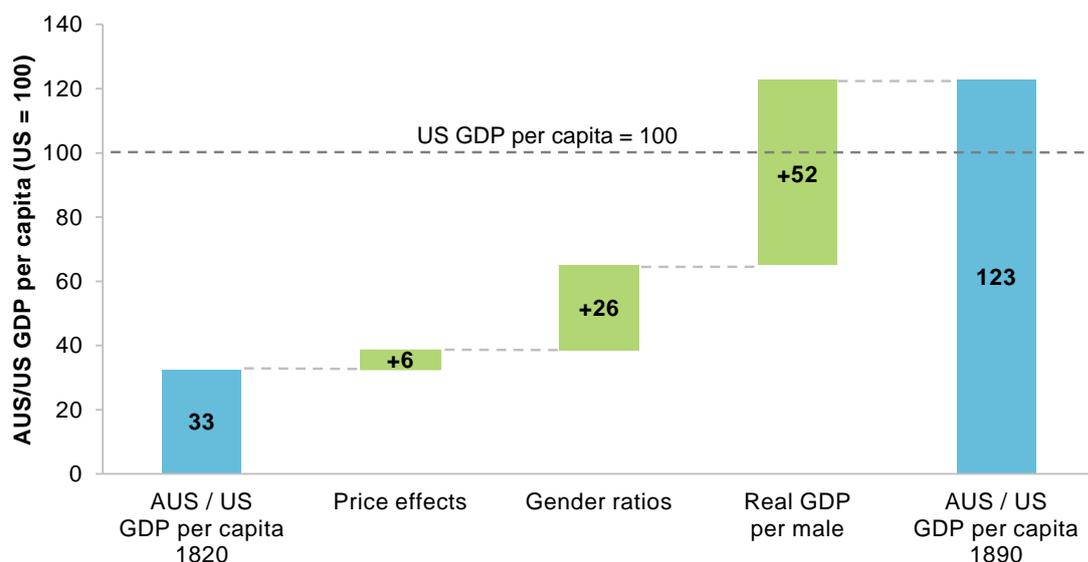
As will be discussed below, it is likely that, although important, our natural resource endowments do not explain all of Australia's rise, and subsequent fall, in relative productivity growth.

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<sup>8</sup> The effect of the gender ratio is that relative GDP per capita in 1820 (33 per cent as a proportion of the US level) is lower than relative GDP per male (76 per cent). This makes Australia's rise in income in the latter part of the century seem less significant.

**Figure 9 A high ratio of males to females and terms of trade explain about one third of Australia's rise to the top of the income ladder**

Ratio of AUS to US GDP per capita<sup>a</sup> in 1820 and 1890, along with the percentage point contributions to this shift from price effects,<sup>b</sup> gender ratios<sup>c</sup> and growth in real GDP per male<sup>d</sup>



<sup>a</sup> Both in of 2010 USD (current PPP). <sup>b</sup> Price effects are due to differences in the growth of real GDP per capita (using current PPP) and real GDP per capita (using constant PPP). These include the effects of the terms of trade. <sup>c</sup> The effect of gender ratios is the difference between real GDP per capita growth (constant PPP) and growth in real GDP per male. <sup>d</sup> Real GDP per male is total GDP divided by the total number of males (of any age).

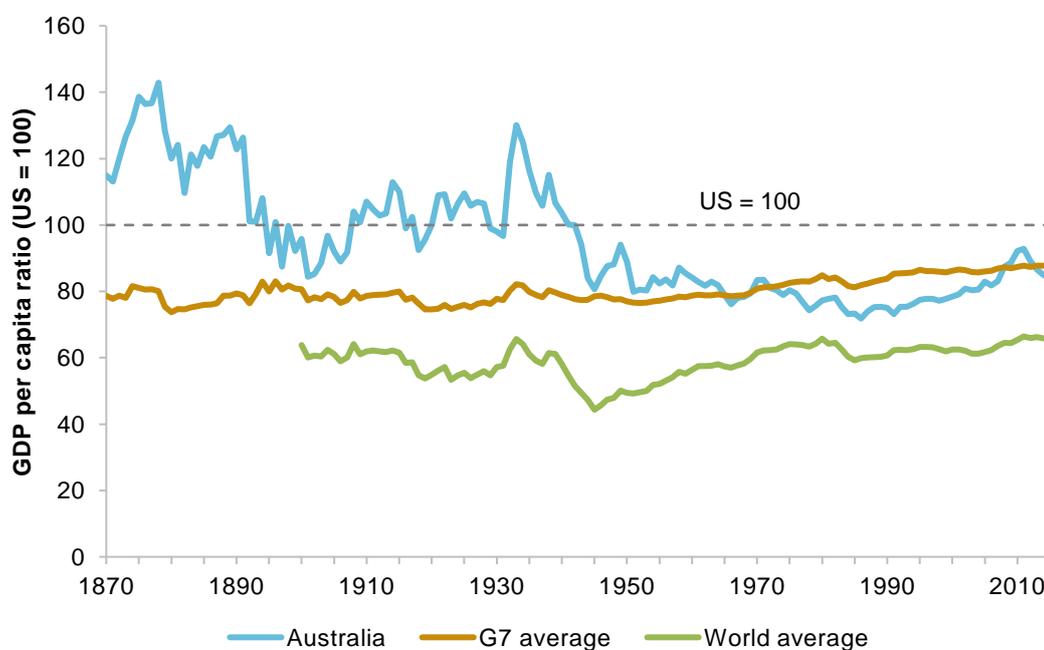
Sources: Commission estimates using Bergeaud et al. (2017); Butlin et al. (2015); and US Censuses.

## Losing the top spot on the income ladder

In the period from 1890 to 1990, Australia's per capita income fell relative to that of the United States. It is important not to overstate this relative decline. At no point since the early Nineteenth Century has Australia failed to be among the world's advanced economies, with a high standard of living in relative terms. And in many respects Australia was fortunate to avoid the kind of decline seen in some other economies with similar starting points, such as Argentina. Nonetheless, Australia's relative economic performance was significantly worse in the century after 1890 than in the seventy years before that date. And this relative decline in income is not just due to comparison with the US, Australia declined against a broader groups of countries as well (figure 10).

Figure 10 **Australia's relative income declined against a broad set of countries in the Twentieth Century**

GDP per capita in Australia, the G7 and a proxy for the world economy<sup>a</sup>, as a proportion of US GDP per capita (US = 100)



<sup>a</sup> The chosen set of countries for the world proxy is the weighted average GDP per capita growth of: Austria, Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Sweden, Switzerland, the United Kingdom, Canada, the United States, Argentina, Brazil, Chile, Columbia, Mexico, Peru, Uruguay, Venezuela and Japan.

Source: Commission estimates using Bergeaud et al. (2017).

Australia's fall in relative living standards is smaller than its fall in relative productivity (table 1). Commission estimates show that between 1890 and 1950 Australian labour productivity as a proportion of the US fell from about 132 per cent to about 76 per cent, while GDP per capita only fell from about 123 per cent to just under 90 per cent. But why did productivity fall so drastically? The initial drop appears to be due to the depression of the 1890s, when Australia temporarily lost almost all of its productivity advantage but recovered strongly afterwards, regaining most of its initial relative level by 1913 (rising to 121 per cent of US levels). From World War One (WWI) until the start of World War Two (WWII), Australia experienced a gradual decline in both relative productivity and relative GDP per capita and by the post-war period Australia was consistently lagging the US, and continued to do so for the remainder of the century.

Looking broadly over the period 1870 to 1950, Australia transitioned from being a high productivity, low participation and low working hours economy into a low productivity, high participation, and high working hours economy (relative to the US).

Table 1.1 **Australian relative productivity appears to have declined gradually in the early Twentieth Century**

Ratio of different economic indicators in Australia compared to the United States (US =100)

	1870	1890	1900	1913	1920	1929	1938	1950
	US = 100	US = 100	US = 100	US = 100				
GDP per capita	114.88	122.80	95.84	103.44	100.07	98.99	115.14	88.85
GDP per employee	118.40	110.74	86.62	92.51	96.14	105.15	102.09	82.90
Labour productivity <sup>a</sup>	131.29	132.08	106.71	121.17	na <sup>b</sup>	87.55	85.00	75.99

<sup>a</sup> Labour productivity uses an estimate of total hours derived from the average hours per male full-time worker (for pre-1950) in Huberman and Minns (2007), multiplied by employment estimates from other sources. This implicitly assumes that the difference in the male full-time work weeks between Australia and the United States are indicative of differences for the broader labour force. Given differences in gender ratios (especially in the late Nineteenth Century), this may be a non-trivial assumption. <sup>b</sup> Huberman and Minns (2007) provide no estimates of average working weeks between 1913 and 1929.

Sources: GDP and GDP per capita: Bolt et al. (2018); Employment: 1890 to 1938: Butlin et al. (2015), US Bureau of the Census (US. Bureau of the Census 1975), 1950: The Conference Board (2018); Hours per worker: 1870 to 1938: Huberman and Minns (2007).

These observations raise further questions. Why did Australia, after finally recovering from the 1890 recession, not fully regain its productivity advantage prior to WWI? And why was the First World War and the interwar period so detrimental to Australian productivity and living standards? And finally, why did Australia never regain its productivity advantage during or after the Second World War?

Why did productivity not (fully) recover after the 1890 depression?

Some economists argue that Australia's high level of productivity in the late Nineteenth Century was unsustainable because it was underpinned by unmeasured factors of production (natural resources) that were either depleted (as in gold mining) or were subject to diminishing returns (as in agriculture when it expanded into more marginal lands). Evidence of this hypothesis include estimates of labour productivity in agriculture being stagnant post-1890, in part due to falling average crop yields (McLean 2013, pp. 116–119).

However, there are least four objections to the role of natural resources in explaining Australia's lower relative productivity prior to WWI:

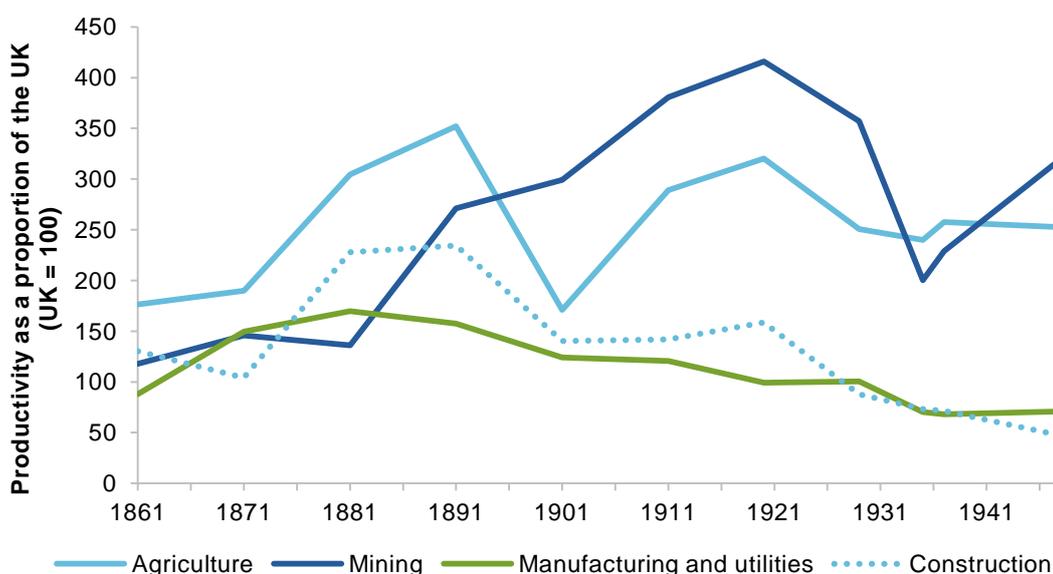
- relative labour productivity (proxied by output per worker) in agriculture did initially fall after 1890 but had mostly recovered by 1921 (and remained well over double UK levels until at least 1948 (figure 11))
- relative labour productivity (output per worker) in mining appeared to remain high until at least 1948

- the share of output in both agriculture and mining were both similar in 1914 to what they were in 1890<sup>9</sup>
- relative labour productivity (output per worker) appears to fall in both manufacturing and construction between 1890 and 1914, which is not easily explained by resource depletion.

True, relative agricultural productivity did continue to fall after WWI, and its share output began falling after WWII. But the latter occurs too late to explain much of Australia’s fall in relative productivity, and the former overlaps with many other possible causes of lower productivity performance (discussed below).

**Figure 11 Apparent productivity falls in manufacturing and construction are hard to account for by resource depletion**

Labour productivity in Australian industries as a proportion of the same industry in the United Kingdom from 1861 to 1948 (UK = 100)



Source: Broadberry and Irwin (2007).

Australian policy changes following Federation may have hindered productivity performance and may explain why productivity only partially recovered prior to WWI. For example, Australian tariff protection increased after Federation (albeit incrementally until the 1930s). In part this reflected political compromises that saw tariffs set at the highest common level of the pre-Federation states (Lloyd 2017). These protections were increased further post-Federation. For example, Irwin (2006, p. 323) ‘According to a League of Nations study, the average Australian tariff on manufactured goods rose from 6 per cent in

<sup>9</sup> Agriculture accounted for 23 per cent of total value added in 1890, 24 per cent 1914 and 24 per cent in 1950. The same figures for mining were 5 per cent in 1890, 5 per cent in 1914 and 2 per cent in 1950 (Butlin, Dixon and Lloyd 2015).

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1902 to 16 per cent in 1913'. This could have hindered productivity in at least two ways. First, it could have drawn capital and labour away from high productivity industries to low productivity industries (such as manufacturing). Second, it could have, by eroding competitive pressures, reduced the incentives for productivity improvement in import-competing industries.

Empirical studies appear to detect some change in trade patterns as a result of these tariff increases. Estimates of the ratio of interstate to international trade (a proxy for the preference between local and foreign sourcing of goods) between 1890 and 1909 show a large fall in international trade between 1906 and 1909, following the imposition of the Lyne Tariff in 1908 (Irwin 2006, p. 326).

The effects of tariffs may have been further compounded by changes to labour regulation following Federation. For example, the Commonwealth Conciliation and Arbitration Court was established in 1904 with powers to settle industrial disputes that crossed state borders and impose compulsory mediation (McLean 2013, p. 137). This led to the ground-breaking 'Harvester' decision that set the 'living wage' at a level significantly higher than prevailing wages for unskilled workers at the time (Isaac 2008). However, this decision, and the Commonwealth labour courts generally, had limited applicability early on<sup>10</sup> and some economists argue its effects are not discernible until the 1920s.

Why was the First World War and the interwar period so bad for Australian productivity?

In hindsight, Australia's weak productivity performance from 1914 to 1939 is not so surprising. There were a series of economic shocks combined with structural reforms that likely hindered productivity (together called 'Fortress Australia', discussed below). And many countries experienced similar economic difficulties over the same period (McLean 2013).

Beginning with the shocks, the First World War was a significant drain on the manpower of the economy, with about 330 000 people deployed out of a population of approximately five million. McLean summarises some of the factors that made WWI so detrimental to the Australian economy:

There was a return to serious drought conditions in the rural sector; a closing of the London capital market for development loans; an extreme scarcity of shipping combined with a high dependence on imports for essential products; the loss of manpower from the civilian labour force into the military; and a slump in the housing market (2013, p. 148).

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<sup>10</sup> The Commonwealth Conciliation and Arbitration Court only had jurisdiction over industrial disputes that crossed state borders, which at the time were few (Isaac 2008). As will be discussed below, it is only when state arbitration courts adopted the methodology of *Harvester* that the decision was binding for most employees.

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Overall, these factors are estimated to have reduced GDP, the civilian workforce and GDP per capita by about 9.5, 6 and 16 per cent respectively (McLean 2013, pp. 147–148). Following the war a number of factors combined to hinder recovery:

- (post-war) falls in global commodity prices that crippled the agricultural sector
- inefficient wartime changes in the mix of manufacturing production towards self-sufficiency (that were necessitated by reductions in international shipping) were subsequently maintained post-war through tariff protection (though with little change in average levels of tariffs)
- the burden of government debt (issued to fund the war) that strained the economy and limited the ability of policymakers to aid the economy before and after the Great Depression
- mandated increases in the real wage (largely as a reaction to the inflation that caused real wage reductions during the war) that decreased Australia’s international competitiveness (McLean 2013, pp. 149–153).

These conditions kept growth subdued until the Great Depression, which further reduced living standards and drove up unemployment. Depending on what metric one uses (unemployment, GDP or GDP per capita), the depression only ended with WWII (McLean 2013).

Compounding this was an intensification of protectionism and centralised labour regulation that formed a mutually-reinforcing nexus. Industrial courts in New South Wales and Victoria were setting increasingly higher basic wages<sup>11</sup> for unskilled workers. But higher labour costs were used as a basis to (often successfully) lobby<sup>12</sup> for greater tariff protection (Wilson 2014). The net result was ever increasing tariffs (especially on manufacturing goods) and wage growth outstripping economic growth (figure 12). Tariff protection for manufacturing increased steadily throughout the 1920s, reaching a peak of about 70 per cent of value of durable imports in 1933. The increasing basic wages and tariff protection likely had a negative effect on per capita income growth.

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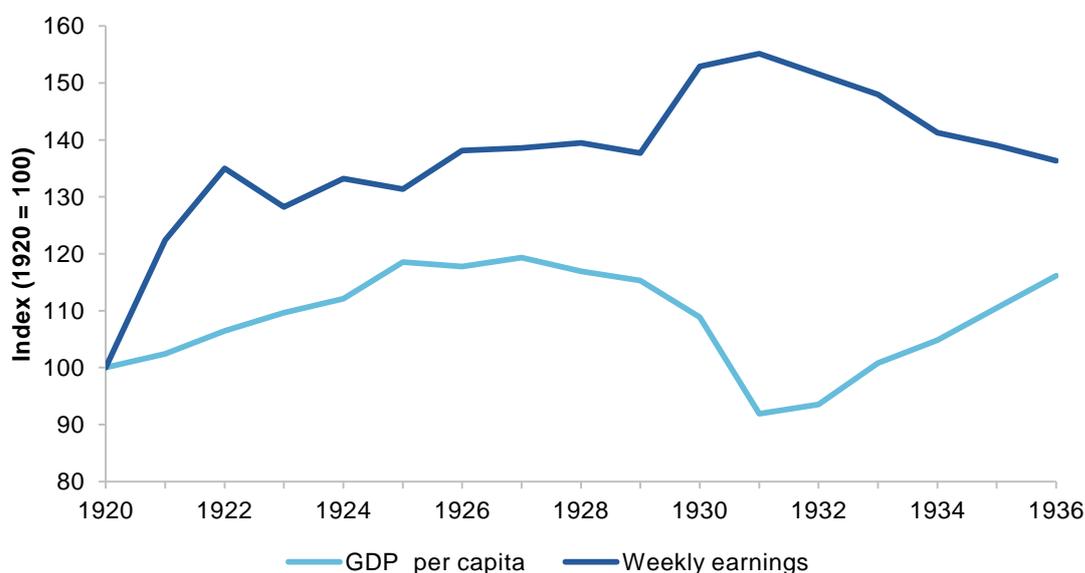
<sup>11</sup> Beginning in 1919, NSW industrial dispute courts adopted new methods of calculating minimum wages that saw them increase by 27 per cent relative to what they would have been under their previous method. Forster (1985) argues they were inspired by the 1907 *Harvester* decision.

<sup>12</sup> From 1921, government tariff setting was often made in reference to recommendations made by the Tariff Board. This body was often the subject of lobbying and an analysis of its decisions between 1924 and 1930 show that in nearly 90 per cent of Tariff Board decisions tariffs were recommended to either increase or stay the same. Recommendations for a decrease of tariffs only occurred in about 10 per cent of cases (Wilson 2014, p. 340).

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Figure 12 **Employees wage growth outstripped GDP growth for most of the interwar period**

Real indices of GDP per capita and real weekly earnings<sup>a</sup> of employees between 1920 and 1936



<sup>a</sup> Employee earnings are deflated by the GDP deflator.

Source: Butlin et al. (2015).

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### Why did Australian productivity performance never recover to its past highs?

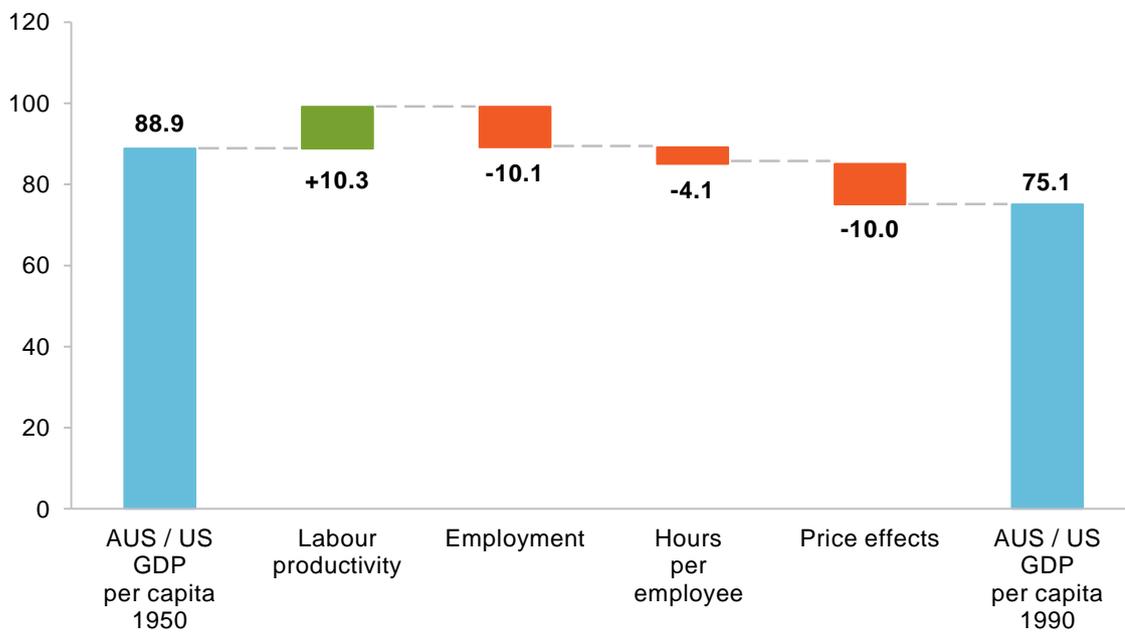
The Second World War, unlike the first, was a positive shock to the Australian economy (McLean 2013, pp. 176–178), with unemployment falling while participation and GDP per capita rose. Part of this better performance during WWII compared to WWI may be due to the tariffs on manufacturing that, while potentially hindering productivity performance, did make the country better placed for an expansion of armaments manufacturing.

After the war, Australia's economic growth was faster than at most points in its history. For this reason, this period (up to about 1973) is sometimes referred to as a 'Golden Age' (McLean 2013). Paradoxically, while Australian productivity grew much faster in the decades after WWII than in the decades before it (and slightly faster than the US), Australian relative incomes actually declined.

These observations raise numerous questions. First, if Australian productivity growth was faster than the US, why did the income gap worsen over this period? Second, does Australia's strong productivity performance over this period weaken the case against the productivity hindering effects of protectionism in the interwar and post-war period?

Australia's weak relative GDP per capita performance over this period appears to be attributable to lower participation and price effects (including weak terms of trade) (figure 13). The main cause appears to be that employment as a share of the population increased from 40 per cent to 49 per cent in the US, while it fell from 43 per cent to 40 per cent in Australia between 1950 to 1990 (The Conference Board 2018). This in turn appears to be due to earlier increase in women's workforce in the United States during the 1970s and 1980s, with Australia only catching up in the 2000s.<sup>13</sup>

**Figure 13 Weaker relative participation and price effects appear to have prevented significant catch-up during the 'Golden Age'**  
Contributors to the change in the AUS / US GDP per capita ratio between 1950 and 1990<sup>a</sup> (US = 100)



<sup>a</sup> The effect of labour productivity is the counterfactual if both countries GDP growth had been equal to their labour productivity and there were no price effects. The effect of employment is approximated by the difference in the growth in GDP per capita and GDP per employee in the two countries. The effects of hours per employee is approximated by the difference between the growth in GDP per employee and GDP per hour. The price effects are approximated by the difference in growth between GDP per capita (measured in current PPP) and GDP per capita (measured in constant PPP) between the two countries.

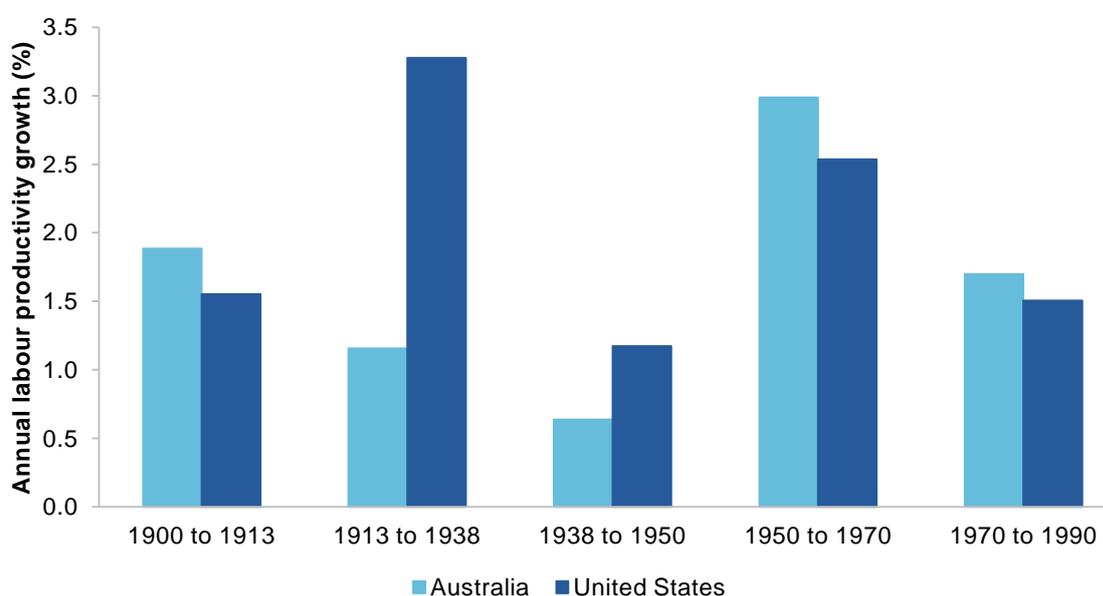
Source: Commission estimates based on the Conference Board (2018).

<sup>13</sup> Female labour force participation (15 to 64 year olds) was 45.1 per cent in Australia and 49.3 per cent in the United States in 1970, with the gap between the two rising by 1980 where the rate was 52 per cent in the former and 60.7 per cent in the latter. However by the time of the GFC, Australia had surpassed the United States' female labour force participation rate (OECD 2020).

Does Australia’s strong productivity performance in the post-war period vindicate the post-war protectionism? Probably not. These policies were beginning in the pre-WWI period and were firmly in place by the interwar period, during which Australia had both weak relative and absolute productivity growth (figure 14). Moreover, the post-WWII period is the first point where there is direct empirical evidence of protectionism being associated with weaker economic growth in a broad set of countries (Clemens and Williamson 2004).

**Figure 14 The postwar period’s golden age did see a significant rise in Australian productivity growth**

Australian and United States average annual labour productivity<sup>a</sup> growth in select periods from 1900 to 1990



<sup>a</sup> Labour productivity uses an estimate of total hours derived from using the average hours per male full-time worker (for pre-1950) in Huberman and Minns, multiplied by employment estimates from other sources. This implicitly assumes that the difference in the male full-time work weeks between Australia and the United States are indicative of the differences for the broader labour force.

Source: GDP and GDP per capita: Bolt et al. (2018); Employment: 1890 to 1938: Butlin et al. (2015), US Bureau of the Census (1975), 1950: The Conference Board (2018); Hours per worker: 1870 to 1938: Huberman and Minns (2007), 1950.

In reality, much of Australia’s faster productivity growth during the ‘Golden Age’ up to 1970 can be attributed to international economic conditions. As McLean explains:

Perhaps the most important fact about the long boom is that it was not unique to Australia. Indeed, all industrialized or advanced Western economies participated. In addition, the Soviet Union and its East European satellite economies, though in many respects operating in self-imposed economic isolation, also experienced respectable growth during these years ...

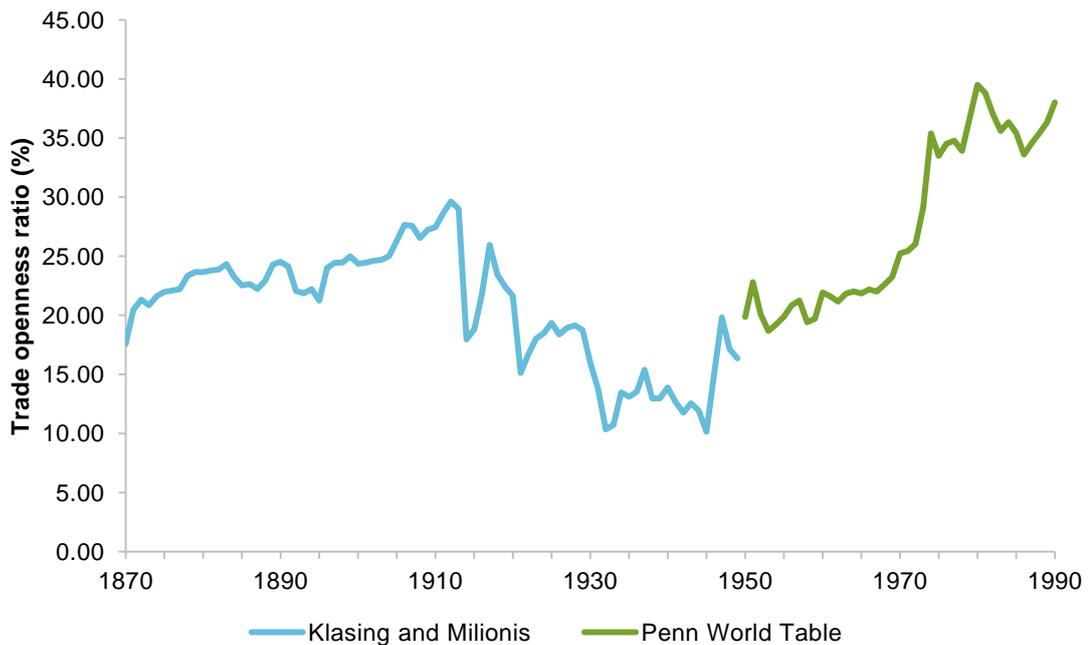
Given the international environment, the only surprising outcome for the Australian economy after 1945 would have been slow growth, stagnation, or decline. (McLean 2013, pp. 184–186)

This rapid growth in advanced economies was initially due to deferred consumption and (non-military) investment during the war years (McLean 2013, p. 185). Many parts of Europe also needed to replace the infrastructure and private capital that was destroyed during the conflict, providing rapid, input-driven economic growth. Though Australia had not lost significant amounts of capital directly to war destruction, there was likely deferred consumption and private investment.

Another possibility is that Australian protectionism, while lowering growth against a counterfactual of free trade, did not significantly hinder productivity during the initial post-war period (1945 to 1973) due to reduced opportunities for (mainly commodity) export-driven growth. Australia’s growth strategy during the late Nineteenth Century was underpinned by commodity exports (especially wool and gold), which would have been difficult to maintain as global trade openness collapsed after WWI, when most governments became more protectionist. There are two pieces of evidence in favour of this hypothesis. First, the level of global trade openness (imports plus exports as a share of global GDP), despite rapid growth after WWII, was still below its peak 1914 level until well into the 1970s (figure 15). Second, as global trade openness was approaching its past highs in the 1970s, Australia’s trade with East Asia intensified to a much greater extent than the rest of the world, due to the rapid industrialisation of the latter, combined with the re-emergence of a mining industry in the former (table 2).

**Figure 15 Global trade openness fell after WWI, and did not reach its past levels until the 1970s**

World trade openness ratio (exports plus imports as a proportion of global GDP) as estimated by Klasing and Milionis and the Penn World Table between 1870 and 1990



Sources: Klasing and Milionis (2014); Feenstra et al. (2015).

Table 1.2 **Australian trade with East Asian countries grew more rapidly than the rest of the world in the 1970s**

Australia and the rest of the world's share of trade with Asian countries and the UK in 1970 and 1979

		<i>Partner's share of Australia's trade</i>		<i>Partner's share of the rest of the world's trade</i>	
		1970	1979	1970	1979
		%	%	%	%
Asian NICs <sup>a</sup>	-exports	5.4	9.0	3.0	4.5
	-imports	2.3	8.0	2.3	4.0
Other ASEAN <sup>b</sup>	-exports	4.3	5.3	1.7	1.9
	-imports	1.9	3.3	1.6	2.4
Japan	-exports	26.2	27.8	6.5	7.1
	-imports	12.7	15.5	7.0	6.8
UK	-exports	11.4	4.4	7.4	6.6
	-imports	21.2	10.6	7.0	6.1

<sup>a</sup> East Asian 'newly' industrialised countries: South Korea, Taiwan, Singapore and Hong Kong. <sup>b</sup> These countries are: Indonesia, Thailand, Singapore, Malaysia, Philippines, Vietnam, Brunei, Cambodia, Myanmar (Burma), Laos.

Source: Anderson & Garnaut (1987, p. 101).

It is possible that prior to possibility of export driven growth that occurred with the industrialisation of East Asia, Australian protectionism, while detrimental, had a lower opportunity cost and only became a significant hindrance as trade opportunities expanded.

Although Australia had decent relative productivity growth post-1973, its absolute growth fell along with other advanced economies at this time. Simultaneously, unemployment and inflation both rose to levels not seen in decades (McLean 2013). Dissatisfaction with this economic performance, combined with greater trade opportunities in Asia provided impetus for the economic reforms that were to come.

## A partial resurgence

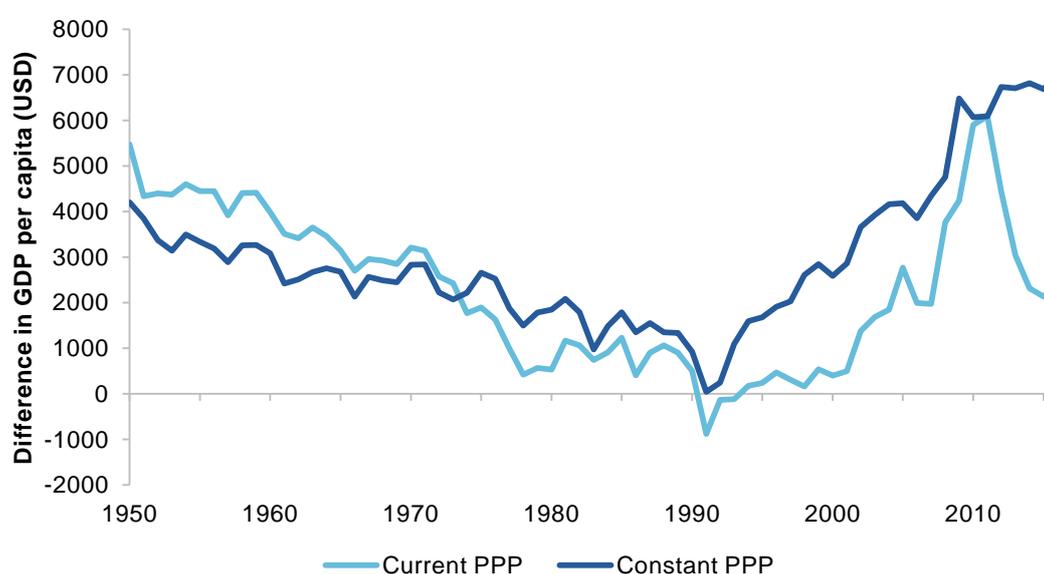
Since 1990, Australia has experienced a significant lifting of its relative standard of living against both the US and a broader set of economies, such as the OECD (figure 16). The causes of this resurgence appear to be manifold. During this time, Australian GDP per capita growth outstripped most high-income countries. This was also at a time when countries at the productivity frontier, such as the US, experienced particularly fast growth. And this productivity performance was complemented by increased labour utilisation, favourable terms of trade and capital deepening at least as high as comparable economies (figure 17).

The ultimate causes of this resurgence are difficult to identify. It will be argued below that a sizeable portion is likely due to economic reforms that both raised productivity and created a more stable macroeconomic environment, but it must be acknowledged that the latter part of

this resurgence also overlapped with a very significant terms of trade boom (the recent ‘mining boom’). And although the direct effect of the terms of trade on GDP growth appear small (as proxied by the difference in the estimates of the ratio of GDP per capita using current and constant PPP respectively in figure 16), the mining boom likely contributed indirectly through capital deepening towards the end of this period. That said, how much the mining sector’s effect on capital deepening is offset by its negative effect on MFP growth is unclear.<sup>14</sup>

**Figure 16 After a long fall, Australia’s relative GDP per capita has risen against benchmark economies since the 1990s ...**

Difference between Australian GDP per capita and the OECD average<sup>a</sup> measured using current PPP and constant (2011 USD) PPP<sup>b</sup> from 1950 to 2016



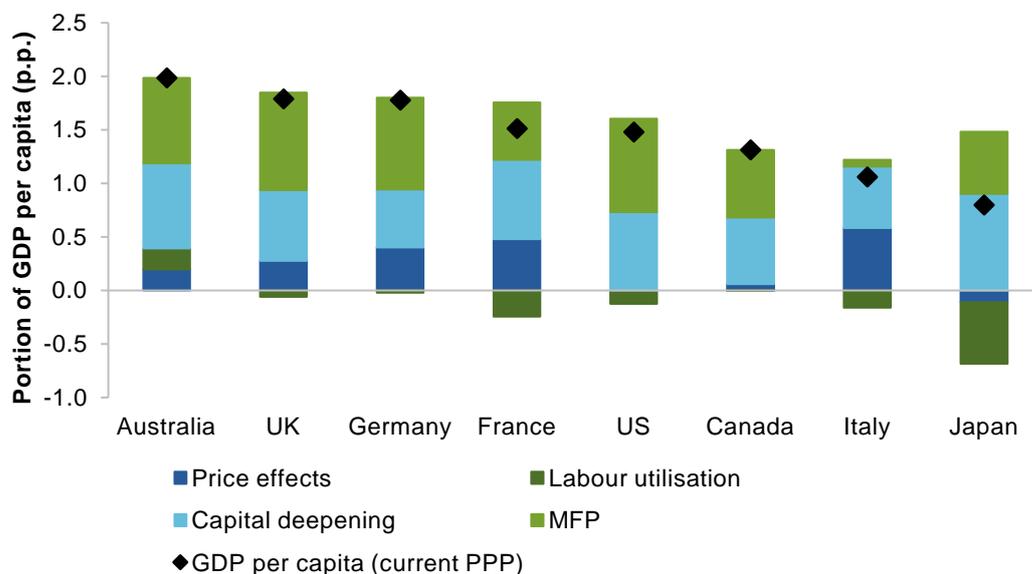
<sup>a</sup> The 24 longest standing members of the OECD were used for comparability over time. <sup>b</sup> The gap between constant and current PPP measures of GDP per capita give a proxy for the effect of the terms of trade as well as the role of domestic prices. So for example, the narrowing of the difference between the two measures around 2010 shows Australia’s significant improvement in the terms of trade around this time (and its subsequent fall).

Source: Bolt et al..

<sup>14</sup> Mining sector MFP has fallen by 25 per cent between 1994-95 and 2018-19, likely due to the lag between investment and extraction and mineral prices incentivising investment in more marginal deposits (ABS 2019).

Figure 17 ... due to favourable price effects, capital deepening, labour utilisation and productivity growth

Growth in real GDP per capita (current PPP) and the per capita contribution from its components: price effects, capital-deepening, labour utilisation and MFP<sup>a</sup> between 1990 and 2017



<sup>a</sup> The price effects are approximated by the difference in growth in real GDP per capita measured in current and constant PPP terms respectively. Note this estimation of the terms of trade effect only has meaning when making comparisons across countries, unlike other measures such as real domestic income, which have an interpretation independent of any cross-country comparison. Capital deepening is the difference between growth in labour productivity and MFP. Labour utilisation is the difference between growth in GDP per capita (constant PPP) and labour productivity.

Source: OECD STAT database.

## 5 The role of policy in Australia's shifting fortunes

As the preceding discussion shows, Australia's economic performance has been influenced by innate factors and impacted at various points by external events. But policy also plays a role. Government policy can either aid or hinder the adaption of households and businesses to a constantly changing economic environment. For example, although governments cannot (significantly) affect the price of iron ore in the global market, they can affect the ability of the economy to respond to changes in these prices. That is, they help create settings that enable capital and labour to flow in and out of the mining sector with minimal detriment to individuals by enforcing rule of law, properly regulating capital markets, maintaining efficient

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infrastructure, funding and regulating education, and providing a safety net for the most vulnerable in society.<sup>15</sup>

In this section, we consider two case studies in how policymakers respond to economic challenges. In the first case, Australian policymakers reduced the openness and competitiveness of Australia in part due to the perceived instability of international economic conditions at the time. This ultimately proved a hindrance to productivity performance and living standards. In the second case, a piecemeal response to the poor economic conditions of the 1970s (which themselves were exacerbated by policy)<sup>16</sup> culminated in an opening up of markets to competition (both domestic and international) and minimising the distortion caused by domestic policy. These case studies illustrate that policy responses to turbulence can put an economy on very different paths

### **A head start forfeited: policy and Australia's fall down the income ladder**

As discussed above, part of Australia's slide down the world rankings for per capita income after 1890 is likely due to policy settings. Reflecting on Australia's fall in relative income, Gary Banks, a former Chairman of the Productivity Commission argued:

In retrospect, the causes of our relative decline seem fairly clear. Just as Australians have been blessed with special resource advantages, we managed to devise some special institutions that, whatever their merits in the short term, ended up significantly handicapping our economic performance. (Banks 2005)

Banks attributes much of Australia's relative economic decline to a set of policy choices ('Fortress Australia')<sup>17</sup> including trade barriers to promote import substitution (figure 18), tightly regulated labour markets, and statutory government monopolies over utilities and other services with pricing structures that taxed business users and subsidised consumers. This policy program had a corrosive effect on Australia's productivity performance. (Banks 2005, pp. 2–4).

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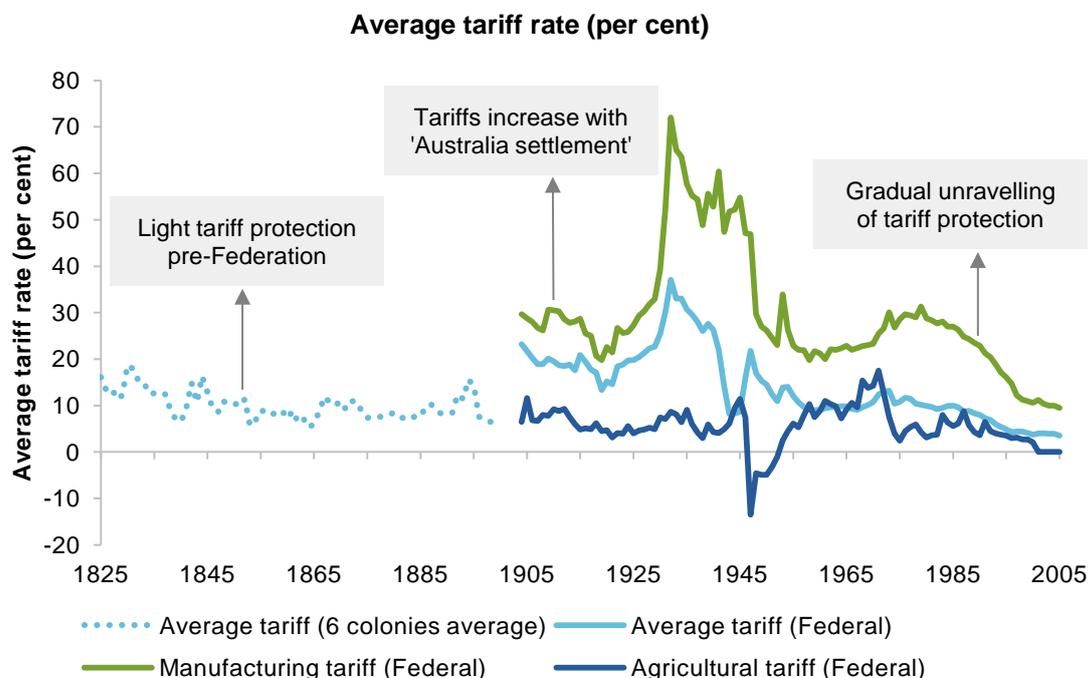
<sup>15</sup> See Acemoglu, Johnson and Robinson (2005), North (1990) and the PC inquiries into funding public infrastructure (2014), NDIS (2017a) and shifting the dial for evidence of the importance of institutions in supporting efficient resource allocation (2017b). See Melo (1977) and Hsieh and Klenow (2009) for theoretical and empirical investigations on the cost of misallocated resources.

<sup>16</sup> The cycle of rising wages and prices that followed the OPEC oil crisis was worsened by policy settings that allowed excessive wage rises. Further, a stronger monetary policy response in the United States to the same circumstances arguably led to a faster disinflation and faster subsequent growth (McLean 2013, pp. 217–218).

<sup>17</sup> This term was coined by Paul Kelly (1992).

Figure 18 **The Twentieth Century saw significant protectionism in Australia ...**

Average tariffs in the six colonies pre Federation<sup>a</sup>, post Federation<sup>b</sup> and in manufacturing<sup>c</sup> and agriculture<sup>d</sup> from 1825 to 2005



<sup>a</sup> Average duty paid on all imports (both those subject to duties and those not). <sup>b</sup> Average duty (customs plus primage, net) – all clearances adjusted for method of valuation. <sup>c</sup> Average tariff for manufacturing is the average duty paid on dutiable imports. <sup>d</sup> Average tariff for agriculture here is proxied by the average rate of assistance. This is calculated by the average difference between domestic and world prices for all covered agricultural commodities. Note that the negative spike in the rate of assistance in early World War II is due to payouts to producers of agricultural goods being lower than prevailing export prices under price stabilisation schemes in place at the time (Lloyd and MacLaren 2015).

Sources: Butlin, Dixon and Lloyd (2015, pp. 578–580); Lloyd (2008, 2017).

Another aspect of Fortress Australia was a suspicion of ‘cutthroat competition’. It was generally assumed that monopoly was the inevitable consequence of market competition and so it was better to pick and regulate the monopolists rather than try and prevent their existence (Pincus 2009, p. 124).

These policies, especially increased tariffs on imported manufactured goods, are at least associated with both an increase in the share of the manufacturing sector (in which Australia had less of a productivity advantage) and a decline in Australia’s trade openness (figure 19). In particular, from about 1890 there is a fall in the openness ratio coupled with a rise in the manufacturing share of the economy. While from about 1970, the opposite association can be observed. The causal connection is trickier to establish but the timing does seem to favour Banks’ interpretation of the policy settings.

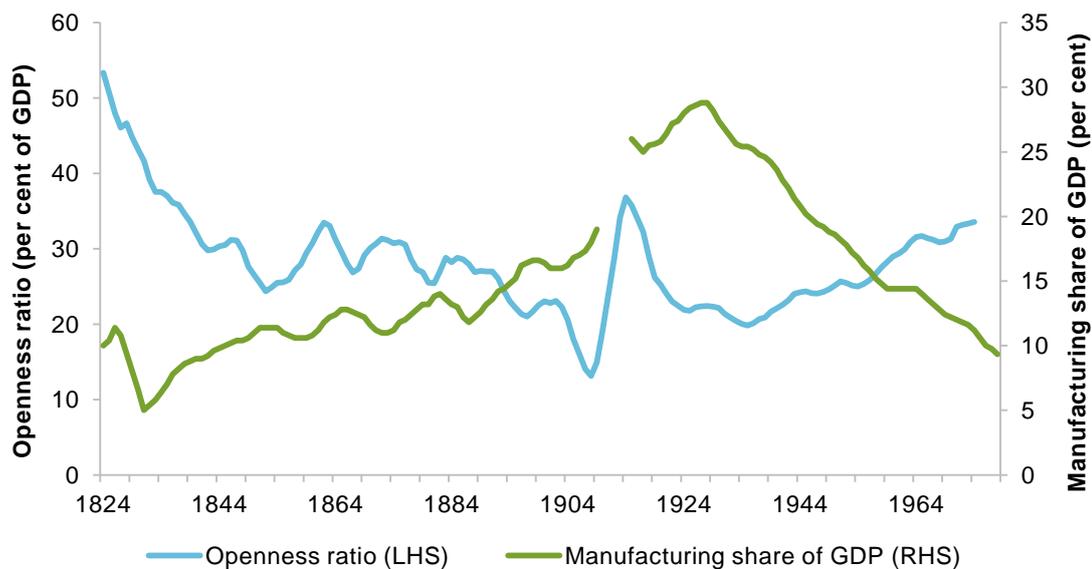
Many of these policies were enacted for more than economic reasons. For example, Paul Kelly said the following about Fortress Australia and tariff protection:

Australia was founded on ... above all, hostility to its geographic location ... Its bedrock ideology was protection; its solution, Fortress Australia, guaranteed as part of an impregnable Empire spanning the globe.

Its appeal transcended that of an economic policy. Protection was both a creed and a dogma. It was a philosophy that would see Australia powerful, secure its prosperity and assuage its insecurity. For its disciples, protection was a policy for war and peace ... Protection was the core of Australia's consciousness. (Kelly 1992, p. 4)

Figure 19 **... which was associated with reduced openness and a higher share of manufacturing in the economy**

Five year moving average<sup>a</sup> of the openness ratio (imports plus exports as a share of GDP) and the manufacturing share of GDP (per cent) between 1860 and 2010



<sup>a</sup> Five year (centred) moving averages are used to reduce the noisiness of the data.

Source: Butlin, Dixon and Lloyd (2015, pp. 578–580)

Despite the likely detrimental effect of Fortress Australia on relative incomes, it may have had some justification from a broader policy perspective. At Federation, as now, Australians desired a relatively egalitarian society and to limit their exposure to economic shocks. Prior to WWII, the size and role of government generally, and the Federal Government specifically, was very limited and so they had few mechanisms to ensure sufficient income or wealth redistribution. The nexus of tariffs and wage arbitration, while crude and inefficient by modern standards, did go some way to redistributing incomes, particularly in a world where a full-time male breadwinner was the dominant model of generating household income. And protectionism, while inefficient, did limit the outflow of foreign currency reserves that had the capacity to periodically cause economic crisis (appendix C).

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However, as time passed, and the role of government changed, better alternatives became available, (including a sophisticated system of transfers to low income households) and so Fortress Australia started becoming an anachronism.

Not only did Fortress Australia likely reduce Australia's relative income, but it was enacted as a policy response to a set of problems. The decade before Federation and those that followed were beset by numerous economic, political, and social crises. Partially in response to these challenges, policymakers put in place what they believed to be the best path for the Australian economy. And although there may be justification for these policies on redistributive or stability grounds, they likely had the unintended side effect of reducing our relative income. As will be discussed below, when policies became available that could achieve a relatively equitable and stable distribution of income without hindering productivity, these were adopted, and we are still benefiting from this decision.

### **Major reform in the face of economic malaise likely boosted productivity**

The causes of Australia's economic revival, beginning in the 1990s, are manifold. They include macroeconomic stability (including the avoidance of recession for 28 years), microeconomic reforms, labour market deregulation, technological change and favourable shifts in the terms of trade. These explanations are connected. Australian businesses facing fiercer competitive pressures were given greater freedom to change work practices at a time when business finance became more readily available and new technologies were available to be put to use (Parham 1999, 2004). While Australia's productivity growth boomed through the late 1990s, it will never be possible to ascribe 'shares' to individual factors because the economic forces worked together.

The decades preceding the reforms of the 1980s and 1990s were beset by numerous economic challenges. While the period from the end of WWII to the early 1970s had been a 'Golden Age', it was followed by a period of low growth (relative to recent history at least), high unemployment and high inflation ('stagflation') (McLean 2013). As with the long boom itself, this economic malaise was mostly of international origin, but it was compounded by local policy and structural conditions.

These problems were worsened by weak terms of trade that lowered income growth at the time.<sup>18</sup> This combined economic malaise precipitated a break from the policies of the past century and eventually led to a comprehensive microeconomic reform agenda (Banks 2005). A few of the principal changes undertaken in the 1980s to 1990s reform period include:

- the unilateral reduction in import barriers (further detailed in appendix A)

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<sup>18</sup> Paul Keating's warnings of Australia becoming a 'Banana Republic' was in part a reaction to weaker terms of trade at the time. And the direct effect of the terms of trade does appear significant. For example, in the years from March 1980 to March 1986 (Keating made his speech in May 1986), the terms of trade had subtracted -0.33 percentage points from annual gross domestic income growth (ABS 2020b).

- the reforms undertaken as part of National Competition Policy (further detailed in appendix B)
- numerous other reforms that increased economic efficiency (box 1).

The resulting increase in domestic and international competition encouraged a more efficient allocation of resources and a more vigorous pursuit of productivity improvement. More flexible labour markets permitted the reorganisation of work practices to take advantage of improvements in technology and skills. More flexible financial markets improved access to capital for new, developing industries.

#### Box 1      **Significant economic reform**

*Capital markets* — the Australian dollar was floated in December 1983, foreign exchange controls and capital rationing (through interest rate controls) were removed progressively from the early 1980s and foreign owned banks were allowed to compete — initially for corporate customers and then, in the 1990s, to act as deposit-taking institutions.

*Infrastructure* — partial deregulation and restructuring of airlines, coastal shipping, telecommunications and the waterfront occurred from the late 1980s. Across the board commercialisation, corporatisation and privatisation initiatives for government business enterprises were progressively implemented from about the same time. Introducing competition and improving regulation in the ‘natural monopoly’ areas, e.g. electricity, gas, water, telecommunications, etc.

*Labour markets* — the Prices and Incomes Accord operated from 1983 to 1996. Award restructuring and simplification, and the shift from centralised wage fixing to enterprise bargaining, began in the late 1980s. Reform accelerated in the mid-1990s with the introduction of the *Workplace Relations Act 1996*, further award simplification (through limiting prescribed employment conditions in enterprise bargaining agreements) and the introduction of individual employment contracts (Australian Workplace Agreements).

*Human services* — competitive tendering and contracting out, performance based funding and user charges were introduced in the late 1980s and extended in scope during the 1990s; administrative reforms (for example, financial management and program budgeting) were introduced in health, education and community services in the early 1990s.

*Taxation reform* — capital gains tax and the dividend imputation system were introduced in 1985 and 1987, respectively. The company tax rate was lowered progressively from the late 1980s. A broad based consumption tax was implemented in 2000, replacing the narrow wholesale sales tax system and a range of inefficient state-based duties. And income tax rates were lowered at the same time.

Source: Banks (2005).

In many respects these policies were made possible by other reforms (and some non-policy changes) that made many of the justifications for protectionism redundant. For example, the increased size and scope of the Australian Government (especially after WWII), meant there were more efficient methods to change the distribution of income than protectionism (such as progressive taxation or welfare). Further, the floating of the Australian dollar in 1983 (box 2) removed any need for the Australian Government to manage capital flows and its

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foreign exchange reserves (another justification for tariffs). Finally, the dismantling of the White Australia policy (another pillar of Fortress Australia) (Kelly 1992) in the late 1960s and early 1970s removed the need to artificially inflate wages in the manufacturing sector to attract British migrants (appendix C).

**Box 2                      Macroeconomic policy reform helped raise Australian GDP**

Macroeconomic stability has played an important role in Australia’s economic recovery. In particular, the floating of the dollar (1983) and the adoption of interest rate targeting (1993)<sup>a</sup> by the independent Reserve Bank of Australia are considered key pillars in achieving this stability. Flexible exchange rates act as a ‘shock absorber’, causing negative economic shocks to depreciate the dollar rather than cause recessions, and positive shocks to appreciate the dollar rather than cause runaway inflation. For example, the tremendous gains from the terms of trade increase during the mining boom, rather than causing an inflationary spiral, caused the dollar to appreciate to a peak of \$1.11 US dollars in 2011 (Berger-Thompson, Breusch and Lilley 2018, pp. 8–9).

Inflation targeting has acted to lower and stabilise the rate of inflation. Since 1993, annual inflation has averaged about midway between the two to three per cent target set by the Reserve Bank of Australia, compared to about 9 per cent in the two decades preceding the adoption of inflation targeting (Debelle 2018, pp. 4–5). This lower, more consistent, rate of inflation provides greater certainty to support business investment.

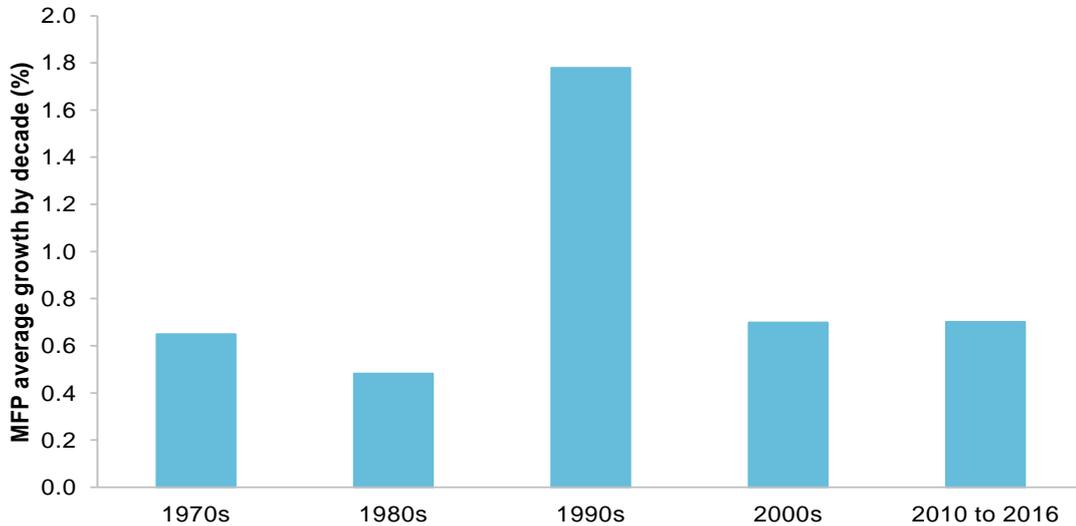
<sup>a</sup> Inflation targeting was begun by the RBA in 1993 but not formally endorsed by the Australian Government until the 1996 Statement on the Conduct of Monetary Policy (Debelle 2018, p. 3).

The microeconomic policy reforms of the 1980s and 1990s likely contributed to an MFP boom in the 1990s, in which Australia’s productivity grew at its fastest rate in the two decades before or after (figure 20). This seems to suggest that these reforms had a level effect on productivity, leading to a series of one-off boosts but no change in the permanent rate of growth.

However, these reforms and the associated productivity growth are only part of the reason Australian GDP per capita has seen a resurgence in recent decades (figure 21). Two other significant contributors include a macroeconomic policy environment conducive to stable growth (box 2) and Australia’s avoidance of recession during the GFC. While both factors improved Australia’s relative standing, the macroeconomic policy environment is a story of Australia’s success through intentional policy reform. By contrast, Australia’s success relative to other developed countries after the GFC is largely due to external factors out of our control, such as poor performance from other developed nations and a positive terms of trade shock due to strong demand for our exports from China (RBA 2017).

Figure 20 **The 1990s saw a surge in MFP growth ...**

Average MFP growth<sup>a</sup> by decade

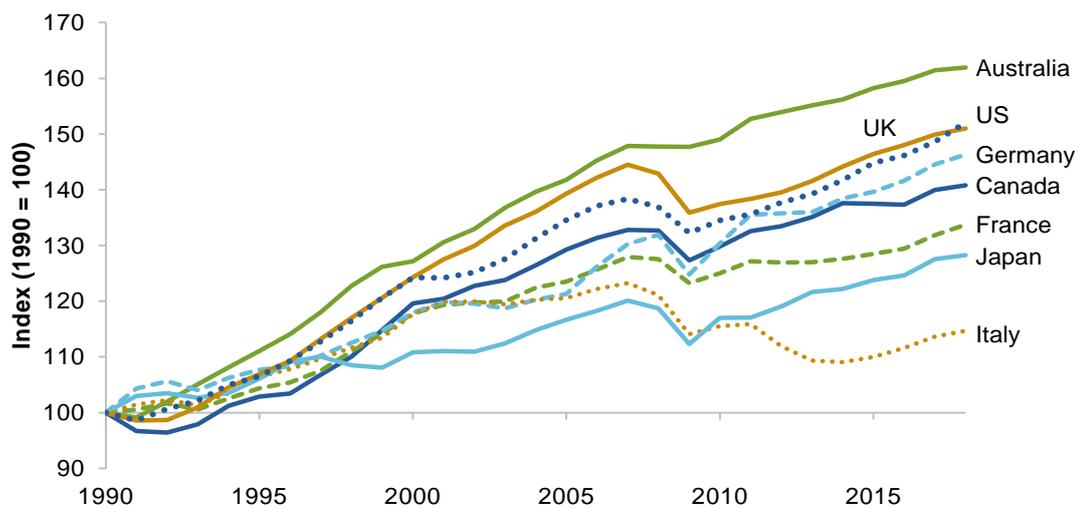


<sup>a</sup> These estimates use an exogenously fair rate of return to capital in calculating MFP, as opposed to the endogenous method used by the ABS. This, as well as the constant assumed labour share of income, mean these estimates are not directly comparable to those made by the ABS. That said these figures are similar to earlier (no longer publicly available) estimates by the ABS.

Source: Bolt et al. (2018).

Figure 21 **... which helped Australian GDP growth outpace other advanced economies**

Real GDP per capita indices (constant PPP) from 1990 to 2018



Source: OECD STAT database.

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## 6 Where to next?

This paper has sketched out a brief history of productivity growth in Australia and in so doing, traced the evolution of economic policy. This history is neither simple nor linear. Productivity growth has ebbed and flowed, while the overall trend has been towards higher productivity and increased average living standards. Similarly, policy has taken many twists and turns, partly in response to the major external impacts of world wars, pandemics, global depressions, and trade developments.

Nonetheless, stepping back, some clear trends emerge. Early in the Twentieth Century, our newly Federated nation adopted the ‘Fortress Australia’ policy framework. We embraced trade protection, strict labour market regulation and high barriers to (non-British) immigration. Much of this policy is understandable in context (there were less sophisticated policy instruments available to governments at the time) but was most likely detrimental to our long-term productivity performance. By contrast, policy reform from the early 1980s focused on openness to trade, foreign investment, competition, and flexibility in the deployment of labour and capital across the economy. Whilst the evidence of causation is always imperfect, these reforms coincided with a turnaround in both Australia’s *relative* and absolute productivity performance. This provides an important general lesson for the future.

Meanwhile, another story has unfolded over time with the gradual evolution of Australia from a primarily agricultural and mining economy towards a more diversified pattern of production. From the mid-Nineteenth Century, Australia tapped its natural advantages in agriculture and mining — sectors that had a high share of Australian and global output at the time — that gave Australians among the highest average incomes in the world.

The Twentieth Century saw the continued rise of manufacturing around the world. But Australia never became a global leader in manufacturing, as it had (and remains today) in agriculture and mining. By contrast, other developed and emerging economies achieved significant gains in productivity and living standards on the back of growing, highly efficient manufacturing sectors.

More recently, the pattern of production has changed again. Globally, the services sector has grown to comprise the majority of employment and value added in developed economies. Australia is no exception. The service sector, once considered a ‘residual sector’, now constitutes 90 per cent of employment (ABS 2020d).

In the Twenty-First Century, to be a high productivity economy requires having a highly productive services sector. But the path to productivity growth in services may look different to that taken in goods sectors like manufacturing, mining, and agriculture.

The services sector is diverse and there is a wide dispersion of productivity growth across it. Knowledge based services — such as professional services and finance — have experienced high productivity growth, technology adoption and significant knowledge spill overs. On the other hand, personal service industries are often characterised by low productivity growth and high labour intensity.

But in general, relative to goods, services are typically less standardised and often delivered in person. They are frequently sold in localised markets and even where large services firms

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exist, activity and decision making is often decentralised to be closer to customers (Sorbe, Gal and Millot 2018). This can place some limits on scale economies and capital deepening — to date it has been hard to achieve automation in many service firms. By contrast, manufacturing and mining achieved large productivity gains by successfully automating many routine aspects of the production process.

Nonetheless, there is considerable scope for future innovation and productivity growth in services, particularly through technology (PC 2002). Artificial intelligence, use of data and new digital platforms offer the prospect of cutting transaction costs and increasing competition, including through international trade.

But as in the past, policy will be a key determinant of success.

For example, innovation in some services industries could involve less emphasis on traditional research and development and greater reliance on new business models and new business formation as a vehicle for experimentation. Hence the quality and adaptability of regulation will be a key factor. Human capital (including the health and skills of the workforce) could become increasingly important to these labour-intensive industries, as could the mobility and flexibility of labour between locations, firms, and sectors. Supporting appropriate risk appetite and avoiding policies that either favour incumbents or act as impediments to new entrants can support this process.

Due to the service sector's diversity, there can be no cookie-cutter policy approach appropriate to all sub-industries. It may be that there is less of a role for traditional 'big bang' reforms, in favour of more tailored, targeted, and piecemeal changes.

Overall, the drivers of productivity growth in services, and the specific policies required to support it, are not sufficiently well understood. There is a need for new research in this area, similar to that which exposed the costs of trade protection in the post-war period and paved the way for future liberalisation. This will be a focus for upcoming Commission analysis.

However, the *general* lessons of the past remain robust: fostering innovation and diffusion of knowledge, openness to the world, flexibility in resource allocation and avoiding policies that promote particular industries, firms, technologies or inputs.

Past recessions have often resulted in some policy discontinuity. 'Fortress Australia' came on the heels of the 1890s recession. The 1930s depression prompted an increase in trade barriers around the world. By contrast, the early 1980s and early 1990s recessions were, in Australia, catalysts for many of the beneficial reforms discussed in this paper.

Just as COVID-19 has brought sudden, disruptive change to the economy (particularly to employment, spending patterns and the use of technology) it is likely that underlying policy settings will also be affected. Australian economic history shows that policy can either help or hinder the achievement of higher living standards. Building future prosperity will require new thinking, based on a fresh policy agenda informed by quality research, but firmly grounded in the lessons of the past.

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