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Compete to Prosper: Improving Australia's global competitiveness

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Preface

As the rapid economic growth fuelled by high commodity prices and capital investment in resources projects abates, many Australians are asking where the next wave of growth will come from. The rapid growth of emerging markets, particularly in Asia, means there are enormous opportunities for Australia to grow through trade. Increased trade, which allows countries and firms to play to their strengths, creates wealth. If Australia continues to open its economy and plays to its comparative advantages in natural resource endowments and a highly skilled workforce, Australian businesses can access new markets and create new, more productive jobs. Australia can continue to raise income and employment levels, which raises living standards and promotes social inclusion.

This growth is not assured. The basis of international competition is changing rapidly. In an ever more connected world, disruptive technologies and lower transportation costs means international competition is moving to the level of individual jobs. Many sectors and tasks which were previously insulated will become trade-exposed. Firms which are able to innovate and differentiate will thrive; others will not survive. The challenge for Australia is to create an agile, flexible economy capable of adapting to the inevitable rise in competition.

Purposeful action is required. Australia faces a pervasive competitiveness problem. Many sectors of the economy lag behind international benchmarks. By focusing on its comparative advantages, raising productivity and improving competitiveness, Australia can continue to prosper. But complacency, or a focus on protecting the status quo rather than embracing the opportunity global trade presents, risks a painful correction through rising unemployment, falling wages and lower living standards.

Australia has the endowments of skills and resources to continue to compete and prosper. A clear sense of purpose and decisive action by policy makers, business leaders, research institutions, educators and individual workers will be required to make the most of these endowments.

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This paper is the result of a research effort conducted by McKinsey Australia. Throughout the process we tested our ideas with multiple sources, including the Business Council of Australia, its President Catherine Livingstone AO and Chief Executive Jennifer Westacott. It is intended as a contribution to determining the ways of enhancing growth in Australia, including as an input to the BCA's program of work.

John Lydon, Managing Partner of McKinsey Australia and New Zealand, oversaw the work along with partners, David Dyer (Melbourne) and Chris Bradley (Sydney), supported by Eleanor Brown, Alice Hudson, Stephanie Madner, Kirstin Mennella and Yannick Spencer.

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Andrew Barkla, President and Managing Director, SAP Australia and New Zealand; Simone Carroll, General Manager Human Resources, REA Group; Anthony Claridge, Senior Vice President Global Supply Operations, ResMed Limited; Peter Crowley, Managing Director, GWA Group Limited; Ahmed Fahour, Managing Director and Chief Executive Officer, Australia Post; David Knox,

Managing Director and CEO, Santos Limited; Catherine Livingstone, AO, President, Business Council of Australia and Chair, Telstra Corporation Limited; Pip Marlow, Managing Director, Microsoft Australia; Sean O'Halloran, President and Managing Director, Alcatel-Lucent Australia; Chris Roberts, CEO and President, Cochlear Limited; Steve Sargent, President and CEO, GE Australia and New Zealand; Andrew Stevens (Chair), Managing Director, IBM ; Giam Swiegers, CEO, Deloitte; Ziggy Switkowski, Chairman, Suncorp Group; Paul Thorley, CEO, Capgemini Australia and New Zealand.

We also interviewed BCA members, economists and business and public sector leaders who generously offered perspectives and practical insights.

Gary Banks, ANZSOG; Rufus Black, Melbourne University; Graham Bradley, AM, Stockland; Mark Burns, TMT; Michael Chaney, AO, Woodside Petroleum; Anthony Claridge, ResMed Limited; Peter Cooper, StartupSYD; Professor Richard Cooper, Harvard; Alan Cransberg, Alcoa; Peter Crowley, GWA Group Limited; Mark Cully, Department of Industry; Ralf Dicke, Leighton Holding; Simon Duggan, Treasury; Henry Ergas, Economist; Saul Eslake, Bank of America; James Fazzino, Incitec Pivot; Michael Fraser, AGL; Elmer Funke Kupper, ASX; Richard Goyder, AO, Wesfarmers; Bob Gregory, Australian National University College of Business and Economics; David Gruen, Treasury; Nick Gruen, Lateral Economics; Peter Harris, Productivity Commission; Johnathan Hauser, Independent Director of the Organic Dairyfarmers Cooperative Australia, formerly Burra Foods; Mike Hirst, Bendigo Bank; Graham Hodges, ANZ; Graeme Hunt, Transfield; Murray Hurps, #StartupAUS; Ken Jones, Leighton Holding; Rod Jones, Navitas; Peter Kerr, Independent Dairy Industry Consultant, formerly Murray Goulburn; Grant King, Origin Energy; Rod Maddock, Monash University School of Business and Economics; Steve McCann, Lend Lease; Mick McMahon, Skilled Group; Rohan Mead, Australian Unity; Ainslie Moore, Universities Australia; Nicholas Moore, Macquarie; Ian Narev, CBA; Sean O'Halloran, Alcatel-Lucent Australia; Paul O'Malley, Bluescope; Nev Power, Fortescue; Hugh Richards, TMT; Chris Roberts, Cochlear Limited; Steve Sargent, GE Australia and New Zealand; George Savvides, Medibank; Tony Shepherd, BCA; Andrew Stevens, IBM; Giam Swiegers, Deloitte; Ziggy Switkowski, Suncorp; Yasushi Takahashi, Mitsui; David Thodey, Telstra; Michael Wilkins, IAG; Dr Alex Wonhas, CSIRO.

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Executive summary

Australia has enjoyed a prolonged period of economic growth, which has created jobs, raised living standards and funded social services. The unemployment rate and median income compare favourably to most developed economies. The drivers of this economic success have changed significantly – from sustained productivity growth during the 1980s and 1990s to extraordinary demand for Australia's minerals and energy over the last decade. This demand meant 90 percent of Australia's gross domestic income growth from 2005 to 2013 came from capital investment and the terms of trade (the price of exports relative to imports).[1]

Continued success is very far from assured. A new question for Australia's leaders has become all too real and urgent: How to transition to new sources of growth as commodity prices and investments in resources projects normalise.[2] And there is no escaping that Australian firms are competing in an increasingly globalised economy. Moreover, fundamental changes to supply and demand are reshaping how the economy operates, down to the level of individual jobs.

On the demand side, the rapid and continuing growth of emerging economies, including China, India and Indonesia, has been much discussed in Australia. The global consuming class is expected to grow from 2.4 billion to 4.2 billion people in 2025, and will be around 150 times Australia's expected domestic population.[3] There are remarkable opportunities for Australian firms to export goods and services to meet the needs of this global market, particularly Asian consumers. But Australia enjoys no guarantee of success. Growth will not come to Australia; Australia must go for growth. And the time to act is now. Other countries are moving and the window of opportunity will not remain open indefinitely.

On the supply side, disruptive technologies will reshape industries and economies. An early example was classified advertising, where the revenue moved from print media to online providers, driven by attackers like Seek and realestate.com.au. Looking ahead, many sectors like financial services, retail, telecommunications and education could be profoundly reshaped by digital disruption. New technologies and techniques, like advanced analytics, additive manufacturing or advanced robotics and autonomous vehicles, will enable innovation and productivity gains. They will also change the nature of work: specifically, reconfiguring which tasks will be performed by people (and which will be performed by computers and machines), and where and how people or machines will perform them.[4]

The increasing uptake of these technologies, coupled with falling transportation costs, is changing the nature of global trade. Across sectors, global supply chains are fragmenting, and countries are further specialising what they produce. Apple's iPod is a good example. It contains 451 distinct components sourced from around the world; the ten most valuable components alone are sourced from six different countries; and many require significant research and development.[5] As a result, global flows of intermediate goods are 3.2 times greater than flows of final goods, and are growing at a faster rate.[6] The fragmentation of supply chains means competition is moving from the level of industry sectors (like manufacturing or retail) to segments of the value chain (like design or logistics). Competition is also moving to the level of individual jobs through the same technological

1 This paper builds on our last major economy-wide report *Beyond the Boom: Australia's Productivity Imperative*, which explained the potentially fragile growth outlook if productivity is not addressed.
2 Increased demand for resources results first in higher prices, then investment in additional supply, and finally in increased output. The enormous investment in new mines, gas fields and export facilities will sustain higher levels of output for decades, as long as Australia's cost of production remains competitive.
3 McKinsey Global Institute 2012, *Urban World: Cities and the Rise of the Consuming Class*; Australian Bureau of Statistics 3222.0 Series B.
4 McKinsey Global Institute 2013 *Disruptive technologies: Advances that will transform life, business, and the global economy*.
5 Greg Linden, Kenneth L. Kraemer, and Jason Dedrick, 'Who captures value in a global innovation network? The case of Apple's iPod,' *Communications of the ACM*, volume 52, issue 3, March 2009.
6 McKinsey Global Institute 2014, *Global flows in a digital age: How trade, finance, people, and data connect the world economy*.

and logistics trends: tools for file-sharing and collaboration allow engineering plans to be drafted by teams in multiple countries; more sophisticated logistics allow construction firms to prefabricate everything from bathrooms in multi-storey dwellings to steel structures for liquefied natural gas (LNG) processing plants offshore.

Australia has no option to delay or avoid what is happening. The explosion in emerging market demand, and the possibilities created by new technologies and changing supply chains are powerful economic forces. These forces can either be harnessed as opportunities or endured as threats: it depends on the response by Australian governments, businesses and workers. Managed well, they create the opportunity for another period of sustained growth. Australia has endowments of natural resources and a highly skilled workforce, which provides a platform for highly productive jobs which can sustain and grow national income and employment.

Australia faces these new challenges in a mixed state of health: at the core, Australia suffers from pervasively low competitiveness. The resources boom delivered rapid national income growth and a surge in capital investment which continues to raise output levels of commodities like iron ore and LNG even as prices for some key commodities abate. The boom also led to a rise in the exchange rate and in input costs as businesses competed for scarce resources in a rapidly growing economy. This increase in exchange rate and input costs has not been offset by productivity gains.

The Australian economy is less traded than many of its peers, but the disruptive forces will only increase the number of sectors and businesses that are exposed to international competition. Some will thrive, some will not. Businesses which are productive and innovative, and make the most of global markets and global supply chains, will prosper. Increased trade, by allocating work to its most productive use, creates wealth. If Australia continues to open its economy, improves its competitiveness and specialises in what it can do best (its comparative advantages) it can access new markets and create new, more productive jobs.

This paper illuminates the vital role that improving Australia's international competitiveness plays in transitioning to a prosperous future. Australia can take a purposeful path: to benefit from trade by focusing on Australia's strengths and creating high-productivity jobs. By growing globally strong sectors and skills, Australia will also create jobs which are more sustainable in the face of increasing competition. This will demand Australia plays to its strengths and accelerates progress where it has actual or latent advantage – a shift in emphasis from policy that, if measured by resource allocation, has traditionally focused more on areas of the economy where Australia's long-term competitiveness prospects are weak.

If Australia does not adapt, it risks a painful correction: the competitiveness problem becomes a handbrake on growth, and job-level competition leads to rising unemployment and lower wages. The difference between the purposeful path and a painful correction could be worth more than one percentage point of GDP growth per annum over the next five years.

The paper has 4 chapters, which are summarised briefly below.

1. Raising competitiveness is Job Number One for Australia's long- term prosperity

Australia must improve its economic competitiveness to unlock economic growth and to increase individual prosperity by creating more jobs, and more productive jobs.

As an open economy with a floating exchange rate, an increase in Australian exports tends to be offset by more imports. The real prize of a thriving export sector is the chance to employ more Australians more productively. The export sectors where Australia is competitive yield 5 percent more output per hour than the rest of the economy. Moreover, these sectors are the only ones where jobs for technicians, trade workers, machinery operators and labourers – the occupations of 30 percent of Australia's workforce – have significantly grown over the last five years. When Australia imports, it can harness the skills and resources of the whole globe, leaving Australians free

to focus on what they do best. This creates gains from trade that increase national prosperity and sustain high-value jobs.

Despite exports, especially resources, increasing over the last decade, Australia's economy is still a lot more domestically focused than its peers. It is the 12th largest economy but the 21st largest trader, with about half the trade levels of Germany and South Korea.[7] Increasing trade – in both goods and services – will be key to unlocking economic growth for the next era.

Standing in the way is a pervasive competitiveness problem. An intrinsic measure of competitiveness, a Relative Competitiveness Score, which we introduce and quantify in this paper, takes into account both the relative productivity and the relative input costs of sectors. Only one sector – agriculture – stands out as strongly competitive. Many sectors, particularly some of the less traded ones, are significantly behind the US.

Raising economic competitiveness is not simply a priority for Australia's current export sectors. Sectors which have traditionally operated more in the domestic field also need to ensure they become and remain competitive. Many of these sectors, particularly services, will be increasingly traded and firms and workers will need to compete with global rivals – like retailers facing increased online competition. Moreover, some of these sectors, like construction, logistics and utilities, are important enablers of export sectors and act as handbrakes on Australia's export potential if they are not competitive.[8]

2. Australia should focus on the sectors and tasks where it can win

Having measured the level of competitiveness and its impact, the question becomes where can Australia win? We investigate Australia's strengths on two dimensions: industry sectors (like agriculture or professional services) and job types.

We first segment the economy into five: **Advantaged Performers** (mining, agriculture, education and tourism), **Latent Potentials** (food manufacturing, pockets of advanced manufacturing and selected niches in global supply chains), **Transitionals** (most of manufacturing), **Enabling Industries** (finance, utilities, construction, professional services, logistics, real estate services) and the **Domestic Core** (communications, retail and wholesale trade, domestic services and public services). It is the Advantaged Performers and the Latent Potentials where Australia tends to have the right combination of skills and endowments to win globally.

The effect of technology and global supply chains means that Australia needs to view its competitiveness not just by sector, but also by types of jobs. We observe three types: **Interaction jobs** (those involving more complex interactions and judgement), **Production jobs** (those primarily about making and moving things), and **Transaction jobs** (those involving more procedural, rules-based tasks). It is in the first category – Interaction jobs – where Australia can, and will need to, win. These represent almost half the jobs in the economy but are the source of all the employment growth. A vital aspect of Australia's competitiveness will be to focus on these jobs of the future and build on Australia's advantages to secure them. However, even if some sectors are advantaged, the imperative to sharpen Australia's competitiveness is true of all sectors – traded or non-traded, relatively competitive or not.

3. Improving the competitiveness of individual sectors

Understanding where Australian businesses can best compete is one thing. The real challenge will be how to do so. Chapter 3 examines the priorities for policy makers and individual firms sector by sector, to improve competitiveness and secure future investment.

7 World Bank 2014, *World Development Indicators*.
8 For the sectors which will remain insulated and are not major inputs to Australia's export sectors, the concept of 'competitiveness' is less relevant, but improving productivity in these sectors remains an important contributor to underlying economic growth.

Developing and sustaining the competitiveness of **Advantaged Performers** and **Latent Potentials** is key. These sectors build on skills and endowments that are hard to replicate. None are guaranteed to prosper, but they have the strongest prospects and there is significant international demand for their outputs. Australia will need to promote competitiveness and secure investment in each sector, while at the same time continuing to move away from firm-level government assistance. Far from being 'yesterday's sectors' that Australia should diversify away from, doubling down on areas of strength is the best route to prosperity.

The **Transitionals** – largely manufacturing sectors – need to accelerate the evolution of their business models, switching focus to parts of the value chain that matter locally or require differentiated products or services. Those that succeed will create new, and new types of jobs.

The less traded sectors – **Enabling Industries** and the **Domestic Core** – represent 80 percent of Australia's gross value added. They need to continue to be the locus of steady productivity improvement, while preparing for the inevitable rise in trade exposure and disruptive trends.

4. Taking a purposeful approach to raise Australia's global competitiveness

Chapter 4 details actions that cut across individual sectors to further enhance Australia's competitiveness. There is a role for both policy makers and firms, as well as educators, research institutions and individual workers.

First, Australia will need to sustain its historically strong record of **attracting foreign investment and skilled immigrants.** Both will be important for continued economic growth, as Australia builds firms and sectors on a scale and with the skills to compete globally.

Second, as trade intensity increases across all sectors, **regulation needs to account for each sector's global context.** Other countries are making it easier for their industries to compete on the global stage, while Australia's regulatory burden has typically increased in the last decade, notwithstanding current efforts to reduce it.

Third, **firms need to innovate, collaborate and rethink how they operate to excel.** There are opportunities to improve how Australia embeds innovation and technology: Australian companies are behind on technology uptake, external orientation, innovation and learning. They need to improve their ability to implement and sustain change. Australian managers need to more actively pursue and adopt innovation, and put the structures in place to make sure it sticks. The good news is Australian firms have world class leaders – they will need to articulate a clear vision of how they will compete in the future and lead their organisations to new levels of performance.

Finally, Australia must **create pathways to the jobs of the future.** Global competition for jobs is shifting, and Australian workers will need to follow the momentum towards Interaction jobs. Labour market structures and skill development must enable workers to continuously adapt to, and take advantage of, a rapidly changing economic landscape.

1. Raising competitiveness is job number one for Australia's long-term prosperity

Australia has performed well historically, but the outlook is less secure. Australians have enjoyed 23 years of uninterrupted economic growth, an unprecedented run among developed nations.[9] While not all Australians feel it, prosperity has risen rapidly. Income per capita rose from 20th in 1991 to 6th in 2012, with the fourth fastest growth rate among OECD nations.[10] Fully 3.7 million jobs were created, unemployment fell from 9.6 percent to 5.2 percent, and participation rates rose.[11]

Now, the question of how to sustain the economic growth that delivers jobs, creates prosperity and funds social services is increasingly pressing as the population ages and the terms of trade and capital investment decrease.

A greater focus on harnessing the benefits of trade will unlock economic growth. The economy has become increasingly open but still has a lower level of trade than many mid-sized developed countries. Increased trade would create more jobs in sectors where Australian workers are most productive. An increase in exports tends to increase imports, allowing Australia to harness the skills and resources of the whole globe, freeing Australians to do what they do best.[12] This increases national income by creating a more productive job mix, and also sustains or increases wages, which encourages more Australians to work, creating more jobs overall.

To succeed, Australia must be broadly competitive with peer nations, and world-beating in a few and very specific areas. This is not the case today. Competitiveness is a combination of productivity (the output created from a given set of inputs) *and* the cost of those inputs. In most industry sectors, Australia's competitiveness is poor. Trade-exposed sectors like airlines, aluminium smelting and automotive manufacturing face growing competition. Australia is clearly competitive in only one sector – agriculture – and has not improved its position markedly in any sector since 2005. This competitiveness problem has recently been exacerbated by an exchange rate well above the historical average.

Raising the competitiveness of historically less traded sectors is also important. Many of these, particularly services, will be increasingly traded and firms and workers will need to compete with global rivals. Also, some sectors are important enablers of export sectors and act as handbrakes on export potential if they are not competitive.

Australia can improve its competitiveness by either boosting productivity or reducing input costs. The latter would in part imply a reduction in real wages. Greater productivity and a focus on non-wage drivers of cost is the approach which sustains higher living standards.

Raising Australia's competitiveness relative to other countries is Job Number One for Australia's prosperity. By improving competitiveness, Australia can increase its share of existing markets, access new markets and supply new products and services. This will sustain economic growth above the long-term trend, create new jobs and raise living standards. Stronger economic growth and higher employment promote social inclusion and support the provision of social services. Australia has adapted before by profoundly changing its mix of export products and export markets – but will need to move quickly and purposefully – otherwise there is a risk of a long, painful adjustment to a more competitive global market.

9 Reserve Bank of Australia 2010, *Twenty Years of Economic Growth: Address to Moreton Bay Regional Council*; Australian Bureau of Statistics.
10 Behind the Slovak Republic (now 38th), Hungary (now 53rd), and Norway (now 2nd).
11 Between 1991 and 2012, workforce participation rose from 63.1 percent to 65.1 percent, according to ABS Labour Force 6291.
12 There are tasks and sectors where Australians are much more productive. The ability to specialise and allocate Australia's resources to their most productive use is the gift of higher trade. We are not arguing for a 'trade surplus' (where exports exceed imports). We note that Australia's experience has been that exports and imports tend balance - aided by the floating exchange rate. The benefit from a greater level of trade is specialisation that enables greater productivity.

1.1 Australia needs new sources of growth to sustain jobs and living standards

The drivers of Australia's economic growth have shifted dramatically over the last two decades.

Following the recession in 1991, Australia reaped dividends from major reforms begun in the 1980s: including floating the dollar, liberalising banks, dismantling wage fixing, reducing tariffs, and granting independence to the Reserve Bank. The resulting productivity gains were 35 percent of Australia's income growth to 2005. Moreover, these gains facilitated a 6 percent per annum increase in exports, which allowed Australia to maintain global export market share for most of that period.[13]

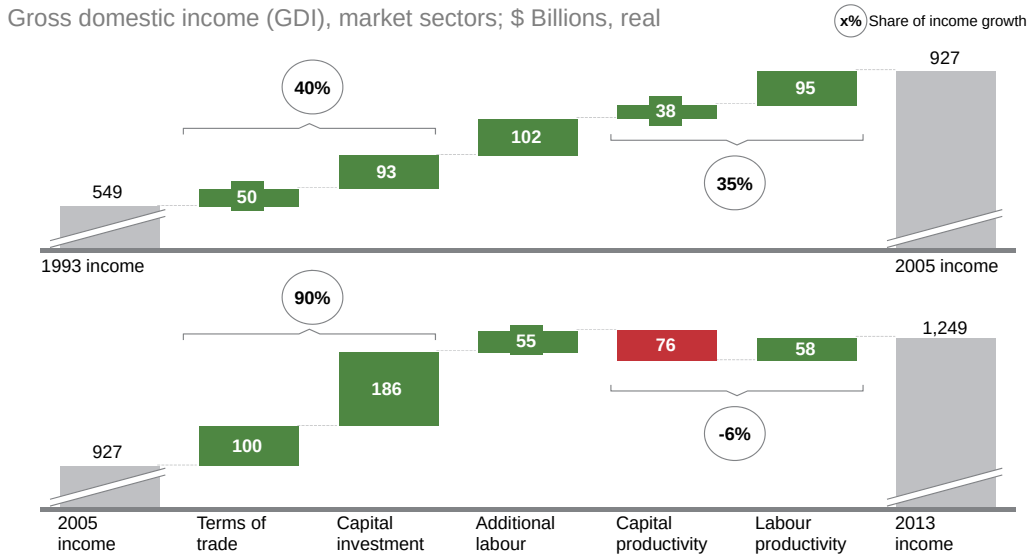
But since 2005, multifactor productivity has been negative, as capital productivity has declined dramatically and labour productivity has grown more slowly. More than 90 percent of income growth between 2005 and 2013 came from Australia's favourable terms of trade, especially the increase in prices for resources, and the associated surge in capital investment (Exhibit 1).

The one constant over the last two decades has been the steady increase in the labour force. In this regard, Australia has done well, with a higher working age population (more people available for work), a higher participation rate (more people looking for work) and a higher employment rate (more people able to find work).[14]

Exhibit 1

New capital and terms of trade have driven income growth since 2005

Gross domestic income (GDI), market sectors; $ Billions, real



SOURCE: Australian Bureau of Statistics; McKinsey analysis

The recent drivers of economic success will not continue to sustain Australia. The demographic dividend will weaken as the population ages. [15] Although output from the resources sector will continue to grow (and productivity will have some bounce-back as capacity comes online), the terms of trade effect was temporary and will continue to decline, and competition for new investment will be fiercer.[16]

In the wake of the boom, it is time for Australia to consider where it can go in pursuit of new growth.

13 Based on constant 2005 US$, until 2002, Australia held 1.2 percent or more of global export market share. In 2012, Australia's global market share was 1 percent.

14 For a detailed analysis of the drivers of Australia's economic prosperity from 1993 to 2012, see McKinsey Global Institute 2012, *Beyond the Boom: Australia's Productivity Imperative*.

15 The Treasury estimates the number of workers per retiree will fall from five today to three by 2050.

16 The terms of trade – the prices Australians receive for exports relative to price of imports – reached an all-time high in 2011. In December 2013, terms of trade were nearly 20 percent below the 2011 peak. Treasury expects the terms of trade to settle at 2005 levels by 2020. Similarly, capital investment has been well above trend. By 2011, Australia had 25 percent more physical capital per hour worked than in 2005. However, the Bureau of Resource and Energy Economics suggests that resource related capital investment will shrink from $268 billion in 2012 to $25 billion in 2018. See also McKinsey Global Institute 2012, *Beyond the Boom* for further discussion of the implications of declining terms of trade and capital investment, and the lag between investment and production for major resources projects (which will reduce, but not reverse, the decline in capital productivity).

1.2 Embracing trade can help plug the growth gap

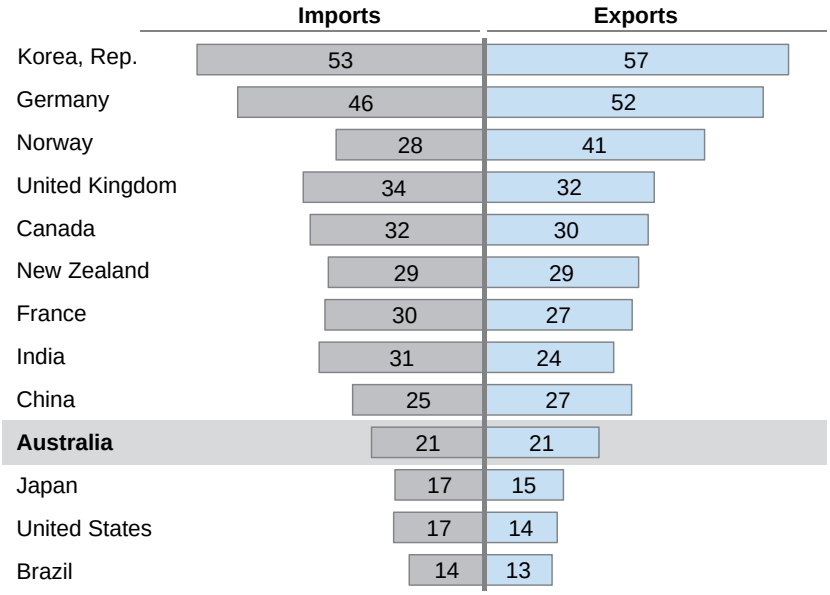
Directing the economy more purposefully towards trade paves the way for a greater number of more productive jobs that can help the economy transition past the boom. Although Australia has been steadily taking steps towards a more open economy, there is still some distance to go.

Australia is less trade driven than most peers. The world's 15 largest economies are typically the largest exporters; however, Australia is one of three which are not. The Australian economy is the 12th largest in the world, but ranks only 21st for share of global exports.[17] It's a similar story for imports. Australia's economy is less trade driven than many small-medium developed economies (Exhibit 2). The ratio of exports and imports to GDP is 30 percent below Canada or New Zealand.[18] A recent McKinsey Global Institute (MGI) analysis of global flows of goods, services, and data and communications further illustrates this isolation, ranking Australia behind many developed nation peers.[19]

Exhibit 2

Australia is less trade driven than most other developed nations

Ratio of exports and imports to GDP, 2012; Percent



SOURCE: World Bank

Becoming more trade driven can help plug the gap left by the end of the resources boom. All other things being equal, additional exports will also directly add to income. However, in the long-run, the adjustment of exchange rates and participation in global markets means increased exports are usually offset by increased imports.[20] Australia's trade balance (the amount of goods and services exported minus imports) has stayed virtually flat since the currency floated, while the combined value of imports and exports has increased from 19 percent of GDP to 42 percent of GDP (see Box 1: *A brief history of Australian trade*).

17 World Bank 2014, *World Development Indicators*. Brazil and Mexico are the other top 15 economies by size, but not by exports.

18 We acknowledge that common economic areas or trading blocs help facilitate international trade (for example, Germany benefits from its membership of first the European Economic Community and now the European Union). However, we note that New Zealand is significantly more trade driven than Australia, and does not enjoy any fundamental economic integration or geographic proximity advantages.

19 McKinsey Global Institute's 'Connectedness Index' assesses a country's global share and intensity of global flows (controlling for country size). While stronger on people and financial flows (ranking 11 and 14 respectively), reflecting Australia's strong immigration program and high level of foreign investment (particularly during the capital investment phase of the resources boom), Australia lags on goods, services, and data and communications (ranking 32, 34, and 30 respectively). See McKinsey Global Institute 2014, *Global Flows in a Digital Age: How trade, finance, people and data connect the world economy*.

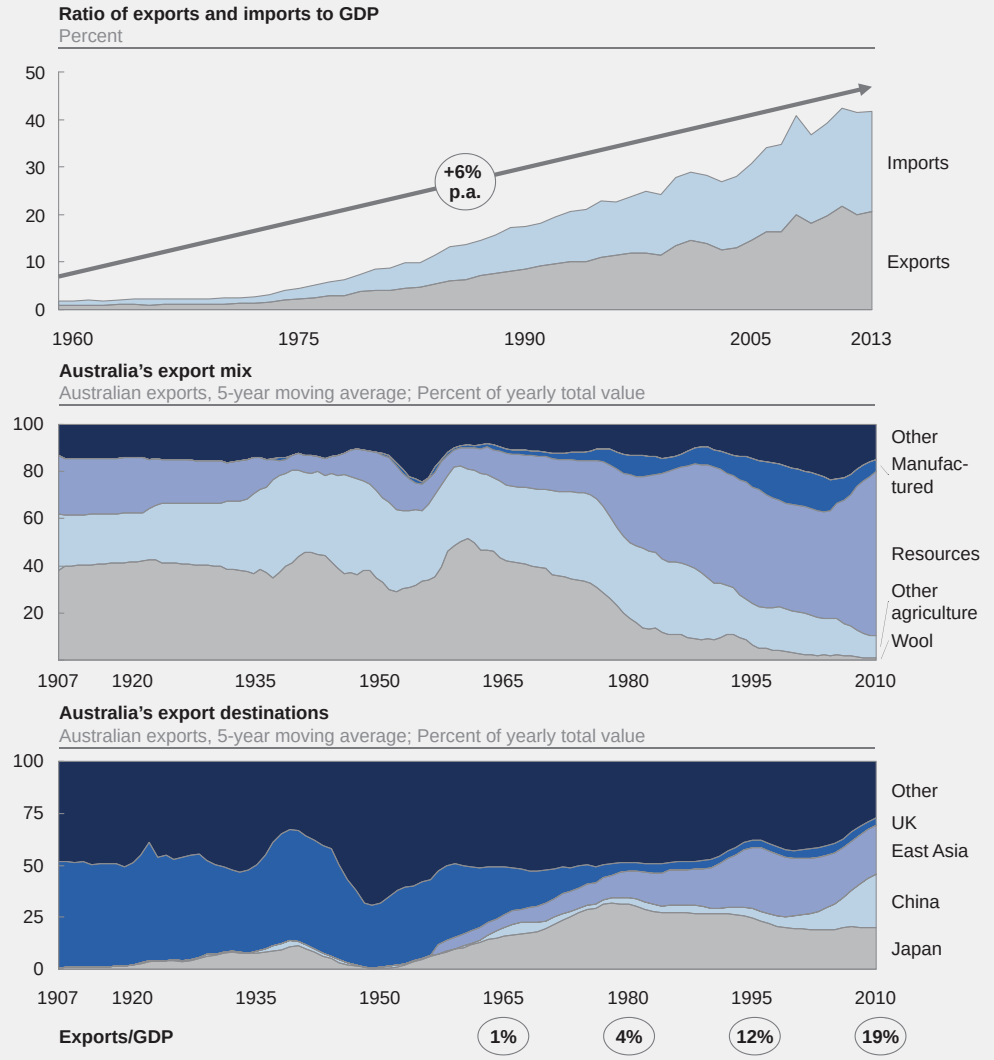
20 In most developed nations, the export to import ratio is close to 1. In particular, Australia's balanced export to import ratio has held stable since the 1960s, when Australia began to open to trade.

Box 1: A brief history of Australian Trade

Since the early 1970s, Australia's economy has become dramatically more open. Both imports and exports as a percentage of GDP have doubled since 1993, and grew four-fold since 1983 (Exhibit 3). The mix of products and customers has also changed remarkably over time, from a country that 'rode on the sheep's back' to being a global resource powerhouse with 70 percent of total exports flowing to Asia. Today, Australia is a world leading exporter of resources (including iron ore, coal, gold natural gas and aluminium ores & concentrates), agricultural products (like wheat and beef) and education.[21]

Exhibit 3

The Australian economy has opened dramatically, as Australia has become a major resources exporter to Japan, East Asia and then China



SOURCE: Atkin, Caputo, Robinson and Wang 2014, Macroeconomic consequences of terms of trade episodes, past and present, Reserve Bank of Australia, p. 7; ABS 5206 Table 1, Table 13; McKinsey analysis

21 Department of Foreign Affairs and Trade 2013, *Trade at Glance*, Bureau of Resources and Energy Economics 2013, *Resources and Energy Statistics*, Department of Agriculture 2013, *Agricultural Commodity Statistics*, OECD 2012, *Education at a Glance*.

A competitive economy with a thriving export sector enables specialisation in highly productive and advantaged activities. Greater specialisation helps sustain and improve living standards through two mechanisms. Better (more productive) jobs, and then more jobs overall.

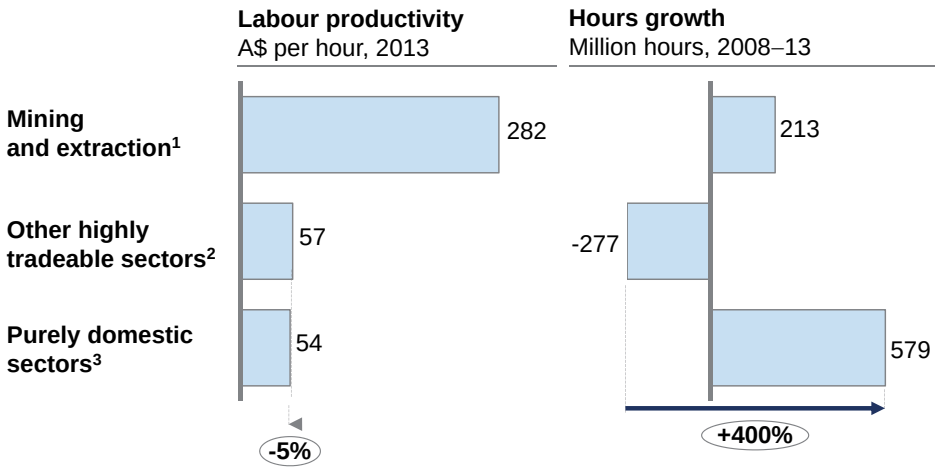
- **Better jobs.** Export driven sectors are the most productive parts of Australia's economy (Exhibit 4). Even without mining, which is skewed by high capital investment, export sectors yield 5 percent more output per hour of labour input. Growing jobs in export sectors while increasing imports in areas where Australia is less productive would increase total national income. This supports higher wages and provides cheaper goods and services for consumers. This is not just a one-time effect. An increase in exposure to the export market is likely to spur exporting sectors to greater levels of performance and innovation; firms will need to continuously improve to maintain and grow share. Research from around the world (including Australia) shows that firms with international exposure have more than double the rate of productivity growth, better management quality, and greater and more novel innovation.[22] The combined impact of a more productive allocation of resources and the increased drive for performance can be significant: McKinsey Global Institute finds that more globally connected economies see up to 40 percent more benefit (in economic output) than less connected economies.[23] Greater trade exposure can unlock a continuing cycle of productivity and income growth.

- **More jobs.** Increasing national income, by creating a more productive job mix, helps increase wages. Higher wages have a positive second-order effect by encouraging more Australians to participate in paid work, and ultimately results in higher employment across the economy. This has been successful in the past – as Australia has shifted towards a more open economy, total employment has grown. Taking action to ensure continued export orientation and increasing export strength will support ongoing growth in employment.

The jobs in trade exposed sectors are often the most vulnerable. However, trying to shield the workforce from trade is an unsustainable way to protect jobs; improving technology means that Australia's exposure to trade will only increase in the future. Instead, increased competitiveness – and growing those sectors where Australia is most competitive – is critical to maintaining high levels of employment and participation, and increasing living standards.

Exhibit 4

Tradeable sectors have greater productivity but are more vulnerable to competition



1 Note that labour productivity of mining and extraction is inflated compared to multifactor productivity due to the high capital to labour ratio and low capital productivity of the sector
2 Includes agriculture, manufacturing, tourism and international education
3 Includes telecommunications, wholesale and retail trade, domestic services and public services

SOURCE: ABS 5206, 6291

22 See McKinsey Global Institute 2010, *Creating economic growth in Denmark through competition*, McKinsey & Company, Copenhagen, p. 62, McKinsey Global Institute 2010, *From austerity to prosperity: Seven priorities for the long term*, McKinsey & Company, London, p. 31-33, and Leo Soames, Donald Brunker, Tala Talgaswatta 2011, *Competition, Innovation and Productivity in Australian Businesses: A firm-level econometric analysis.*

23 McKinsey Global Institute 2014, *Global Flows in a Digital Age: How trade, finance, people and data connect the world economy.*

1.3 To benefit from trade, Australia will need to raise competitiveness

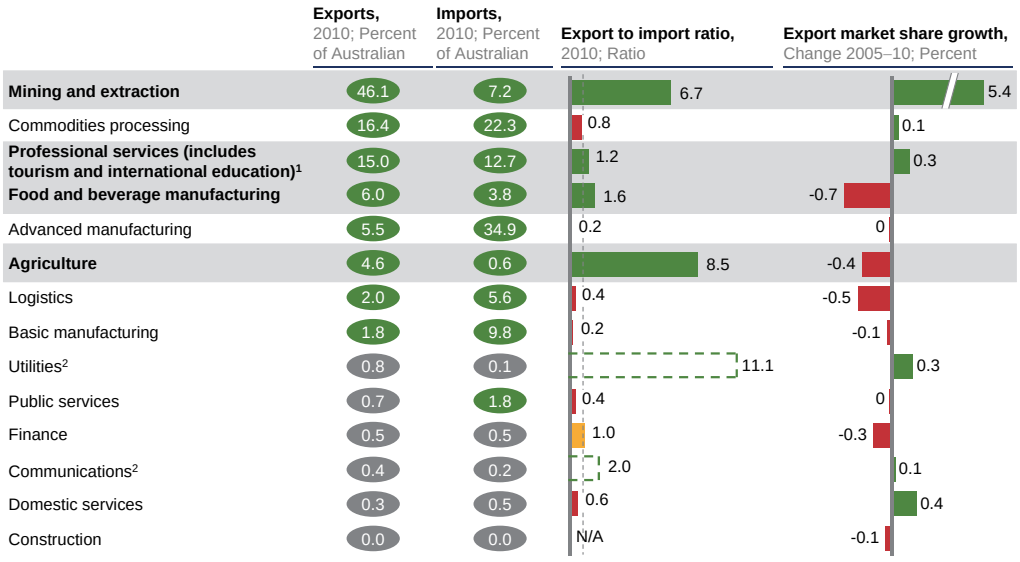
To obtain the benefits of increased trade, Australia must overcome the single obstacle that impedes better performance in trade: quite simply, competitiveness is weak.

There are two ways to assess competitiveness. The first is to look at how Australia actually performed in the global market. According to this measure, it has been competitive in only a few industries. In this paper, we also introduce a 'Relative Competitiveness Score', developed for this research. This score, which decomposes underlying competitiveness into labour productivity and input cost per hour worked, sheds light on the nature of Australia's competitiveness problem, and highlights the potential for improvement.

To assess how Australia actually performed, we look at two *outcome measures*: export to import ratio and export share growth (Exhibit 5). Export to import ratio shows where Australia tends to be able to produce goods and services more efficiently than competitors, such that it sells more than it buys. Export share growth goes further, assessing whether Australia has been more successful than competitors in growing its exports in each sector. This is a stringent test of competitiveness in terms of outcomes, because it tests Australia's responsiveness to market trends and its access to scarce factors of production as well as its competitiveness.[24]

Exhibit 5

Australia's trade performance has been strongest in mining and extraction, tourism and education, food manufacturing and agriculture



1 Most of tourism and international education falls into categories covered in this bucket, but they have not been split out in OECD data. According to ABS data, tourism has an X:M ratio of 1
2 Though utilities and communications exhibit a strong export to import ratio and market share growth, this comes off an extremely low base. As such, they have not been considered a competitive strength

SOURCE: OECD, World Bank

Australia is a net exporter in five primary sectors: mining and extraction (which includes oil & gas), food and beverage manufacturing, agriculture, tourism and international education. In mining and extraction, between 2005 and 2010, Australia increased its share of world exports from 5.9 percent to 11.3 percent, a gain of 5.4 percent. In other large net export categories Australia made modest increases in professional services and commodities processing, and lost share in food and beverage manufacturing and agriculture.

24 For example, in agriculture and food and beverage manufacturing, Australia exports much more than it imports. However, Australia has not been able to make the most of the rapid growth in the export market given the rising consumer class in emerging economies. As a result, Australia's overall share has declined, although absolute exports increased.

In other sectors, particularly advanced and basic manufacturing, Australia is not competitive and imports much more than it exports at the aggregate level. An analysis of advanced manufacturing shows the relationship between productivity and input costs required for competitiveness: the strongest players have either high process sophistication (Germany and Japan) or low wages (China, South Korea and the US).[25] Australia has neither of these, so it does not have the productivity sufficient to offset high input costs. For example, total hourly compensation in Australia is double South Korea, but production process sophistication is lower (5.1 versus 5.3 on a 1–7 scale).[26] This is not to argue for a low wage economy. But unless Australian firms achieve substantially higher productivity (through product differentiation or process sophistication) then they will struggle to be competitive in this sector unless wages fall.

This leads to a second method of assessing Australia's competitiveness. We calculate a Relative Competitiveness Score for each sector, combining labour productivity and input costs/hour and compare Australia with the US (Box 2: *Assessing Australia's competitiveness*). It is from this score that the pervasiveness of Australia's problem is revealed.

25 World Economic Forum 2013, *Global Competitiveness Report*; OECD, 2014 *STAN Structural Analysis Database*.
26 World Economic Forum 2013, *Global Competitiveness Report*.

Box 2: Assessing Australia's competitiveness

To assess Australia's competitiveness, we present a Relative Competitiveness Score that equals sector gross value added (GVA) divided by total input costs, relative to other countries.[27]

To understand the drivers of the Relative Competitiveness Score for a particular sector, we decompose this into two supporting metrics:

- **Relative Labour Productivity** shows whether Australia creates more value per hour worked. It is equal to sector GVA divided by total hours worked relative to the comparator country.[28]

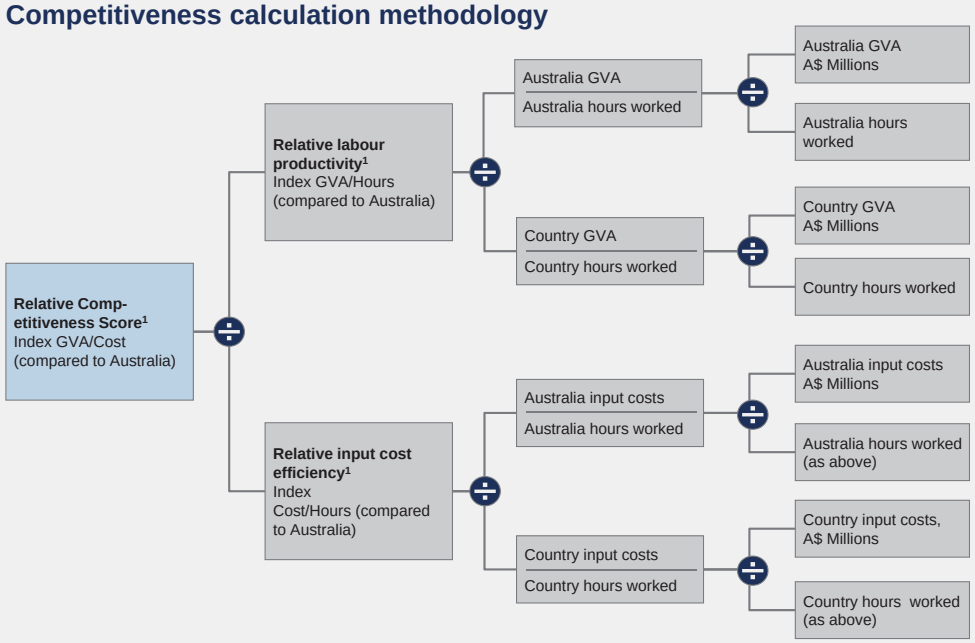
- **Relative Input Cost Efficiency** equals total costs per hour worked relative to the comparator country. It includes labour, services, materials, energy and capital, weighted by usage for each sector.[29] This shows how many hours of work can be purchased for a set budget.

The Relative Competitiveness Score divides Australia's Relative Labour Productivity by its Relative Input Cost Efficiency (Exhibit 6). This simplifies to Australia's GVA divided by total cost, relative to the comparator country's GVA divided by total cost. A score greater than zero indicates Australia is more competitive than the comparator country.[30]

27 Gross value added is the value of output at basic prices minus the value of intermediate consumption at purchasers' prices, i.e. the difference in value between the final product and any products consumed from other sectors.
28 Data availability across countries drove the choice of labour productivity instead of multifactor productivity.
29 Services, materials and energy costs are the costs of intermediate inputs, i.e. the products consumed from other sectors. Capital refers to capital services costs (which also equals capital compensation, or GVA – labour compensation). Capital services cost is measured by the weighted growth of capital stocks of eight assets (weights are based on the rental price of each asset which consists of a nominal rate of return, depreciation and capital gains).
30 For ease of interpretation, whenever a Relative Competitiveness Score, Relative Labour Productivity or Relative Input Cost Efficiency scores are presented, we subtract one from the results so that a positive score indicates Australia is more competitive, and a negative score indicates Australia is less competitive.

Exhibit 6

Competitiveness calculation methodology



1 Final scores have been rebased so that 0 = equal to comparator country, by deducting 1 from the index

The Competitiveness Score is most meaningful at the sector level. In 2005, for which we have the most extensive data, Australia was less competitive than most of the five largest developed economies in all sectors except agriculture.[31] We also extrapolate 2012 competitiveness compared to the US.[32] This analysis shows that Australia's competitive position has not changed substantially since 2005. Because exchange rate effects are cancelled out in our analysis, this is not the cause of the underlying competitiveness problem.

To illustrate the Relative Competitiveness Score, imagine three wineries in different countries. All produce the same volume of wine, which they export. For simplicity, we assume labour and electricity are the only factors of production. The first winery, *Manual Merlot*, is in an emerging economy with cheap labour and pays $10/hour to the workers that tend the vines and pick the grapes, and $0.10/kWh for electricity. The second, *Productive Pinot*, pays $20/ hour and $0.20/kWh, but because of better technology and operational practices, it requires half as much labour and electricity to produce the same amount of wine. The third, *Boutique Bubble*, also pays $20/hour and $0.20/kWh, but has the same basic processes as the first. However, it has differentiated its product through greater quality and effective branding, and charges double the price of the first two.

In this simple, contrived example, all three are equally competitive. *Manual Merlot* competes with lower input costs per hour. *Productive Pinot* and *Boutique Bubble* compete by creating more gross value added per hour – they are more productive. *Productive Pinot* creates a greater volume from a given set of inputs. *Boutique Bubble* creates a greater value (not volume) from a given set of inputs. A winery that is able to combine low input costs and higher productivity would be relatively more competitive and able to capture share from the others.

31 The most extensive data comes from EU KLEMS, and provides GVA, hours, and input costs (labour, services, materials, energy, capital charges). Our comparator country analysis is primarily driven by data availability with a filter for similar countries: large developed nations. For the competitiveness score in 2005, exchange rate has been cancelled out as it is a simple ratio of dollars (e.g. US$ divided by US$, compared with AU$ divided by AU$).

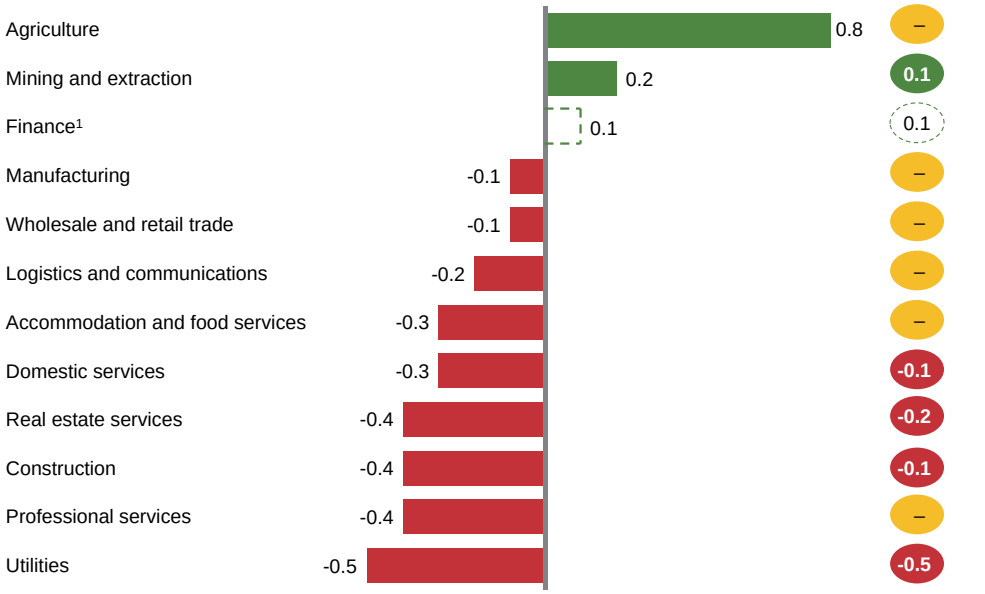
32 Taking the EU KLEMS 2005 competitiveness as a starting point, we analysed the competitiveness trend of each country using 2005 and 2012 data from the United States Bureau of Economic Analysis and the Australian Bureau of Statistics. Applying the relative improvement in labour productivity and input costs to the starting point provides the 2012 Relative Competitiveness Score.

Agriculture is the only Australian sector that is well ahead of the United States. Two others, mining and extraction and finance, are also competitive on this metric, and both have improved since 2005.[33] The remaining eight sectors are behind the US, and the competitiveness of two sectors, utilities and real estate services, declined substantially (Exhibit 7).[34] While our source data does not break tourism and international education out into individual sectors, other sources give us reason to believe that both of these sectors would perform well: Australia ranks well for tourism according to the World Economic Forum (WEF), it has highly liveable cities, and seven universities are in the top 100 in international rankings.[35]

Exhibit 7

Less than a third of Australia's sectors are intrinsically competitive

Australian Competitiveness Score compared to US
Index (0 = equal to US)



1 Traditional productivity comparisons in the finance sector are difficult due to complexities measuring sector GVA
SOURCE: EU KLEMS, 2005, from revs published 2008 and 2011; Bureau of Economic Analysis; ABS

When we look at the components of the Relative Competitiveness Score, Australia's input costs are higher than the US for almost all sectors. Only in Agriculture (which is on par for cost), mining and extraction, and financial services, does relative productivity offset the cost position (Exhibit 8).

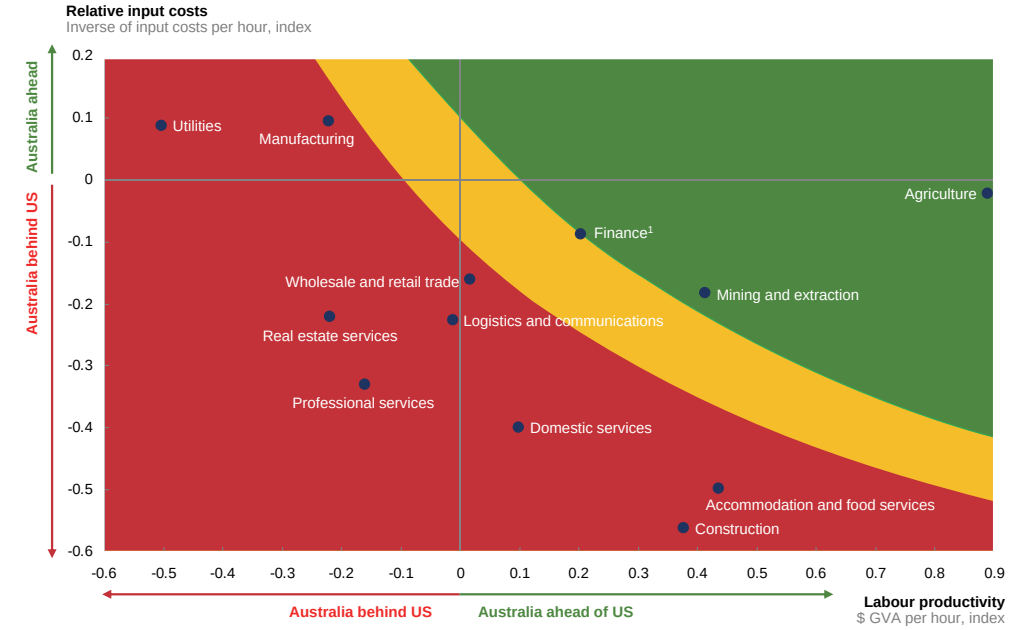
The choice of exchange rate affects this decomposition, but not the overall result. The high exchange rate in 2012 means that input costs, when converted to US dollars, is higher than if converted at a long-run average exchange rate. However, the same applies to labour productivity: the high exchange rate increases Australia's relative GVA per hour worked. If calculated with a lower exchange rate, the effect is to improve the relative input cost efficiency, but to reduce relative labour productivity, without changing the overall score.

33 Productivity comparisons in the finance sector are difficult due to complexities in measuring sector GVA, so should be viewed in combination with more industry-specific metrics.
34 Although EU KLEMS does not measure tourism and international education as separate sectors, other sources indicate that they would be competitive. Australian tourism ranks 11th on the WEF *Travel and Tourism Competitiveness Index*; in 2010 Australia had the third-highest share of international education (behind the US and UK), according to the OECD *Education at a Glance* report.
35 WEF 2013, *Travel and Tourism Competitiveness Index*; QS 2013, World Rankings; Economist Intelligence Unit 2013, *Global Liveability Report*.

Exhibit 8

Low intrinsic competitiveness is primarily driven by higher input costs

Australian productivity and cost compared to US including nominal exchange rate inflation, 2012, Index (1 = equal to US)



1 Traditional productivity comparisons in the finance sector are difficult due to complexities measuring sector GVA
SOURCE: EU KLEMS, 2005, from revs published 2008 and 2011; Bureau of Economic Analysis; ABS; RBA

We acknowledge several limitations with the Relative Competitiveness Score in terms of the robustness with which we can measure the productivity and cost components across countries and over time.[36] Due to these technical limitations, we include more targeted competitiveness analyses of specific subsectors in the subsequent chapters where we use operational metrics that can avoid some of these limitations (e.g. landed cost per MMBTU of LNG production, landed cost per kg of skim milk powder in China). Importantly, for the subsectors we analysed in greater depth, we found that the broad conclusions are consistent with the results in this chapter. That is, Australia faces a pervasive competitiveness problem: while labour productivity has kept pace with many developed markets, this is not sufficient to offset increased costs and the high exchange rate.

- **Input costs.** Producing goods and services in Australia has become increasingly expensive relative to other countries. As the economy expanded rapidly, labour and materials were increasingly scarce, and prices adjusted accordingly. This price inflation was particularly acute in mining, utilities and construction (all directly affected by the capital investment boom). In some sectors, high labour costs contribute to high input costs. For example, the average Australian manufacturing hourly compensation is 65 percent higher than the US.[37] However, this does not apply across the board.[38] In fact, despite higher wages, total cost per employee is lower than the US in manufacturing and B2B services sectors.[39] Australia's input cost problem arises from more than just wages. One 2012 report finds that Australia's average facility lease costs were 50 percent higher than the US, and transportation and utility costs were 35 percent higher.[40] All these costs add up. For example, the price of domestically produced intermediate goods in Australia rose 30 percent between 2005 and 2014, compared with an EU average rise of 20 percent.[41]

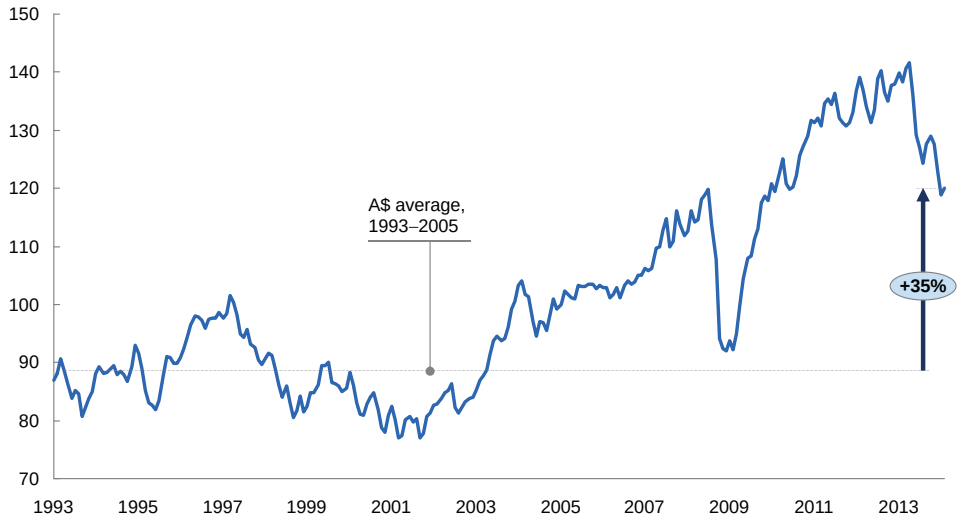
36 See the appendix for further details on the methodology and these concerns.
37 Total hourly compensation in USD, including wages and supplementary benefits. IMD *World Competitiveness Yearbook*, 2012.
38 Gross annual income for an HR director is 25 percent below US levels, and gross annual income are within 10 percent of US levels for engineers, department heads, personal assistants and bank credit officers, according to IMD 2012 *World Competitiveness Yearbook*.
39 KPMG 2014, *Competitive Alternatives: KPMG's Guide to International Business Location Costs*.
40 KPMG 2014, *Competitive Alternatives: KPMG's Guide to International Business Location Costs*.
41 ABS 6427 Table 1: OECD 2014, *STAN Structural Analysis Database*.

- **Exchange rate.** Australia's nominal exchange rate (at which currencies are traded) has soared, substantially reducing the margins that Australian exporters earn.[42] In 2011–12, fuelled by high commodity prices, capital investment in resources projects, and investors seeking economic stability during the European sovereign debt crisis, the AUD/USD exchange rate was more than 50 percent above the 1993–2005 average, and briefly reached US$1.10, its highest point since before the Australian dollar was floated in 1983.[43] The combination of the nominal exchange rate and rising input costs generate the real exchange rate. In early 2014, despite a recent decline, the real exchange rate was still 35 percent above the 1993–2005 average (Exhibit 9).

Exhibit 9

The Australian real exchange rate has risen sharply

Effective real exchange rate[1]; Index (2005 = 100)



1 Nominal exchange rate of a currency, geometrically weighted against a basket of other currencies and adjusted for consumer prices as measured by trade volumes

SOURCE: Bank for International Settlements Narrow Index; McKinsey analysis

- **Productivity.** Productivity is a measure of the output generated per unit of input (for example, labour productivity measures the amount of output per hour worked). Australia's overall productivity performance since 2005 (while poor compared to what was achieved in the 1990s) has broadly been at par with other countries.[44] As a result, it has not offset the effect of a higher exchange rate, nor the underlying change in input costs.

Taken together, the outcome measures and the inputs to the Relative Competitiveness Score reveal that Australia has real or potential strength in highly traded sectors like mining and extraction, agriculture and food manufacturing, and professional services (mainly driven by tourism and education). Some of these are not making the most of their potential: for example, agriculture has the highest Relative Competitiveness Score, but has lost market share. The high exchange rate partially explains this, but there are other fundamental barriers to competitiveness, which we explore sector by sector, in Chapters 2 and 3.

Other, traditionally insulated sectors, like utilities, construction and domestic services, have low and declining competitiveness. But many sectors and tasks which were previously insulated will become trade-exposed, and even those that don't can be a handbrake on the competitiveness of other sectors.

42 The price of Australian exports is set in the currency of the market where it is traded. The revenue earned by the exporter (when converted back to Australian dollars) is lower when the Australian dollar is higher. When a portion of the producer's cost base is set in Australian dollars, margins are compressed.
43 Reserve Bank of Australia 2013, *The Australian Dollar: Thirty Years of Floating*.
44 The Conference Board 2012, *Total Economy Database*.

Australia's competitiveness problem is compounded by a number of structural barriers which currently make it difficult to improve productivity. Box 3: *A CEO Perspective: Barriers to Competitiveness* highlights the main barriers Australian business leaders identified as impediments to competitiveness.

Box 3: A CEO Perspective: Barriers to Competitiveness

We interviewed 35 CEOs during our research. The most common barriers cited are listed below, and they inform the reform themes in Chapter 4 of this paper.

Scale. In some sectors, the relatively small size of the domestic economy is a major barrier. For those that are highly traded and capital-intensive, reaching global scale is essential to remain competitive. Oil refining is a good example. Output for each of Australia's oil refineries (prior to recent closures) ranged from 75,000–138,000 barrels per day (bpd).[45] Modern plants produce at least 200,000 bpd, and the world's largest refinery, in India, produces over 1.2 million bpd – roughly 50 percent more than Australia's total production.[46] For other sectors, that are less traded, the domestic market can be relatively concentrated, and less competitive, reducing incentives to innovate and improve productivity.

Access to growth capital. The lack of venture capital is cited as a barrier to start-ups and to SMEs trying to scale up, with a concern that regulation and investor expectations drive capital to lower risk investment destinations. Australia ranks 33rd on the availability of venture capital and 20th on availability of credit overall.[47] Even leaders of large corporations with access to capital feel they and their boards are constrained by the short term expectations of capital markets.

Access to talent. In Australia's domestic workforce, common concerns cited were the calibre of middle management, the mismatch between the type of degrees studied and those sought by employers, the efficacy of vocational training, and a disconnect between the skills currently developed by Australia's education system and those required for a more complex, more global world. Access to internationally mobile talent, especially skilled labour to address specific shortages, was also raised. This corresponds with international comparisons; Australia ranks 35th on availability of skilled labour and 27th on availability of competent managers.[48] Fully 30 percent of businesses report that they find a lack of skilled persons is a barrier to innovation.[49]

Lack of global orientation. To capture the export opportunity presented by increasing global trade flows will require a change in mindset. Firms that tailor their products for the domestic market (and then export any surplus), or that focus on competing across the value chain, will need to change their orientation from domestic needs to focus on the needs of export markets and the opportunity to specialise as participants in a global value chain. Australia is much less trade driven than peer countries, particularly outside the resources sector.

Collaboration. Many see opportunities for greater collaboration between public and private sectors. The interface between research and education institutions and industry is frequently cited. In the WEF competitiveness index, Australia ranks 15th on collaboration, compared with the US 3rd and UK 5th.

Labour market rigidities. Restrictive work practices and poor relations between management and the workforce are cited as a barrier to enhancing productivity in jobs that Australia currently has and to creating the jobs of the future. Australia ranks very poorly in the

45 McKinsey Refining Capacity Database.
46 The Conversation, 'Security in doubt as Australia's aging oil refineries shut down', 27 February 2012.
47 IMD 2013, *World Competitiveness Yearbook*.
48 IMD 2013, *World Competitiveness Yearbook*.
49 Australian Bureau of Statistics, 8158.

World Economic Forum's subjective ratings on labour market efficiency: 137th on hiring and firing practices, 135th on flexibility of wage determination, and 113th on alignment between pay and productivity.[50] Another ranking suggests that Australia does not appear to have the productive relationships required to address the problem: it is 103rd on cooperation in labour-employer relations, and 47th on productive labour relations.[51] An OECD assessment of legislative requirements pertaining to protection against dismissal and regulation of temporary employment put Australia ahead of the average, but behind the US, UK, Canada and New Zealand.[52] As the job mix changes in response to a shifting industrial mix, new technologies and offshoring, many worry that a lack of flexibility in working arrangements could prevent Australia from creating as many new jobs as it could.

Regulation. Many discussed the need for regulation that allows Australia to continue to grow and prosper in a more globally competitive world. The focus on domestic outcomes without an appreciation of the impact on international competitiveness may mean regulatory decisions do not consider the full national interest. The slow speed of approvals and inconsistency between jurisdictions is also commonly cited as a barrier. While it is a subjective measure, Australia ranks 128th on regulatory burden, while Australia's nearest neighbour, New Zealand, ranks 13th.[53]

50 WEF 2013, *Global Competitiveness Index*. On hiring and firing practices, flexibility of wage determination, and alignment between pay and productivity, Australia's rankings were substantially lower than the US (9th, 29th, 12th); Canada (16th, 20th, 28th); New Zealand (61st, 10th,16th) and the UK (27th, 12th, 11th).
51 IMD 2013, *World Competitiveness Yearbook*.
52 OECD 2013, *Indicators of Employment Protection*. Australia is ranked 8th and 6th on worker protection against dismissal and regulation on temporary forms of employment, behind the US (3rd, 2nd); UK (5th, 3rd); Canada (4th, 1st) and New Zealand (1st, 5th).
53 IMD, 2013, *World Competitiveness Yearbook*.

1.4 Growing jobs in trade-related sectors will help sustain economic growth

Australia faces a stark choice. It can take a purposeful path to regain its competitiveness, or risk a painful correction. To illustrate, we present two 'bookend' scenarios.[54] At one end, a purposeful path could deliver GDP growth of up to 3.5 percent per annum to 2020. At the other, a painful correction could see growth fall as low as 2.1 percent per annum.

We begin with a base case. The Department of Employment predicts that Australia will have just over one million new workers entering employment by 2020, mostly in domestic sectors. Assuming sector-level productivity improvements consistent with the last 20 years gives a base case of 2.8 percent GDP growth per annum to 2020.

A purposeful path, where Australian governments and businesses make tough choices to enhance productivity and focus on the areas where Australia can be competitive, offers a path to higher growth, sustained employment and higher living standards. If Australia's strongest export sectors return to their peak share of employment from the past five years, the value from these more productive jobs could deliver GDP growth of up to 3.5 percent per annum to 2020.

In a painful correction, firms and workers that are not competitive will be replaced by global competitors. Unemployment will rise. This will place downward pressure on wages, input costs and the exchange rate. A painful correction results in a lower standard of living, with lower participation rates than Australia could have achieved on the purposeful path.

54 These bookends are intended to illustrate the difference between possible outcomes. They are not forecasts, and are not the result of detailed economic modelling. They include only the primary impact of the factors adjusted, and do not include any dynamic equilibrium adjustment for second-order effects or other economic factors. See the appendix for further description of the scenarios and methodology.

If Australia's participation rates were to fall to the average from the 1990s, and Australia's strongest export sectors fall to their lowest share of employment from the past five years, then economic growth to 2020 could be as low as 2.1 percent per annum.

1.5 Improving the competitiveness of historically less-traded sectors is essential

The sectors where Australia has been most trade-exposed are an obvious focus for improving Australia's competitiveness. But raising the competitiveness of historically less-traded sectors of the economy is also important. First, disruptive technologies and declining transportation costs mean many of these sectors, particularly services, will be increasingly traded. Firms and workers will need to compete with new entrants and global rivals. The arrival of Uber in Australia, which allows passengers and drivers to connect using smart phones and mobile internet, threatens to disrupt the existing taxi industry structure. PayPal presents an alternative payment mechanism to traditional banks and merchant service providers

Second, some of these sectors, even if they remain relatively insulated from trade, are important enablers of export sectors and act as handbrakes on Australia's export potential if they are not competitive. For example, electricity generation and distribution will continue to be an important input to many industries, while remaining insulated from international competition due to Australia's physical distance from other markets.

Finally, our analysis (detailed in subsequent chapters) shows that the historically less-traded sectors of the economy are typically the least competitive. The good news is that this suggests they are not at what economists call the 'Production Possibility Frontier' – which means there is plenty of scope to improve productivity, powering economic growth and improving Australia's competitiveness.

□ □ □

The choice between a purposeful and a painful adjustment is stark. There are some grounds for optimism. Australia has adapted before. Its export mix – in both products and destination – has changed enormously over the last century. Australia became a world leader in education exports in the 1990s and is doing so with natural gas right now. But the clock is ticking, and the competitiveness challenge is urgent. The next chapters outline how and where Australia can compete to take a purposeful path to sustained prosperity.

2. Australia should focus on the sectors and tasks where it can win

Competition demands choice. Australia can't win at everything – and to try to do so would mean forgoing an opportunity to tap into the skills and capacity of the entire globe, each business and each country doing what they do best. This raises two questions: what choices does Australia have about where to compete, and how are such choices realised in the context of a market economy? Critically, the choice of where to compete is not just about sectors, but also about the type of jobs performed, as individual tasks are increasingly exposed to competition from technology and workers in other countries.

Australia is a high-cost country, in part because of high wages. Sustaining high wages and high living standards in the face of international competition is easier when Australia has specialist skills that are difficult to develop, makes differentiated products and services that are hard to replicate, or capitalises on its privileged natural endowments.

Australia can and should win in the Advantaged Performers: mining, agriculture, tourism, and education; and in the Latent Potentials: food manufacturing and niches including pockets of advanced manufacturing, and elements of global supply chains like design and engineering services where Australia has specialised skills. Australia will need to focus relatively more on complex interaction-rich jobs and less on Transaction and Production jobs across all sectors – which has profound implications for Domestic and Enabling sectors.

Reviewers of our draft work have asked: are you saying Australia should 'pick winners?' No, we are not. What we propose is not that government select a wish list of target sectors, backed by various incentives, with scant regard for fit with Australia's intrinsic competitive strengths. Nor are we suggesting support for individual firms or 'national champions'. We are saying that economic reform is difficult, and Australia should focus scarce policy resources, time and political capital on removing the microeconomic barriers to private sector growth and on overcoming problems of coordination and incentives in areas where Australian businesses have the potential to win. Policy makers should think twice before directing incentives and resources to areas where Australia will not be able to create or sustain intrinsic competitiveness. Australia is not just competing against individual exporters, but also against the skilled policy design and focused export strategies of other countries.

This chapter answers the first of our two questions: where can Australia win in sectors and tasks?

2.1 Winning the competition for products and services

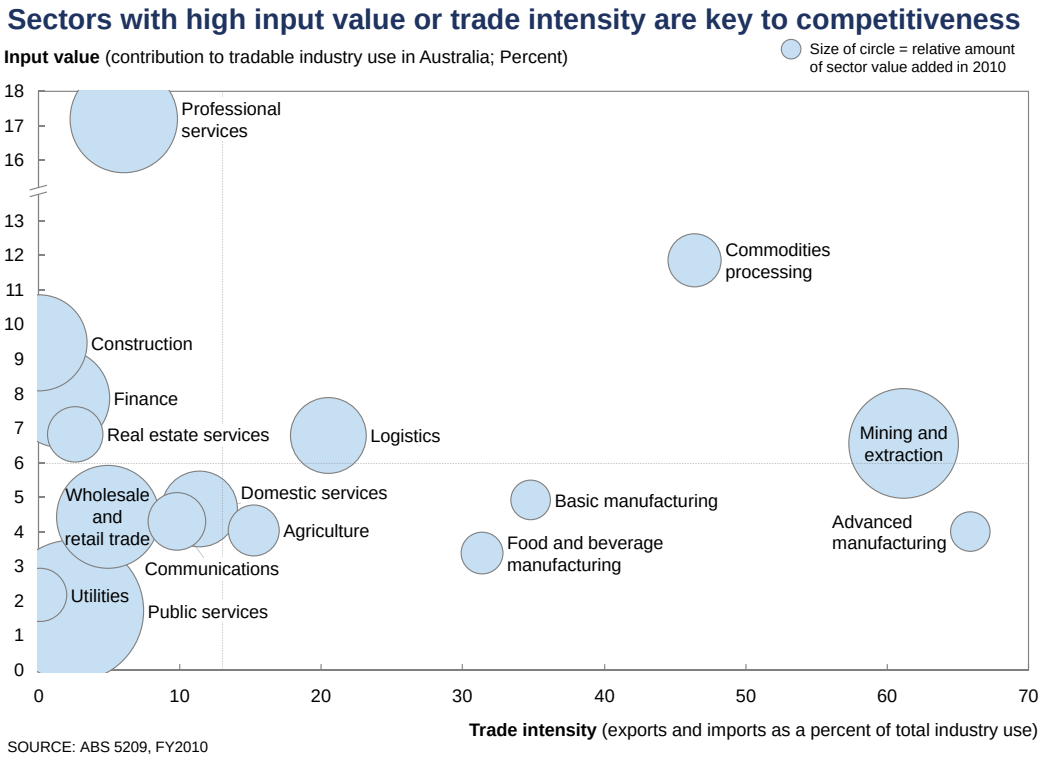
Australia needs an accurate understanding of where in the economy the highest export potential lies. Only then can Australia prioritise its efforts to generate the export growth it needs. Our analysis shows five clear segments: Advantaged Performers, Latent Potentials, Transitionals, Enabling Industries and the Domestic Core. Australia's export prospects are strongest in mining and extraction, agriculture, tourism and education (the Advantaged Performers) and food manufacturing; and niches of advanced manufacturing and global supply chains where Australia has specialised skills (the Latent Potentials).[55]

How do we get to an accurate understanding of Australia's higher trade potential? We sort the economy by trade-favoured segments after viewing it through three lenses. The first lens is **trade**

55 A 2014 report by Deloitte Access Economics, *Positioning for Prosperity*, came to similar conclusions about Australia's growth potential sectors.

intensity. Australia has a front line of directly trade exposed industries and also a support line of industries that provide important inputs to tradability. Exhibit 10 shows how those industries scatter along two measures. This identifies the Domestic Core: those sectors in the bottom-left corner, which represent almost 33 percent of gross value added (GVA) but less than 1 percent of exports. The Enabling Industries, representing 46 percent of GVA are in the top-left; they have not been highly traded, but they are inputs to trade exposed sectors.[56] The remaining industries, to the right, make up 20 percent of GVA, and are directly trade exposed. It is from these sectors that the heavy lifting of export improvement must come.

Exhibit 10



The next lens to view is **competitiveness**. As we discuss in Chapter 1, competitiveness is driven by relative productivity and relative costs. We combine these into a Relative Competitiveness Score (Exhibit 7, Chapter 1). The only industry in which Australia is decisively competitive on this basis is agriculture. If we also consider outcome metrics, where share in global export markets has been gained, mining and extraction is competitive.[57] Tourism and education are also areas where there is evidence of global competitive advantage but these are composite industries in the available statistics that don't show up directly.[58]

While current competitiveness matters, long-term competitiveness is based upon fit with **endowments**, which is our third lens. Endowments can change, but it takes significant time and coordination. Therefore, it is best to build on endowment strength rather than start from behind. Australia has two great endowments: the natural endowment built on its unique geography and geology, and a skills endowment derived from people (whether Australian-born or immigrant, educated in Australia or overseas).

In terms of natural endowment, Australia is blessed. It has the most arable land per capita, globally important reserves in iron ore, coal and gas, and ranks second behind only Brazil in natural tourism

56 The logistics sector looks to be tradeable but that results from the airlines component.
57 Mining and extraction includes the mining, oil and gas sectors.
58 Australian tourism ranks 11th on the WEF *Travel and Tourism Competitiveness Index*; in 2010 Australia had the third-highest share of international education (behind the US and UK), according to the OECD *Education at a Glance* report.

resources.[59] Looking only at the natural endowment (in geography and geology), we find that agriculture and related food manufacturing, mining and tourism easily make the list of high trade potential.

And there is further potential in the skills endowment. Australia's depth of skilled labour is well above average: 44 percent of Australians have high-level problem-solving proficiency versus 34 percent in the US.[60] Unfortunately, the sectors in which tertiary-level skills are a big part of labour do not tend to be so important for export competitiveness. For example in mining, tertiary-educated labour makes up just 11 percent of the workforce compared with 32 percent in the finance sector. The notable exception is the education sector.[61] Moreover, in the manufacturing sector, it is very specific and tightly connected clusters of skills and institutions that matter for trade competitiveness, which has meant that in some niches – like certain advanced medical devices – Australia has managed to create bright spots of trade competitiveness.

When viewed together, these lenses on trade potential reveal five clear segments (Exhibit 11).

- **Advantaged Performers** are trade exposed sectors where Australia is already strong and has the endowments to win in global markets. They are mining, agriculture, tourism and education. There are also notable niche performers at a subsector level such as medical device manufacturing. These sectors have ongoing advantages, but their contribution to Australia's economy cannot be taken for granted.

- **Latent Potentials** are sectors where on the basis of endowment, Australia is a contender, but not yet a winner. The most prominent example is food manufacturing, which is advantaged by Australia's strong agricultural sector and reputation for food quality, but there are other niches with unrealised potential, such as pockets of advanced manufacturing, and elements of global supply chains like design and engineering services. The challenge is to make the most of the Latent Potentials, converting them into actual advantage and export growth.

Exhibit 11

Sorting Australia's economy for export growth

	Tradeability[1]	Relative competitiveness Score	Endowment	Sectors
Advantaged Performer	Highly tradeable	High	Stronger	Agriculture, Mining, Tourism and international education
Latent Potentials	Highly tradeable	Lower	Stronger	Food manufacturing, Niches in manufacturing and global supply chains
Transitionals	Highly tradeable	Low	Weaker	Commodities processing, Advanced manufacturing, Basic manufacturing
Enabling Industries	Important to tradeable sectors	N/A	N/A	Finance, Utilities, Professional services, Construction, Logistics and Real estate services
Domestic Core	Not currently highly traded	N/A	N/A	Wholesale and retail trade, Communications, Domestic services, Public services

1 Aggregate assessment. Many sectors have highly traded elements, despite being predominately domestic sectors overall

59 WEF 2013, *Travel and Tourism Competitiveness Index*.
60 OECD 2013, *Skills Outlook*, Table A2.10a; high proficiency refers to the top two of five levels.
61 EU KLEMS estimates tertiary-educated workers in education at between 40 and 70 percent.

- **Transitionals** are trade exposed industries where sustaining a winning position over time will require substantial repositioning, or may simply be impossible. These are basic manufacturing, commodities processing and most of advanced manufacturing.[62] Adaptation strategies and harvesting of remaining potential under realistic expectations are key.

- **Enabling Industries** are sectors that provide inputs to trade exposed industries, but are primarily domestic players. These are construction, finance, real estate, professional services, logistics and utilities. As the backline to Australia's frontline exporters, Enabling Industries can maximise Australia's trading potential by offering efficient, competitive goods and services that are aligned in cost and quality to the requirements of the industries they support. They are therefore important determinants of Australia's international competitiveness.

- The **Domestic Core** represents all remaining sectors – wholesale and retail trade, telecommunications, domestic services and public services. Although they are trending towards increased trade exposure, these sectors are currently the most insulated. Productivity improvements in these sectors will always be valuable.

The dynamics across these segments differ markedly (Exhibit 12). Eighty percent of GVA is concentrated in the less tradeable sectors, but Advantaged Performers grow at more than twice the rate of every other sector. The less traded sectors also account for the majority of employment and employment growth. Advantaged Performers account for over half of exports and the lion's share of export growth. Moreover, every $1 of imports in these sectors is matched by $6 of exports, in contrast with the Transitionals where imports outweigh exports by more than 2:1.

Exhibit 12

Performance of the 5 segments

Bottom performer
Mid performer
Top performer

	GVA		Employment		Exports[1]		Productivity		X:M ratio[2]	
	2013, Percent of total	5 year CAGR, Percent	2013, Percent of total	4 year CAGR, Percent	2013, Percent of total	5 year CAGR, Percent	2013, $ GVA per hour	5 year CAGR, Percent	2013, Ratio	5 year change, Percent
Advantaged Performers	16	5.4	10	-0.1	63	10.9	114	3.3	3.2	0.8
Latent Potentials	2	0.1	2	-2.9	7	2.8	65	1.3	1.6	-0.2
Transi-tionals	6	-1.8	6	-0.3	23	-0.9			0.3	-0.1
Enabling Industries	40	2.7	31	3.2	6	0.5	89	1.3	0.6	-0.1
Domestic Core	36	2.3	51	1.0	<1	1.2	54	1.0	0.3	0.0
Total	100	2.6	100	1.4	100	7.6	74	1.5	1.0	0.1

1 The value of tourism and international education exports were taken out of other sectors based on the relative size of all exports in sectors which contribute to tourism GVA. Tourism export data at a sector level was unavailable
2 Total exports/Total imports

SOURCE: ABS 5206,8155, 5368, 6219, 5249; McKinsey analysis

62 Advanced manufacturing, which includes machinery and all equipment manufacturing, has been considered a transitional sector as broadly competition is cost-focused. However, there are numerous subsectors within it for which product and service innovation is required. These subsectors are much more highly reliant on high-skill labour, so fall into the niche manufacturing in Latent Potentials.

It is in productivity that the differences in the tradeable potential of these segments are most striking. When measured in aggregate, a job in the Advantaged Performers drives more than double the GVA than in domestic sectors. Even excluding mining and extraction, the same job will drive 5 percent higher GVA. Moreover, despite its well-documented falling productivity (partly for temporary reasons of capacity addition), the fact that mining is still so much more productive than other industries means developing more jobs in this area has been driving aggregate productivity growth. This highlights one of the prime ways that increased trade can create wealth: allocating work to its most productive use. This shift is already happening, as a result of market forces and price signals, but accelerating it by improving competitiveness in export sectors will facilitate the most effective returns for Australia and Australians.

2.2 Winning the competition for tasks

Buying and selling tradeable products and services is one dimension of trade. Another, and now inescapable, dimension of trade competitiveness where tasks performed (in which country) and whether they are performed by people or machines. Here Australia needs to come to a view on what kind of jobs it will be distinctive at, surpassing all others.

In the now-receding world of scattered, localised employment, the skilled artisan only had to compete with his near neighbours. But two trends are becoming increasingly powerful:

- **Offshoring and disaggregation of value chains.** Communication technologies are enabling more sophisticated tasks to be performed offshore. Australians are used to call centres in low cost countries handling basic transactions, like billing enquires. Increasingly, white collar jobs like paralegal work, book-keeping and accounting can also be performed remotely, with video-conferencing and cloud computing allowing work conducted offshore to be integrated seamlessly. Moreover, these technologies, combined with declining logistics costs, lead to more global disaggregation of production. Boeing sources from 5,400 factories around the world, which compete to provide some of the 2.3 million parts in a 787 Dreamliner.[63] But these forces are not just allowing global sourcing of components. Entire value chains are fragmenting. Indeed, while available data limits our analysis to sector level effects, this trend is extending far into the make-up of what gets done where. 'Manufacturing' covers everything from high-value-added design and support services to low value-added manual assembly. For example, using its global network, Apple designs a new iPod model in California and India, sources components in Japan, and assembles the finished products in China – faster and more efficiently than it ever did in Cupertino.[64] Amazon's Mechanical Turk, which allows users to dynamically allocate tasks in real time to a global labour pool numbering hundreds of thousands, further challenges existing conceptions of value chains, by disaggregating value chains not just between firms but down to individuals.[65]

- **Automation.** Competition for jobs is not just from other workers. New technologies allow thousands of documents that need to be read for legal discovery to be scanned and classified as relevant or not by machine in a matter of hours. Autonomous trucks, which drive themselves without human intervention, already operate in a number of West Australian iron ore mines.

Now, the faraway labourer – or intelligent machine – is available for hire and may be better endowed than the local labourer in skill or price or speed of work, or with the efficiency of organisation, or whatever is required to win the customer. The dynamics of job-level competition are reaching deeper and deeper into industries and individual companies, even those that at first seem immune from global competition. The impact of offshoring in Australia has been estimated to number over 20,000 jobs per year in services alone.[66] The result is that jobs in sectors that were previously

63 Boeing 2014, *World Class Supplier Quality* < http://787updates.newairplane.com/787-Suppliers/World-Class-Supplier-Quality# >.
64 McKinsey Global Institute 2011, *An Economy that Works: Job creation and America's future.*
65 < https://www.mturk.com/mturk/welcome> 'Mechanical Turk is a marketplace for work. We give businesses and developers access to an on-demand, scalable workforce. Workers select from thousands of tasks and work whenever it's convenient.' Numerous other online portals also exist for routine and bespoke services.
66 National Institute of Economic and Industry Research 2012, *Off-shore and off work: The future of Australia's service industries in a global economy, an update.*

insulated from global competition (the Enabling Industries and the Domestic Core) will increasingly need to be competitive on a world standard.

The range of job types in Australia's economy is complex and ever on the move. The McKinsey Global Institute uses three broad job types to understand the dynamics of international job competitiveness.[67]

- **Interaction jobs** are characterised by higher levels of reasoning, judgement and the ability to manage non-routine tasks. Roles such as professionals, managers, home-nurses and community workers tend to fall into this category, covering 47 percent of full time employees. People in these jobs must be collaborative, creative, and have strong problem solving skills.[68]

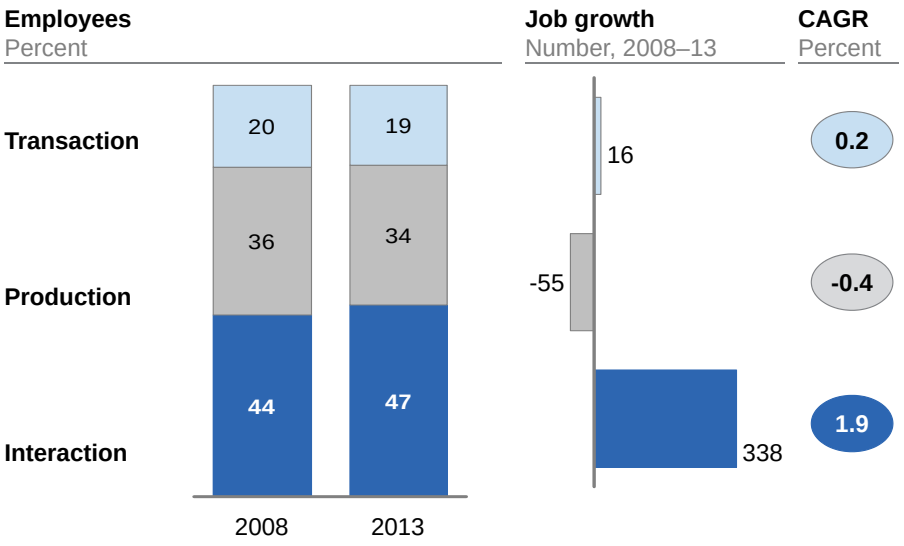
- **Production jobs** involve converting materials into finished products, and tend to be movement-intensive. Production jobs represent 34 percent of full time employees: labourers, machinery operators and drivers, and technicians and trades workers.

- **Transaction jobs**, such as clerical, administrative and sales assistants, are based around exchanges that are rules-based, and can be scripted, routinised or automated. These jobs represent 19 percent of the economy.

The trend in most modern economies is towards a marked increase in Interaction jobs relative to Production and Transaction jobs. For example in the US, from 2001 to 2009, 4.8 million Interaction jobs were added, but 2.7 million and 0.7 million jobs were shed in production and transaction jobs respectively.[69] Australia is no different; in the last decade Interaction jobs account for more than 100 percent of the jobs created (Exhibit 13).

Exhibit 13

Most of Australia's job growth has come from interaction jobs



SOURCE: ABS 6291.0.55.003 Labour Force, Australia, Detailed, Quarterly

67 To obtain a picture of the Australian economy along these lines, we mapped the Australian Bureau of Statistics' eight job classifications to these job types. The three job types are presented in McKinsey Global Institute 2012, *The World at Work: Jobs, pay and skills for 3.5 billion people.*

68 This has important implications for the types of skills Australia's education system will need to develop. We note, to clarify a question often asked during our research, that Interaction jobs do not necessarily require high levels of formal education. MGI research found about half of Interaction jobs require a university degree.

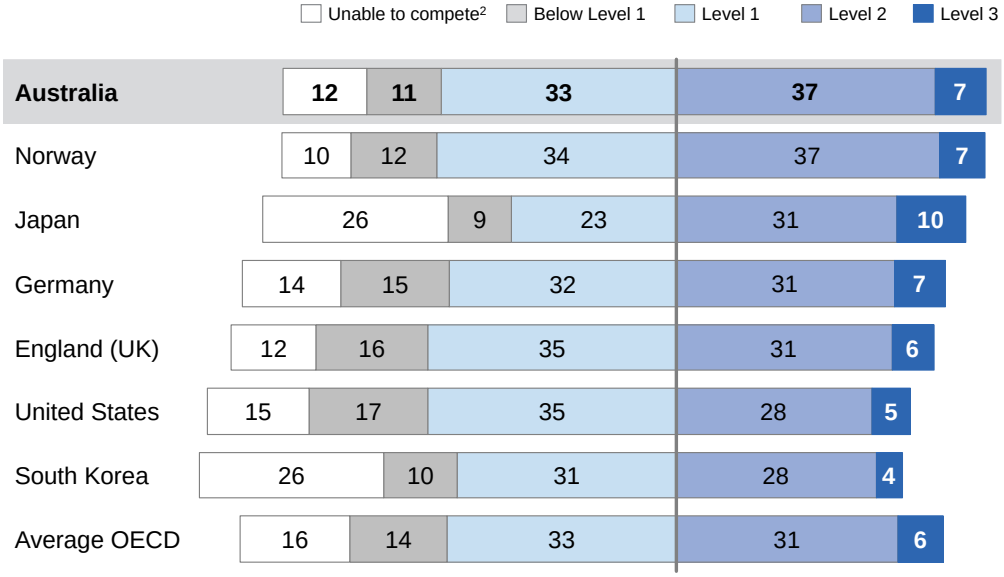
69 McKinsey Global Institute 2012, *The World at Work: Jobs, pay and skills for 3.5 billion people.*

Fortunately, Australian workers are relatively well positioned to compete in interaction-rich jobs. Australia's depth of skilled labour is well above average – a source of strength although this requires ongoing nurture (Exhibit 14).[70] Offset against this, basic labour costs are high; for example, in manufacturing, Australia's total hourly compensation in manufacturing is double South Korea's and two-thirds higher than the US.[71] Therefore a focus on promoting Interaction jobs is right due both to opportunity (where the growth is) and necessity (what costs are). Australia's competitive success will increasingly be defined around job types.

Exhibit 14

Australia performs strongly on complex problem solving measures

Problem-solving by proficiency level; Percent of survey population[1]



1 Excludes individuals who opted out of the assessment
2 Includes individuals with no computer experience or insufficient IT skills to complete the online problem-solving test
SOURCE: OECD Skills Outlook 2013, Table A2.10a

2.3 Where is the competitiveness potential in Australia's economy?

Putting Australia's endowments, priority segments and job types together provides a map to look at Australia's economy. Very simply, the future of Australia's export competitiveness will be those sectors where it is an Advantaged Performer or has Latent Potential on one hand, and Interaction jobs on the other.

This is not to say that simply shifting people to these areas is enough – Australian firms and workers also need to improve competitiveness in those sectors and tasks. The total competitiveness gap between Australia and the US is mainly attributable to the difference in level of competitiveness within Australia's sectors, rather than a mix effect of the size of sectors with inherently different competitiveness.

Australia's ability to compete at the task level is important across all sectors but particularly so in the Domestic Core, simply because this is the location of over half the jobs. Moreover, the fact that many Domestic Core industries have been somewhat insulated from global competition could indicate that Australian firms will not always be match-fit to compete on these specific tasks. It won't be possible to hold back the tide as labour markets globalise; but shoring up and nurturing Australia's

70 This exhibit defines strong proficiency as level 2 or 3 on the OECD Skills Outlook scoring. Individuals receiving this score can complete problems that have explicit criteria for success, a small number of applications, and several steps and operators. They can monitor progress towards a solution and handle unexpected outcomes or impasses.
71 IMD, 2013, *World Competitiveness Yearbook*.

advantages in critical Interaction jobs will be paramount to maintaining great jobs, and perhaps growing new exportable services.

A simple look at where the jobs are moving tells the story powerfully. Australia is doing well in growing employment in the less tradeable part of the economy but these are almost all Interaction jobs. The only place that Production jobs are being added is in the Advantaged Performers (many in mining and extraction). Meanwhile, jobs are moving out of the Transitionals, but Interaction jobs are a lot more shielded (Exhibit 15).

Exhibit 15

The dynamics of jobs and sectors

Growth in number of jobs 2008–13; Thousands

Strong decline
Small change
Strong growth (>50)

Sector classification	Job type: Interaction	Production	Transaction	Total
Advantaged performers[1]	19	61	9	90
Latent Potentials[2]	5	-36	-1	-32
Transitionals[2]	9	-67	-2	-60
Enabling Industries	102	18	-26	94
Domestic Core	202	-29	37	210
Total	338	-53	17	301

1 Tourism employment split extrapolated from weighted average of accommodation and food services, logistics, and education job type split
2 Extrapolated from total employment as data split for manufacturing not available

SOURCE: ABS 6219, 8155, 5249; McKinsey analysis

The good news is that these segments of competitive potential are likely to have large global markets well into the future. Emerging economies are developing at an unprecedented rate. China and India are growing per capita income around 10 times faster than the United Kingdom did during the industrial revolution, with populations around 100 times larger: each a feat 1,000 times larger in magnitude![72] These new centres of economic activity are much closer to Australia than North America or Europe are, and often in the same time zone. The global consuming class is expected to grow from 2.4 billion to 4.2 billion people in 2025,[73] creating new sources of demand for many of the sectors where Australia has an advantage, or latent potential.

- **Increasing demand for infrastructure and pressure on natural resources.** Natural resources – land, water, energy and minerals – will be under increasing pressure. The rise of the consuming class (and natural population growth) will increase demand for infrastructure and food, as well as for discretionary products. For example, by 2025, floor space equivalent to 85 percent of all today's urban residential and commercial building stock will need to be built.[74] In India, calorie intake is expected to rise 20 percent per person over the next 20 years. At the same time, it is becoming more difficult for supply to react quickly to meet rising demand. Already, 25 percent of fish stocks are overexploited, with an additional 50 percent fully exploited.

72 The UK took 154 years to double per capita GDP, and had a population of 9 million. China and India doubled GDP per capita in 12 and 16 years respectively, with populations around 1 billion. See McKinsey Global Institute 2014, *Global Flows in a Digital Age: How trade, finance, people and data connect the world economy*.
73 McKinsey Global Institute 2012, *Urban World: Cities and the Rise of the Consuming Class*.
74 McKinsey Global Institute 2012, *Urban World: Cities and the Rise of the Consuming Class*.

Where supply can be increased, it may become increasingly energy intensive. For example, the energy intensity of water has been rising due to the lowering of the groundwater table, the increasing use of desalination projects, and increasing water transport requirements.[75] This combination of increasing demand and constrained supply will drive growing markets for Australia's Advantaged Performers (mining and extraction and agriculture), and Latent Potentials (food manufacturing sectors, as well as niches such as energy-efficient technologies).

- **Greater people flows.** International tourism and education markets are expected to grow rapidly – an additional 1.5 million students are expected to be seeking international education by 2020, while total tourist arrivals are expected to surpass 1.8 billion in 2030, up from less than 1 billion in 2011.[76] This growth will directly translate into potential for growth in Australia's education and tourism sectors, both Advantaged Performers.

- **Increasing tradability of services.** Improved communications technologies will increasingly facilitate trade of services. This will mean sectors that were previously shielded from competition become vulnerable, but also open new Asian markets for services, where Australian firms can develop competitive service niches.

- **Greater demand for discretionary items and healthcare.** The expansion of the global consuming class will rapidly increase emerging market demand for discretionary items.[77] It is estimated that the world will need the equivalent of nearly 240 new Procter & Gambles (the world's largest consumer goods company) to meet the needs of these new consumers.[78] Coupled with the ageing global population, demand will also increase for sophisticated healthcare and financial products. For example, healthcare services are expected to rise from 10 percent of developed economies' GDP today to 15 percent by 2030, the equivalent of an approximately 2.5 fold increase in the size of the developed world health industry today.[79] While this trend will not directly translate into support for one of Australia's Advantaged Performer or Latent Potential sectors, this rising affluence is likely to provide opportunities in more niche products where Australia has latent potential, such as advanced manufacturing and specialist services.

Equally important, but often overlooked, is the threat associated with these trends. Emerging markets are increasingly capable of supplying many of their own needs, and as they develop scale and sophistication, the bar will be raised on industries where Australia has traditionally exported or served its own needs with domestic production.

These developments can facilitate enormous growth in Australia's Advantaged Performers and Latent Potentials – if Australia moves to capture that growth. Australia has been debating how to capture the growth of the Asian Century – but to date, only the education, minerals and liquefied natural gas sectors have or are substantially increasing their level of exports to Asia. Other countries are not missing a beat. In 2001-2013, Australian exports to China grew at 27 percent. Africa and Latin America grew at 31 percent and 28 percent respectively, both from a similar starting point.[80] China already has or is considering free trade agreements with most of Asia, the gulf region, New Zealand, and select Latin American and European nations.[81]

With this, the question becomes: how does Australia best capture growth in its Advantaged Performers and Latent Potentials, particularly in Interactions jobs, and how does it shield its economy against the threats it faces?

75 McKinsey Global Institute 2011, *Resource Revolution: Meeting the world's energy, materials, food and water needs.*
76 International Education Advisory Council 2013, *Australia—Educating Globally* (Chaney Report); World Tourism Organization (UNWTO); Tourism towards 2030 Global Overview.
77 McKinsey Global Institute 2012, *Urban World: Cities and the Rise of the Consuming Class.*
78 According to McKinsey Global Institute, by 2025, urban consumers are likely to inject around US$20 trillion a year in additional spending to the world economy; Procter and Gamble achieved US$84 billion net sales in 2013.
79 McKinsey Health Practice.
80 Chinese imports from Europe and North America grew at 17 and 16 percent per annum respectively, but off a much larger base. We are not suggesting an economy the size of Australia's should be compared to the much larger, multi-country economies on other continents in terms of export volumes. We simply make the point that while the rapid growth in Australian exports to China should be celebrated, it is not unique. General Administration of Customs; MIT Media Lab; McKinsey analysis.
81 China's Ministry of Commerce 2014, *China FTA Network* < http://fta.mofcom.gov.cn/english/index.shtml >

Just imagine...

$6B **from dairy**: by replicating NZ's success as traded milk demand grows 60% by 2025

$13B **from education**: simply by maintaining our 2010 share as the market grows to ~7.3 million by 2020

$20B **from tourism**: by maintaining our current share as the propensity for international travel rises 75% to 2030

$120B **from LNG**: by 2025 if planned and speculative projects are realised (or $68 billion with only committed projects)

Note: All figures are incremental export revenues from exports

SOURCE: McKinsey, 2013, Extending the LNG boom: Improving Australian LNG productivity and competitiveness; Australia—Educating Globally (Chaney Report); FAPRI 2000–2025 Dairy outlook; Tourism Research Australia; McKinsey analysis

□ □ □

This framework establishes the 'where to compete' by sectors and job type. Now we turn our attention to how Australian firms and sectors might increase competitiveness in this context.

3. Improving the competitiveness of individual sectors

So far, we have argued that Australia has an urgent competitiveness problem, and that part of the solution will be 'where to compete'; focusing on those sectors and jobs where Australia can and should win. Chapters 3 and 4 now address 'how to compete'; the types of purposeful actions Australia must pursue to win. Here, in Chapter 3, we discuss the purposeful approach as it applies to five segments.

- **Advantaged Performers:** nurture ongoing competitiveness
- **Latent Potentials:** convert potential to advantage
- **Transitionals:** adapt by transforming the business model
- **Enabling Industries:** get fit to support competitiveness
- **Domestic Core:** strive for a global benchmark

Many of the issues we outline in Chapter 3 are beyond the influence of governments. Firms will need to adapt to and make the most of new markets and disruptive technologies (see Box 4: *Technologies which can drive growth and unleash disruptive change*).

Policy will play a role, and there are important thematic shifts needed (see Box 5: *Government subsidies and tariffs: not a sustainable road to competitiveness*). Policy emphasis needs to go more towards building on strength than protecting the status quo, towards focused enablement rather than fragmented funding, and towards assessing market structures with an international perspective rather than a predominantly parochial one.

Australia needs to be purposeful about how it nurtures its existing strengths and builds new strengths from its natural resources and skills endowments. Australia needs a narrative for how the country will chart its course in a rapidly changing global economy. Australia can afford to be confident about its ability to take the purposeful approach – but cannot afford to be complacent about the future without it.

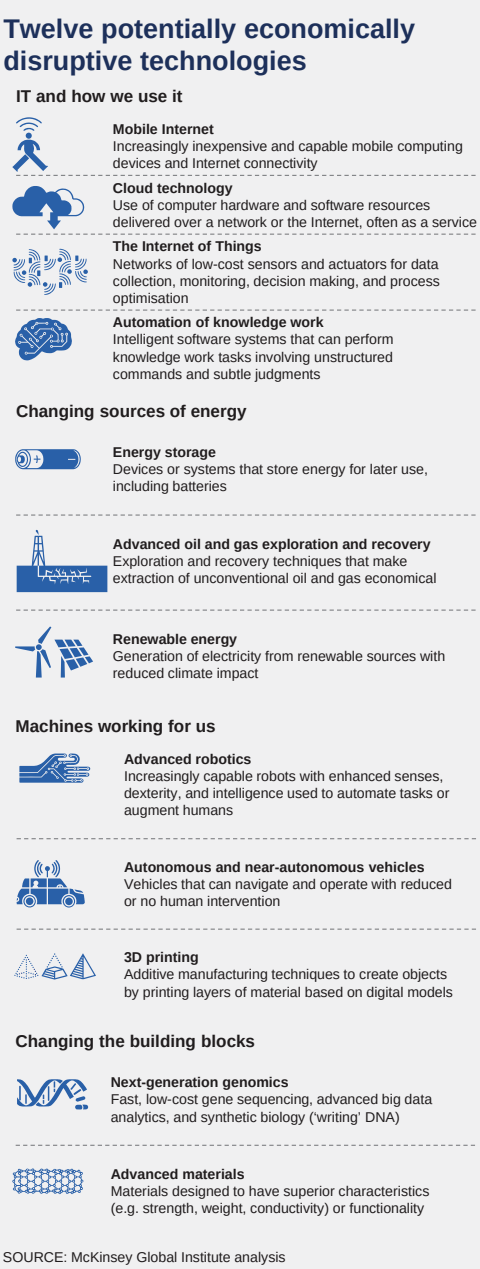
Our proposed segment level approaches, discussed here in Chapter 3, should be complemented by economy-wide actions from policy makers, business leaders, research institutions, educators and individual workers. These actions – in the areas of investment and immigration, regulation, innovation and collaboration, and labour market structures and skills – are discussed in Chapter 4.

Box 4: Technologies which can drive growth and unleash disruptive change

The McKinsey Global Institute recently reviewed a large number of technologies, to identify those with the greatest potential to drive substantial economic impact and disruption by 2025. The twelve selected share four characteristics: the technology is advancing rapidly, the potential scope of impact is broad, significant economic value can be affected, and that economic impact is potentially disruptive.[82]

These twelve potentially disruptive technologies can be grouped by how they affect the way people live and work, the sources of energy used and the very building blocks from which products are developed (Exhibit 16).

Exhibit 16



SOURCE: McKinsey Global Institute analysis

The potential implications are profound. The spread of mobile internet gives consumers enormous amounts of information and choice about what they buy and where they buy it from, raising the bar on consumer-facing industries. Cloud technology (especially when combined with mobile internet) enables new ways of working in virtual teams. The proliferation of new sensors and devices (the 'Internet of Things') will enable businesses to deliver substantial productivity improvements in areas like logistics and maintenance.

Advanced robotics and autonomous vehicles, together with the automation of knowledge work, will be another source of productivity improvements, but will displace some production and transaction jobs, as discussed in Chapter 2. Additive manufacturing or '3D printing' could redraw the lines of what is produced locally and what is produced offshore.

Advanced oil & gas recovery techniques have been fundamental to the growth of Australia's LNG industry, as the first country to export non-conventional coal-seam gas as LNG. Next-generation genomics could have profound impacts on medicine and agriculture, and open up new fields where Australia might translate its skills and knowledge base into new commercial applications.

It is impossible to forecast how each of these (and other) disruptive technologies will affect the competitiveness of Australian firms. We highlight some examples, sector by sector in this chapter, and discuss the importance of business leaders driving innovation and collaboration and the adoption of new technology in Chapter 4.

82 McKinsey Global Institute 2013 *Disruptive technologies: Advances that will transform life, business, and the global economy.*

Box 5: Government subsidies and tariffs: not a sustainable road to competitiveness

Industry assistance provides a temporary shield against global forces. But it is a blunt tool which tends to be unsustainable and counter-productive; it can slow down responsiveness to market signals and entrench reliance on uncompetitive sectors and operating models.

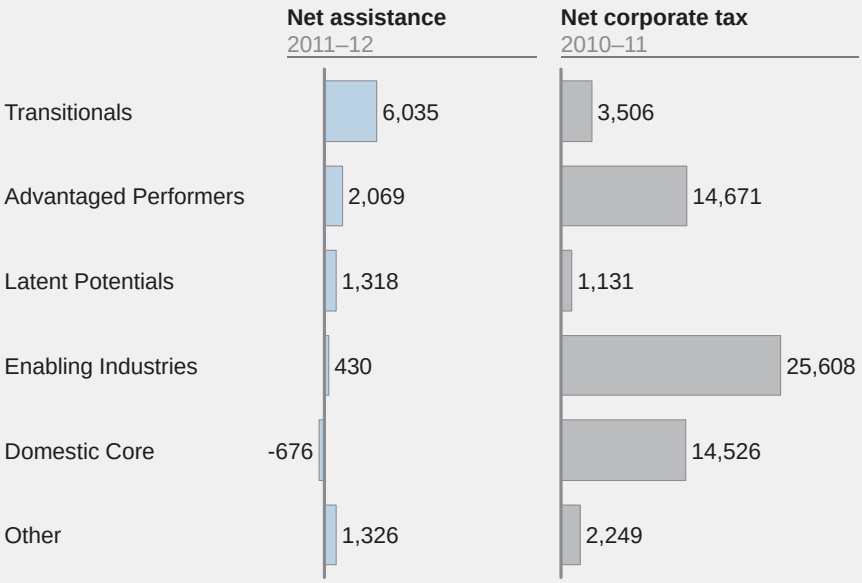
Although Australia has been moving away from tariffs and industry assistance over the past 40 years, there is still work to do. In 2011–12, according to the Productivity Commission, the federal government directly spent a gross $13.2 billion on industry assistance, or a net amount of $9.2 billion once negative tariffs are taken into account.[83] This number excludes spending by state governments and indirect support such as local content requirements or favourable regulations.

Particularly problematic is that in the past, this assistance has focused on declining sectors: Transitionals have received two-thirds of net assistance (Exhibit 17). As a result, the assistance has very low returns in terms of tax take, as is the case for Transitionals. This puts pressure on government budgets, reducing capital for other government activities such as reskilling workers affected by industry decline.

Exhibit 17

Past government assistance has not focused on Australia's advantages

A$ Millions



SOURCE: Productivity Commission, 2011–12, Trade and Assistance Review; ATO, 2010–11, Taxation Statistics Table 4E

83 Productivity Commission 2011–12, *Trade and Assistance Review*. Negative tariffs refer to the impact of tariffs in intermediate industries on final industry users. For example, an industry that imports manufactured goods with tariffs incurs a cost penalty.

3.1 Advantaged Performers: nurture ongoing competitiveness

Advantaged performers are the engine room of Australian exports and competitiveness. They include mining and extraction, agriculture, tourism and education. With their intrinsic advantages and ongoing global demand, they continue to be critical to Australia's broader success. Australia has natural endowments and a skill base to build from, but competitiveness needs to be nurtured and enhanced. Ongoing success is not assured. Purposeful action is required, and needs to be tailored to the specific challenges of different sectors.

In mining and extraction, the key will be to secure ongoing investment in a competitive global market place. Take LNG as an example: Australia will be one of the world's leading gas exporters by 2020. Moreover, Australia will be the first country to turn non-conventional coal-seam gas into LNG. The opportunity remains enormous. For example, McKinsey estimates that if all LNG projects currently proposed are realised, they would contribute an additional $320 billion in GDP over the life of the projects, create 150,000 new jobs, and contribute $5 billion per annum in additional taxes and royalties.[84]

However, high underlying cost challenges have crept in: our recent paper found Australian LNG projects are up to 30 percent more expensive than Canadian projects.[85] Australia now needs a concerted effort to ensure it secures new projects (and efficiently delivers on those it has in the pipeline). No one policy is enough, a whole host of improvements in taxation, regulation, infrastructure, labour markets, and industry collaboration will be needed to remain competitive.

For mineral resources, like coal and iron ore, Australia has increased the volume of output substantially since 2001.[86] But rising costs and output from international competitors have put a number of mines on the right-hand side of the cost curve. Many Australian mining companies will need to improve productivity and address high input costs from their suppliers to remain competitive, and secure further investment.[87]

Australia has developed globally distinctive competencies in mining services, but the industry will need to continue to invest in research, to develop and deploy new technologies to drive productivity. As well as enhancing Australia's productivity, this can become a platform for service exports ranging from exploration to the ability to conduct remote and autonomous operations.

In education, Australia must prepare for new and different forms competition. This is another prime opportunity where Australia has shown it can compete globally. Australia features the highest ratio of overseas students of any country. It is Australia's largest service export, and can be worth another $13 billion by 2020 just by maintaining global market share.[88] Beyond the direct financial benefits, educating international students has many other benefits for Australia. It helps create international professional networks, creates familiarity with Australian brands (which positively influences future consumption choices) and alumni act as ambassadors recommending Australian products and companies.[89] It also gives Australia access to global talent, when students stay to work and reside here.

Again, this success cannot be taken for granted. Education exports declined 4 percent in 2010–11 while the global market grew 4 percent.[90] For international students, the choice of destination is driven primarily by academic reputation, student experience, pathways to work and remain in the host country, and the costs to study and live in the country.[91] Australia benefits from a good reputation. Its universities have a strong presence in the top 100 and its cities are attractive destinations.[92] However the cost to study in Australia has risen, compounded by the exchange rate, so that studying in Australia is now 8 percent more expensive than the US and 60 percent more than Singapore (Exhibit 18).[93]

Meanwhile, the international market is changing rapidly. Competition is intensifying, with some forecasts anticipating a possible oversupply of up to 1.9 million student places worldwide in 2020,

84 McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness*.
85 Breakeven landed cost in Japan is US$12.0/mmbtu for an Australian unconventional project, and US$9.2-9.5/mmbtu for a Canadian unconventional project. See McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness*.
86 In this period coal production has grown 4 percent per annum and iron ore production has grown 10 percent per annum, according to the Bureau of Resources and Energy Economics 2013, *Resources and Energy Statistics*.
87 McKinsey Basic Materials Institute.
88 The British Council, 'The Shape of Things to Come'; OECD 2012 and 2013, *Education at a Glance*, C4; ABS 5368 Table 11.1; The Work Foundation Lancaster University.
89 See, for example, International Education Advisory Council 2013, *Australia—Educating Globally* (Chaney Report); and the Department of Business Innovation & Skills 2013, *The Wider Benefits of International Higher Education in the UK*.
90 OECD 2013, *Education at a Glance*.
91 McKinsey Global Institute; Caroline Macready and Clive Tucker 2011, *Who Goes Where and Why: An Overview and Analysis of Global Educational Mobility*.
92 Australia does not have any universities ranked in the top 20 globally, but has seven universities in the top 100, as it did in 2007. Six Australian cities are ranked among the top 50 international student cities. QS World Rankings 2007, 2013.
93 HSBC; McKinsey analysis.

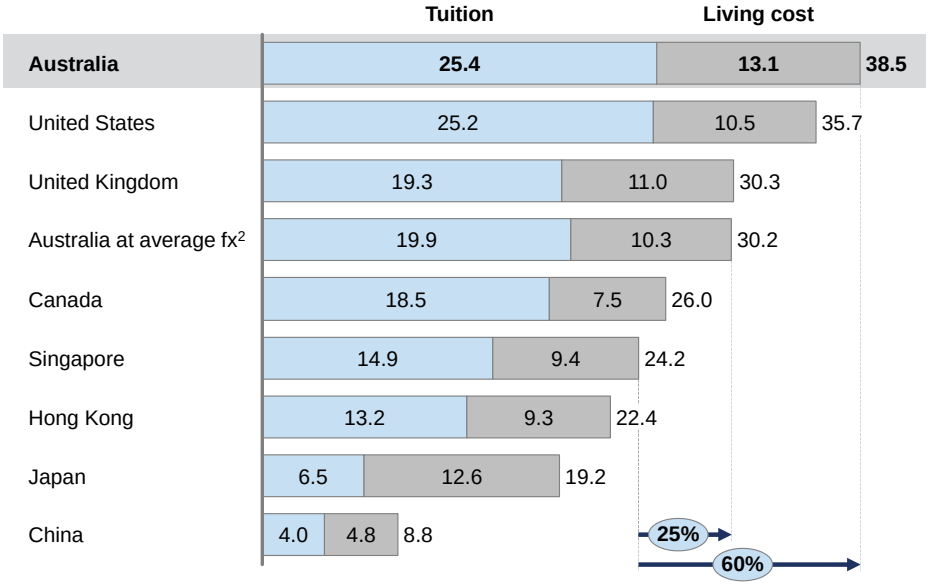
and disruptive technologies like MOOCs (Massive Open Online Courses) allowing students to access content and instruction from leading global institutions anywhere in the world.[94]

Government actions have a real impact here, for better and for worse. The Jackson review and Dawkins reforms of the 1980s commercialised international education and encouraged universities to seek full-fee paying international students. Australian international education exports grew at 17 percent per annum from 1989 to 2009. But, changes to student visa policy in 2009/10 affected the ability to translate student visas to permanent residency and severely curtailed demand for Australia's leading services export.[95] Government will continue to have an important role in shaping the sector's incentives, creating an integrated strategy across education and immigration policies, and increasing transparency on student experience and outcomes. Universities will need to innovate, as a number face capacity constraints and will need to consider different delivery models to expand.

Exhibit 18

Studying in Australia is more expensive than in competitor countries

Living costs and net tuition costs, 2013; US$[1]



1 At 30 July 2013 exchange rate
2 Adjusted from July 2013 exchange rate to reflect 2005–10 average $A-$US exchange rate of $0.727

SOURCE: HSBC; McKinsey analysis

In agriculture, Australia must drive for scale. Agriculture is the only industry which is strongly competitive in our Revealed Competitiveness Score, and has plenty of untapped potential. Australia has the most arable land per capita of any country, and in some cases this translates into substantial market share – Australia has 50 percent market share of Merino wool.[96] Substantial demand increase is predicted, for example China's per capita meat consumption could increase by 40 percent over the next 20 years.[97] But Australia is losing global market share (2.4 percent per annum from 2005–10).[98] One of the primary solutions is to play for scale. Governments should encourage (or at least not impede) the professionalisation and scaling-up of farming enterprises. The tendency to nurture small-scale farming should be weighed against the opportunity cost of not having larger, more capitalised and more efficient farms in their place.

94 International Education Advisory Council 2013, *Australia—Educating Globally* (Chaney Report).
95 ABS 5368 Table 11a; Trilokekar and Kizilbash 2013, *Imagine: How Can Canada Benefit from the Australian experience?* Canadian Journal of Higher Education.
96 Australian Bureau of Statistics 2003, 1301; IMD 2013, *World Competitiveness Yearbook*.
97 McKinsey Global Institute 2011, *Resource Revolution: Meeting the world's energy, materials, food and water needs*.
98 OECD 2014, *STAN Structural Analysis Database*.

In tourism, Australia must invest for growth. Tourism is critical to Australia's broader economic development, particularly in regional areas; every dollar spent on tourism generates an additional 91 cents in other parts of the economy, and 46 cents of every tourist dollar are spent in regional Australia.[99] Due to landscape and climate, Australia is ranked 11th by the WEF for Tourism competitiveness, up 2 places from 2011, but it is not price competitive, where the ranking plunges to 137th.[100] Australia has an enormous opportunity as the propensity for international travel is expected to nearly double by 2030 driven by the emerging global consumer class and demographic change.[101] Ongoing efforts will be needed to ensure the supply of labour and the investment in tourism infrastructure keeps pace in a hotly contested global market.

3.2 Latent Potentials: convert potential to advantage

Australia needs to nurture potential areas of strength that can become successful export drivers. Latent Potentials are to be found in food and beverage manufacturing, and also in niches with high skill levels, such as pockets of advanced manufacturing, and elements of global supply chains like design and engineering services. The task in Latent Potentials is to translate intrinsic advantages into actual advantage. This requires a complex and tight interconnection between people, skill bases, institutions, resources, and knowledge. To get there, individual efforts from firms may need to be supplemented with the right incentives and coordination. Some sectors, like food processing, will need to compete at global scale, and any policies that explicitly or implicitly restrict this should be reviewed as part of a strategic focus on unlocking potential.

Others, where a combination of practical research and entrepreneurialism are required to create a commercially viable offer, may require new incentives. The story of Cochlear, a great example of Australian specialised knowledge-intensive production, is illustrative of Latent Potential turned to advantage. Cochlear has 60 percent of global market share for hearing implants, and is one of the world's most innovative companies.[102] But its story is one of a unique confluence of support mechanisms. Initial research was part of a PhD, which was funded by a university grant. Prototype funding was sourced from a telethon. A medical equipment exporter provided support and expertise to begin exporting. The federal government provided additional capital to start commercial-scale development. Each stage of this process, and the linkages between them, were critical. Unfortunately, these supports were unique to Cochlear, and may be difficult to replicate at scale. As such, it is critical to develop more, and better linked, mechanisms to ensure Australia can see more success stories like this one.

In specialised technology-intensive production, Australia needs more focus, connectivity, and commercial orientation. For Australia as a small country to produce more cases like Cochlear will take a systematic approach. Funding remains fragmented across too many priorities, and is not sufficiently linked to commercial outcomes. Australia has taken some steps in the right direction. The CSIRO has established Global Precincts in recognition of the value of clusters of interconnected players, and has suggested differential support mechanisms for different stages of the value chain.[103] But there is still work to do. Globally, Australia still ranks 34th on cluster development.[104] Furthermore, while Australia produces almost double the amount of citeable research per capita than the US, it has among the lowest rate of conversion into patents.[105] Australia's patents per capita are less than half those of the US. Perhaps one reason for this is Australia's low performance on university-industry collaboration; Australia is ranked 15th, well behind the US at number 3.[106] In short, Australia must drive further commercialisation of the best ideas from paper to patent. This will require improved collaboration and connectivity between players, increased outcomes-based incentives, and stability of funding.

99 Tourism Australia, 2011, *Tourism 2020 Overview*.
100 WEF 2013, *Travel and Tourism Competitiveness Index*.
101 Austrade 2013, Tourism Forecasts <http://www.tra.gov.au/publications/forecasts-Tourism_Forecasts_Spring_2013.html>.
102 Forbes 2011, *Most innovative growth companies* <http://www.forbes.com/lists/2011/most-innovative-growth-companies.html>; BRW, 'Cochlear banks on R&D spend to recover its edge' 17 February 2014.
103 Interview with Dr Alex Wonhas, Director CSIRO Energy Transformed Flagship, May 2014.
104 Global Innovation Index 2013.
105 Global Innovation Index 2013; United Nations Secretariat, Scopus SCImago Journal and Country Rank.
106 World Economic Forum 2013, *Global Competitiveness Index*.

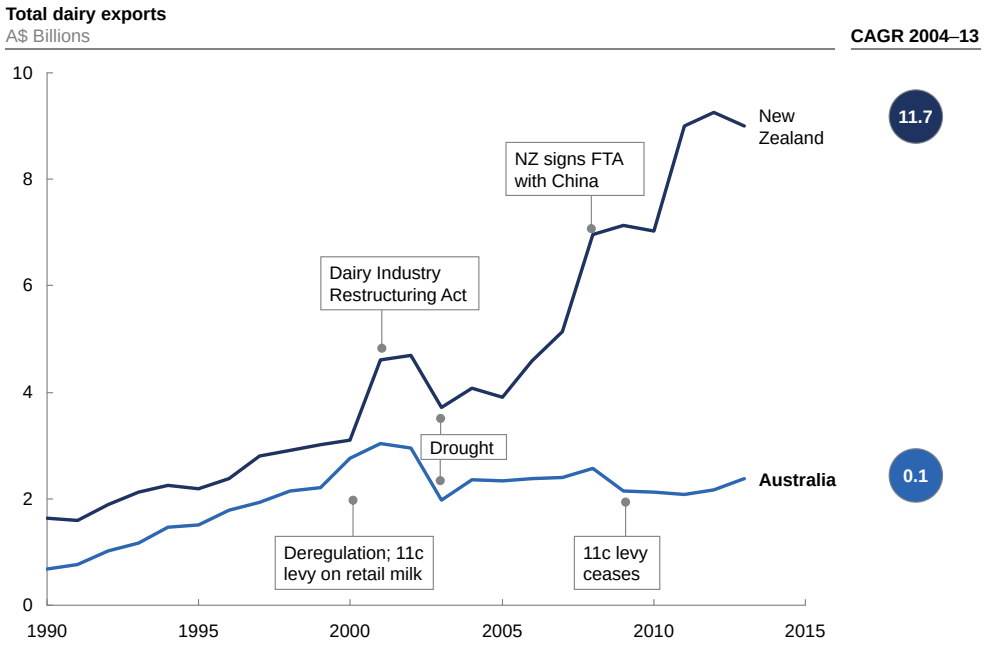
In supply chain niches, Australia will need entrepreneurship and collaboration. The fragmentation of global supply chains will create a number of niches, like design and engineering services, or online solutions, where Australian's with specialised skills can participate in global markets. Similarly, disruptive technologies will create opportunities for new products and services (see Box 4). Capitalising on these opportunities will require high levels of entrepreneurial capability – to identify opportunities and convert them to workable business models – and the ability to collaborate with other innovators and supply chain partners.

In food and beverage manufacturing, Australia needs to create a scaled route to market. World food demand will increase 70 percent by 2050, and with the largest arable land per capita in the world, Australia is well positioned to play a significant role in filling it.[107] Brand Australia is also powerful in bringing an assurance of quality and food safety; Australia ranks 8th out of 107 countries on food quality and safety.[108] Wine is a good example of Australian success. Between 1995 and 2005, Australia tripled global market share to nearly 10 percent, even when the global market was growing at a rapid 8 percent per annum. Although share has since fallen back to 8 percent, wine represents a healthy US$2.8 billion of export revenue.[109]

However, in many food chains Australia has failed to translate its potential into the level of export performance of which it is capable. The milk industry is a story of squandered potential (Exhibit 19). At the start of the 2000s, Australia's milk industry was on par with New Zealand's. A decade later, New Zealand had doubled production while Australia's stayed flat. New Zealand became the world's leading exporter of milk and added $7.5 billion annual export growth. Their success was underpinned by a whole of system approach where New Zealand farms got bigger, processing scale and efficiency increased, and investment in branding and technology was scaled up. Australia, at that time, deregulated but without anything approaching the intent and ambition across the Tasman.

Exhibit 19

New Zealand's dairy exports have accelerated; Australia's have flatlined



SOURCE: ABS 5368.0; Statistics New Zealand Table EXP006AA; exchange 2004–2013 AUD/NZ = 1.19; McKinsey analysis

107 Australian Government Department of Agriculture, Fisheries, and Forestry 2012, *Food demand to 2050: Opportunities for Australian agriculture.*
108 Economist Intelligence Unit 2014, *Global Food Security Index.*
109 MIT Media Lab 2014, *Observatory of Economic Complexity.*

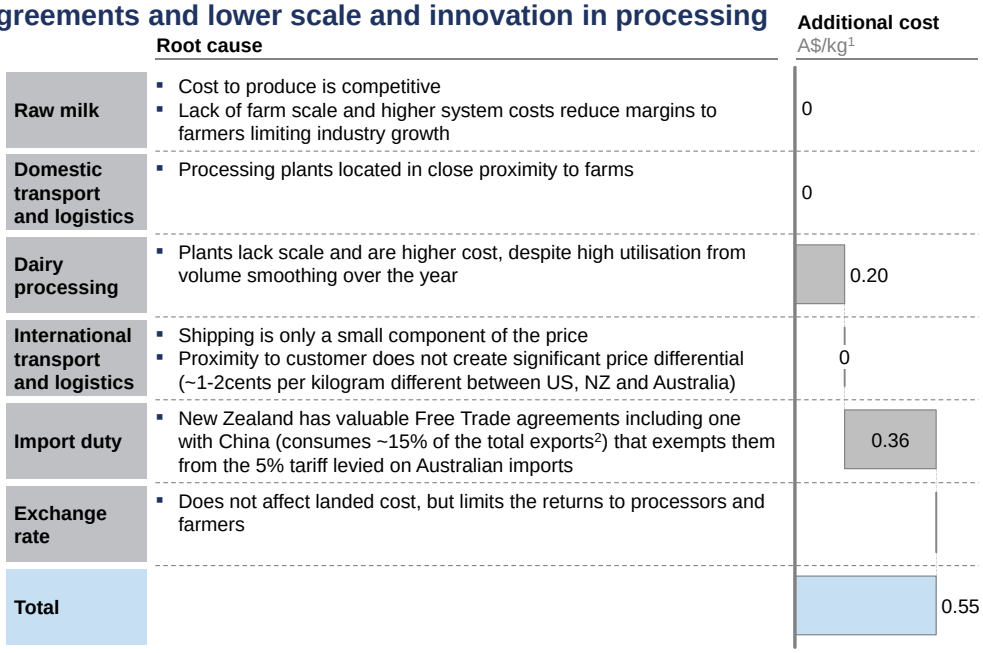
The New Zealand dairy industry is oriented toward exports. It has much larger processing plants, which give a scale advantage, and an industry model which keeps raw milk costs down by allowing production to surge in spring, whereas the Australian industry is more domestically focused and smooths monthly production by grain feeding, which increases raw milk costs. Helping their competitiveness even more, New Zealand struck a trade deal with China, giving them a 36 c/kg landed cost advantage over Australia (Exhibit 20).

Today, the average New Zealand dairy farm is 80 percent larger than a Victorian one, and processing plant utilisation is 15 percent higher.[110] Fonterra, the New Zealand milk products monopoly, spends proportionately 40 percent more on R&D and 300 percent more on marketing than Australia's Murray Goulburn Co-operative.[111]

New Zealand created a dairy industry structure that was designed to compete globally. How can Australia take similar purposeful action to turn the Latent Potential of its food and beverage industries into market share? Blunt subsidies or industry assistance programs will not be enough. It will take purposeful market design, with efforts to identify bottlenecks, nurture the right connections, and think strategically the whole way along the value chain.

Exhibit 20

Australian dairy is less competitive than New Zealand because of trade agreements and lower scale and innovation in processing



1 Landed cost per kilo of skim milk powder
2 Share of dollar exports using FAPRI 2013 data and oceania export prices

SOURCE: Expert interviews; Dairy Australia

3.3 Transitionals: adapt by transforming the business model

There are three industry groupings – all of them in manufacturing – where there is or should be ongoing transition: advanced manufacturing, basic manufacturing and commodities processing.[112] These are all highly trade exposed, and for many firms, sustaining a winning position over time will require substantial repositioning. For some, it may simply be impossible. Realistic expectations and a focus on adapting and harvesting of remaining potential under realistic expectations are key.

110 Dr Jon Hauser 2013, *What it takes to compete in the global dairy industry*.
111 Bloomberg; Fonterra and Murray Goulburn annual reports.
112 For rough sizing purposes, we have considered advanced manufacturing to cover the ABS classifications of machinery and equipment manufacturing, basic manufacturing to cover textiles, leather and footwear, non-metallic mineral product manufacturing, wood and paper manufacturing, and printing and recorded media. Commodities processing includes chemicals, rubber, plastics and fuel, and basic and fabricated metal manufacturing.

Collectively, Transitionals are only 6 percent of GVA, but they amount to 23 percent of exports. At the same time, they account for 65 percent of imports. For every dollar that it earns from exports, Australia spends $2.90 overseas.

Australia is in the midst of adjusting and responding to the globalisation of supply chains and the addition of large new low-cost pools of capital and labour in the global market. As the McKinsey Global Institute observed in 2012, manufacturing as a share of employment has been in decline for at least two decades across developed nations. Australia's further recent loss of competitiveness has served only to steepen an already endemic trend.[113] The recent announcements calling an end to car assembly in Australia brings this trend into stark relief. This is a trend across developed nations, and Australia is not alone in its need to adapt and move on.[114]

Additive manufacturing is another disruptive, but potentially beneficial trend that could reshape elements of manufacturing. The performance of additive manufacturing machinery is improving, the range of materials is expanding, and prices (for both printers and materials) are declining rapidly –bringing 3D printing to a point where it could see rapid adoption for more manufacturing uses.[115] With 3D printing, an idea can go directly from a 3D design file to a finished part or product, potentially skipping many traditional manufacturing steps where Australian firms are often less competitive.

It is a mistake to think Australia can be insulated from these disruptive trends. The reality is that firms are being forced to be more selective about which markets and parts of the value chain they play in. To be clear, this is far from the end of these sectors in Australia, but firms must reconceive their business models in light of new competitive realities that challenge old market structures. Governments will need to support these transitions by removing barriers that reduce competitiveness or restrict firms from adapting, and, where firms or specific sectors are not viable, enabling workers to find new jobs.

Broadly, we see four responses by manufacturers, depending on a combination of how exposed they are to trade competition and how differentiable their role is in the value chain.

- **Niche specialists.** Some firms in highly exposed markets can retain their manufacturing footprint by focusing on specialties which are differentiable and less dependent on cost. Australia's advantage will reside in unique technologies, skills and supply chains. Overall, potential niche specialists encompass roughly 20 to 30 percent of Transitional's GVA and employment (2 percent of Australia's total). For example, GE has used innovation and technology to differentiate itself, even partnering with the CSIRO to accelerate their innovation. As a result, GE has established a leading position in highly technical and software-enabled niche products such as commercial and military jet engines for aircraft, where it has 70 percent domestic market share.[116] Niche specialists need to have the granular market understanding to tailor products to market needs, and the innovative capacities to address those needs effectively and distinctively. Configuring their own global value chain efficiently will also support success.

- **Value chain orchestrators.** Manufacturers who operate in sectors where the production part of the value chain is highly trade exposed, but other value chain elements – such as design, marketing, distribution and servicing – remain important components of value, can reconfigure their role. Value chain orchestrators account for roughly 30 to 40 percent of Transitionals' GVA and employment (2 percent of total). For example, Pacific Brands remains an important player in apparel despite exiting textiles manufacturing. This company focuses instead on design, marketing and retailing. Another example is Caltex, which remains an important player in petroleum despite closing one of its refineries. It has transitioned by focusing on petroleum marketing, logistics and distribution. To remain sustainable, firms in these sectors need to make

113 McKinsey Global Institute 2012, *Beyond the Boom*; McKinsey Global Institute 2012, *Manufacturing the Future: The next era of global growth and innovation.*
114 McKinsey Global Institute 2012, *Manufacturing the Future: The next era of global growth and innovation.*
115 McKinsey Global Institute 2013, *Disruptive technologies: Advances that will transform life, business, and the global economy.*
116 The Australian, 'General Electric banks on big data' 20 March 2014.

smart choices about where they play and expand, how to differentiate themselves, and from which tasks they need to exit.

- **Truly vulnerable.** Where manufacturers are highly exposed but do not have the degrees of freedom to specialise in differentiated products, difficult processes or shift focus along the value chain, there are few options left. These tend to be sectors that are labour intensive with commoditised products. It is here as a nation Australia must ease the transition and get communities and people into alternative work. This represents roughly another 20–25 percent of Transitionals' GVA and employment (1 percent of total). After many years of low trade barriers, the number of truly vulnerable cases has diminished significantly. Possibly the most notable sector here is metals processing. Although global demand is growing for metal products, Asian countries, which enjoy the benefit of lower cost labour and closer proximity to markets, are predicted to win out. These countries continue to increase supply as improved institutional risk profiles mean that they become more attractive investment destinations for capital. Australia struggles due to its ageing and small facilities combined with the loss of its historical advantage in low energy costs.

- **Across the moat.** There will remain an important part of manufacturing for which distance really matters, as is the case in many building products like bricks or cement. These sectors account for roughly 20 percent of Transitionals' GVA and employment (1 percent of total). Firms will remain competitive by driving productivity in a 'defensible core' of their business. This 'defensible core' tends to exist where input costs are not uncompetitive, labour costs are a relatively small portion of cost, product complexity and demand variability give local production an edge over foreign manufacturers with long lead times, and where shipping costs are a meaningful portion of total cost.

Holding back the tide will not only be impossible to sustain, it will also be unhelpful. Time is of the essence in building valuable niches and in developing new capabilities in different parts of the value chain. Moreover, some government assistance has damaging effects on other parts of the economy. The negative effect of tariffs on the construction sector was estimated at around $1.4 billion in FY12.

In all four of the above responses, some painful adjustment will be inevitable. Here, the role of governments must be about motivating and easing transition to more sustainable markets and operating models. That means investing in building up the comparative advantages in skill and innovation required to compete in niches and value chain orchestration, and creating clear pathways to re-employment for people affected.

There is also clearly a role for firms in making smart choices about where and how they play. In addition to the 'where' detailed above, Chapter 4 discusses the firm-level actions available to business leaders to improve how they compete.

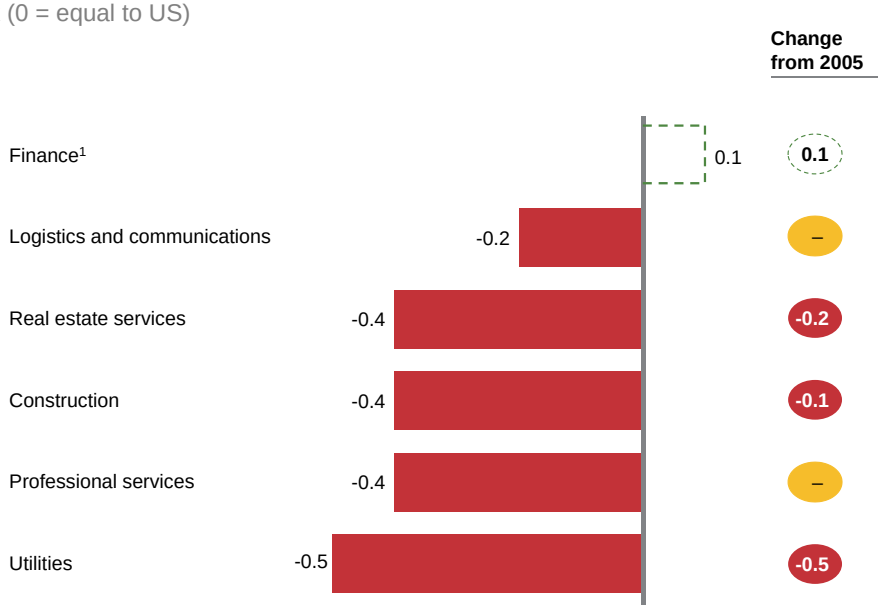
3.4 Enabling Industries: get fit to support competitiveness

As the backline to its frontline exporters, Enabling Industries maximise Australia's trading potential by offering efficient, competitive goods and services that are aligned in cost and quality to the requirements of the industries they support.[117] They are construction, finance, real estate, professional services, logistics and utilities. However, all Enabling Industries with the exception of finance have low Relative Competitiveness Scores (Exhibit 21).[118]

Exhibit 21

Australia's enablers are not competitive

Australian Competitiveness Score compared to US
Index (0 = equal to US)



1 Traditional productivity comparisons in the finance sector are difficult due to complexities measuring sector GVA

SOURCE: EU KLEMS, 2005, from revs published 2008 and 2011; Bureau of Economic Analysis; ABS

Productivity improvements in all sectors are valuable, but policy makers should start with the Enabling Industries which have the largest impact on highly trade exposed industries and are the less competitive: utilities, construction and logistics.

- In **utilities** (electricity, gas, water and waste services), Australia urgently needs to address poor planning, drive incentives for capital efficiency and allow the right market signals to manage demand. In 2005, Australian utilities were competitive with the US, but have since had the worst deterioration in competitiveness of any sector, driven by higher costs and reduced productivity. They are now one of the biggest problem spots. Default electricity tariffs have increased by 10 percent per annum since 2009.[119] The worst possible combination of cost-plus pricing, excessive investment, and inability to ration peak demand through pricing mechanisms have come together to produce this result. Wide-ranging reforms are needed to allow energy retailers to manage peak demand, harmonise regulation, improve planning and introduce more private/public collaboration in capital projects.

117 Firms in some of these sectors, like finance, professional services and construction, have the potential to expand to other markets. When services are performed in another country, they do not contribute to Australian GDP. However, there are other benefits, including profits flowing back to Australian shareholders, and the increased capability Australian firms develop from operating in other markets.
118 Productivity comparisons in the finance sector are difficult due to complexities in measuring sector GVA.
119 Paul Simshauser and Tim Nelson 2013, *The Outlook for Residential Electricity Prices in Australia's National Electricity Market in 2020*.

- **Construction** is expensive in Australia. A recent study concluded that for similarly specified commercial buildings, it costs 25 percent more to build in Australia than in the US and UK.[120] This cost problem starts with high input costs. There are remaining tariffs in some manufacturing industries with a $1.4 billion impact on the construction industry.[121] But labour productivity will be at the heart of helping construction become a positive for Australian competitiveness. The labour relations system in construction, described by the Productivity Commission as 'problematic', must be reformed.[122]

- **Logistics** has a Relative Competitiveness Score of 0.8 versus the US, despite efforts to reform roads, rail and ports. The infrastructure for distribution of goods is ranked 30th (versus US 12th) and quality of overall infrastructure 34th (versus US 19th).[123] For example, when a container travels from Melbourne to Brisbane by rail, 20 percent of the journey time is spent crawling just 15 km through Sydney. While incremental actions have been taken to improve this situation, focused, strategic investments are needed to remove the most important bottlenecks.

3.5 Domestic Core: strive for a global benchmark

The Domestic Core employs over half of Australia's workers and therefore is pivotal to Australia's productivity and growth agenda. Domestic Core sectors are wholesale and retail trade, telecommunications, domestic services and public services. The first three are not competitive with the US (data was not available for public services). This represents an opportunity to improve: striving to reach, and even set, the global benchmark.

First, the low scores suggest these sectors are not at what economists call the 'Production Possibility Frontier' – which means there is plenty of scope to improve productivity, powering economic growth. Second, there are pockets which can be traded, where Australia can develop world-leading propositions. The efficient delivery of public services can become a new export capability. Even hospitals can be export earners if overseas domiciled patients choose to undergo treatment in Australia.

Finally, disruptive forces threaten to change the status quo. Many sectors and tasks that were once shielded from competition and innovative operating models will be subject to global competition. The internet is allowing companies like Amazon, WhatsApp and NetFlix to disrupt previously insulated sectors like retail, telecommunications and media.

Even when a sector is relatively insulated from overseas markets, the tasks currently performed there are not. Offshoring and automation will affect workers in these sectors – especially those in the production and transaction jobs described in Chapter 2. These sectors are some of the largest employers, and sources of employment growth, in Australia. Enhancing their productivity and getting 'match fit' is important.

□ □ □

Australia cannot take its future competitiveness for granted. Purposeful action – not subsidies – tailored at a sector level are required to boost competitiveness in Advantaged Performers and Latent Potentials, and the back-line industries which enable them. At the same time, cross-cutting action will be required from policy makers, business leaders, research institutions, educators and individual workers. We explore these in Chapter 4.

120 Turner & Townsend 2013, *International Construction Cost Comparisons: Draft report for the Business Council of Australia*.
121 Productivity Commission 2011–12, *Trade and Assistance Review*.
122 Productivity Commission 2014, *Public Infrastructure: Draft Report* <http://www.pc.gov.au/projects/inquiry/infrastructure/draft>.
123 IMD, 2013, *World Competitiveness Yearbook*.

4. Taking a purposeful approach to raise Australia's global competitiveness

Continuing the focus on 'how to compete' begun in Chapter 3, our recommended shift in Australia's broad industrial policy approach is three-fold. First, emphasis should be placed on where Australia can or should win, rather than sectors or jobs where there is little evidence of long-run advantage. Second, the role of government should be in facilitating the right overall environment for competitiveness, including fostering collaboration and commercialisation. Third, Australia needs an increase in focus and the duration of that focus, to make best use of scarce resources, skills and political capital at a scale where Australia has a greater chance of producing world-beating results.

Chapter 4 describes a set of purposeful cross-cutting actions which, in addition to sector-specific actions set out in Chapter 3, will be required to improve Australia's competitiveness.

- **Investment and immigration: continue Australia's strong track record.** Australia has an outstanding record of attracting skilled immigrants and foreign capital. Australia will need new investment to unlock the potential of increased scale in sectors like agriculture and food processing, and to enable industries in transition to transform. As global competition for skilled workers increases, Australia will need to maintain its position as a destination of choice.

- **Regulation: set rules in a global context.** Other countries are making it easier for their industries to compete on the global stage, while Australia's regulatory burden has been increasing. As trade intensity increases across all sectors, regulation will need to better take into account each sector's global context.

- **Business leaders: capture the value of innovation and collaboration – and make it last.** Individual firms remain masters of their own destiny. Those who have found ways to innovate and outperform can be twice as productive as peers in the same industry, helping them overcome the challenges of high cost inputs. There is opportunity to improve how Australia utilises innovation and technology: Australian companies are behind on technology uptake, external orientation, innovation and learning, and ability to implement and sustain change. Australian business leaders need to more actively pursue and adopt innovation, and put the structures in place to make sure it sticks.

- **Labour market structures and skills: create pathways to jobs of the future.** Global competition for jobs is shifting, and Australia needs to smooth the path for Australians to follow the momentum towards Interactions jobs – and enable them to continuously adapt to a rapidly changing industry landscape. Policy makers, employers, workers and education providers all have important roles to play.

4.1 Investment and immigration: continue Australia's strong track record

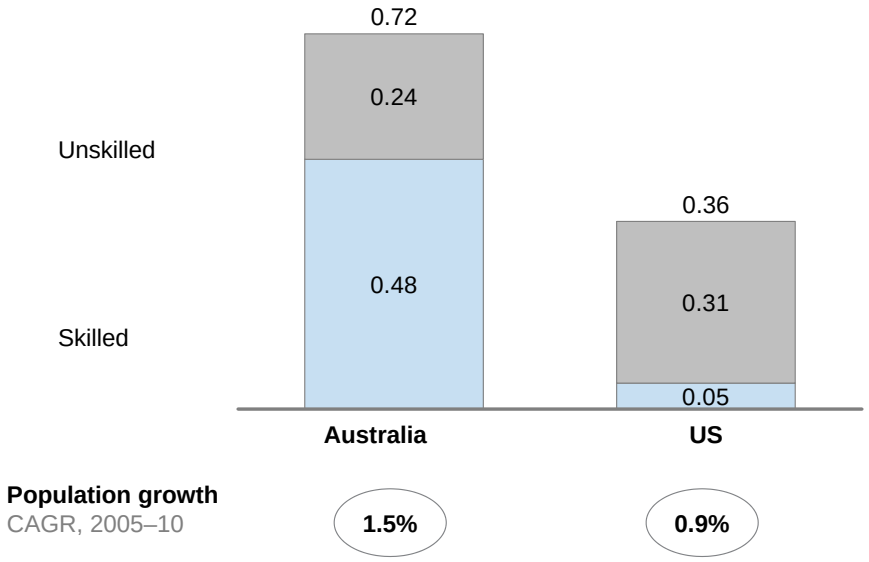
Australia's enviable growth record owes a lot to continued high investment and positive growth in the labour force (Exhibit 1, Chapter 1). This has been underpinned by a strong political consensus about Australia being an open economy participating in and benefiting from global markets, not just in goods, but also in investments and people. Improving competitiveness will be very difficult if Australia does not sustain its excellent track record.

In labour markets, a core component of Australia's success has been a strong and sustained skilled immigration program. Past MGI research on Australia noted that over the recent decade, Australia outperformed the US on all three drivers of total hours growth: working age population, participation rates, and employment rates. A look at the numbers (Exhibit 22) makes the role of immigration, and particularly skilled immigration very clear. Australia had double the immigration rate of the US, and almost nine times the rate of skilled immigration.

Exhibit 22

Australia has more, and more productive, immigration

Immigration rate[1]; Percent of population, 2005–10 average



1 Immigration defined as obtaining legal permanent residency status

SOURCE: Australia: Department of Immigration; USA: Department of Homeland Security, World Bank

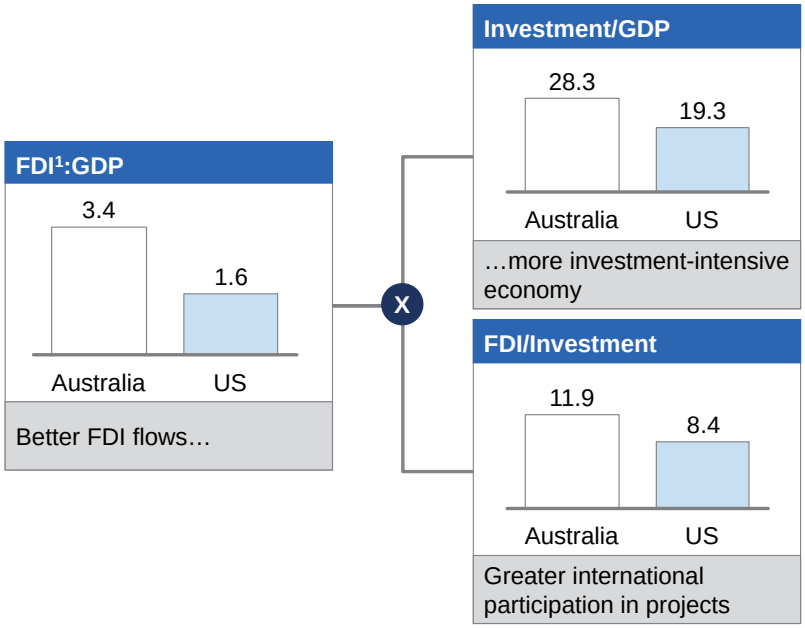
Maintaining and enhancing this excellent track record will benefit all Australians. As the population ages, the mix of workers to retirees could create labour shortages. Immigration will be essential to match labour supply and demand. But complacency cannot be afforded. In fact, the global outlook suggests that being a nation of choice for skilled workers will be more a necessity than a luxury. Recent research by MGI suggests that, in advanced economies, there will be a surplus of 32–35 million low-skill workers, but shortages of 16–18 million high-skill workers.[124] Moreover, there will be similar shortages in developing countries, implying competition for these skills will intensify.

In capital markets, Australia has been a successful destination for investment, achieving double the rate of Foreign Direct Investment (FDI) that the US achieved (Exhibit 23). This is not just because Australia's growth has been more capital intensive, but also because international capital is a greater percentage of all investment. This is especially important given the very large size of resource projects relative to the size of local financial markets. It provides access to dollars as well as technical skills and close relationships with world-class operators. It is wrong to think the boom is over and Australia no longer needs the world's investment. If anything, global competition for the next wave of investment will be stiffer, and Australia cannot take its status as a preferred investment destination for granted.

124 McKinsey Global Institute 2012, *The world at work; Jobs, pay and skills for 3.5 billion people.*

Exhibit 23

Australia has been more successful as an investment destination
Percent



1 Foreign Direct Investment
SOURCE: EIU; World Bank

4.2 Regulation: set rules in a global context

Australia's international competitiveness is significantly affected by the regulations that govern product, capital and labour markets. Australia benefits from well-established, high quality legal and regulatory institutions. However, Australia's regulatory competitive position is low, and has been deteriorating markedly in recent years. Australia's ranking for 'Burden of Government Regulation', while a subjective metric, has fallen from 66th in 2009 to 128th in 2013.[125] Over the same period, New Zealand improved from 31st to 13th.

At the same time, some of Australia's competitors are purposefully adjusting their regulatory environment to seek a strategic advantage. When Incitec Pivot Limited, an Australian industrial chemical company, invested in a new ammonia plant in Louisiana, the local (State) regulator made it clear exactly what the emissions standards were. IPL was offered and accepted the assignment of a skilled permit writer to work with the company, to ensure the plant design met important environmental standards, and also ensured the application was prepared and processed in only a few months, significantly faster than it would have been in Australia.[126]

Other countries are facilitating investment by creating incentives for businesses and talented individuals to relocate. Representatives of Singapore's Economic Development Board proactively meet foreign businesses, and help them to secure permits, access tax deductions and other investment incentives, to find office space and establish themselves in Singapore. Dubai wants to diversify its economy, and Dubai's Internet City provides a variety of financial incentives, including tax-free status for corporate earnings, guaranteed for 50 years, and exemptions from customs duties, and facilitates investment with 50-year leases to create certainty for long-term projects.

125 World Economic Forum, 2013, *Global Competitiveness Index*. Australia also declined 10 ranks in business efficiency (from 7th to 17th), and 5 ranks in government efficiency (from 8th to 13th). In just the last year, Australia's ease of doing business ranking declined 1 place to 11th, behind New Zealand 3rd, US 4th, and UK 10th.
126 Interview with James Fazzino, CEO Incitec Pivot Limited, March 2014.

We use these examples, not because we recommend each mechanism, but to make the point that while Australia has increased its regulatory burden, other countries are seeking to create a strategic advantage by actively reducing the barriers to trade, investment and international talent.

Below, we highlight five imperatives that Australia needs to address to ensure its regulatory and taxation regime is appropriate in a global context.

1. Rein in excessive localisation of standards

Local standards reduce competition and increase costs by making it harder for firms to enter specific markets. This is because firms may not be able to procure parts from international markets where high competition encourages low costs, and because domestic firms may have to adjust their product specifications to global markets, making it more complex to export. Of course, this can benefit some individual firms, who enjoy protection from competition. In aggregate, the increased costs have a negative effect, by reducing the competitiveness of Australian firms who procure these goods/services, and reducing the standard of living of Australian consumers.

National leaders must address an underlying mindset that 'Australia is unique, and requires unique rules'. They must likewise resist the temptation to impose new regulations as an answer to matters of public controversy, overstating the benefits and understating the hidden costs of new regulations. There are two areas where Australia can take action:

- **Adopt or recognise international standards where they suffice.** There are a plethora of standards for products ranging from consumer goods (like bike helmets, sunglasses or prams) to industrial supplies. For many of these, it is not obvious that Australia has uniquely different requirements. Adopting or recognising the standard of larger jurisdictions, such as the European Union, would effectively increase the scale of Australia's domestic market, reducing costs to consumers and encouraging Australian producers to innovate and compete globally.

- **Where local regulations are required, harmonise them across jurisdictions.** Australians often joke about the different railway gauges laid down in the 1850s. It wasn't until 1995 that a train could travel between Brisbane and Perth, via Sydney, Melbourne and Adelaide, on a standard gauge track.[127] But variation, duplication and overlap between local, state and federal government regulations remains far too common. For example, the Productivity Commission found 'duplication and overlap, and inconsistent administration of the 22 petroleum and pipeline laws and more than 150 statutes governing upstream petroleum activities impose significant unnecessary burdens on the sector'.[128] The problems are well known – the challenge is creating the political impetus for action.

2. Increase the efficiency of the approval process to encourage investment

The importance of strong standards to protect health, safety and the environment is without question. However, Australia can improve the efficiency of its regulatory approvals processes. There appears to be an underlying belief in some quarters that a lengthy process is the hallmark of a rigorous process. We disagree. There needs to be adequate time for consultation and rigorous assessment, but better decisions are made when the standards are clear, and jobs and prosperity follow from timely decisions. Australia can take action in two areas:

- **Streamline the approvals processes and consider prioritising select applications.** Comparisons with international competitors show opportunities to speed up approvals. Medical devices designed and manufactured in Australia can take up to 14 months longer to gain approval in Australia than the EU.[129] This not only inhibits sales in Australia, but constitutes a barrier to exports, as many importing nations require country of origin approval before the medical devices can be sold in their market. To unlock Australia's global potential as a designer and manufacturer of products like medical devices, policy makers should consider whether Australian manufacturers who require local approval before export should be given priority in the approvals process.

127 Australian Government Department of Infrastructure and Regional Development 2014, *History of rail in Australia*, < www.infrastructure.gov.au/rail/trains/history.aspx >
128 Productivity Commission, 2009, *Review of Regulatory Burden on the Upstream Petroleum (Oil and Gas)*.
129 Interview with Chris Roberts, CEO Cochlear Limited, February 2014.

- **Clarify the required standard – and stick to it.** Ambiguous standards create additional costs. For example, a number of LNG operators' own compliance standards exceed regulatory requirements. This over-engineering is intended to avoid subsequent rework in case the content or regulator's interpretation of regulation changes during the project.[130] A clearer statement of requirements would help reduce the escalating capital costs which reduce the competitiveness of some large resources projects.

3. Take a global perspective on market structure

Australia's competition policy reforms in the 1990s helped increase the level of competition in many domestic markets. This supported international competitiveness: firms in tradeable markets became more efficient and better able to compete globally, and the cost of inputs they sourced from Enabling Industries reduced. We argue above that introducing more competition and price signals to markets like electricity generation and distribution, and removing unnecessary local regulations would continue the good work which followed the Hilmer Report in 1993. However, the industry structure paradigms that served Australia well in the past will not always be appropriate in the future.

- **Adapt market definitions to changing realities.** As value chains fragment and competition moves to the level of individual jobs, market definitions will need to evolve. Even traditionally domestic sectors like retail or media are being rapidly transformed by internet-enabled international competitors.

- **Explicitly acknowledge the merits of export competitiveness.** When economies of scale are required to compete globally, Australia's relatively small market size can be an impediment, especially if merger and acquisition rules prevent the consolidation required to match international rivals. Applications for access to export infrastructure, like the private railways operated by iron ore producers in the Pilbara, are based on legislation which seeks to promote competition within Australia – but the effect of multiparty operations is to reduce the capacity of the rail system.[131] Australian consumers would not benefit (the price is set globally) but jobs and export revenues would decrease.

- **Consider purposeful market design to unlock potential.** In rare examples, a purposeful redesign of the regulations and incentives that shape a market may be required to unlock Australia's potential. New Zealand very deliberately enabled its dairy processors to achieve scale and capture global export share. The Dairy Industry Restructuring Act allowed the two largest dairy co-operatives to merge to form Fonterra. The Act was passed to increase international competitiveness, but also included safeguards to prevent abuse of monopoly power in the domestic market. Fonterra now controls approximately 95 percent of milk production in New Zealand and approximately 40 percent of global dairy exports, and has enjoyed a decade of double-digit growth while Australia's dairy industry has flat-lined.[132]

4. Continue to seek international market access for Australian goods and services

Australia is handicapped by poor trade arrangements with other countries. Australia ranks 134th for access to foreign markets, reflecting the high tariffs faced by Australian exporters.[133] Continued focus on free-trade agreements with other nations, building on the recent agreements with South Korea and Japan, is essential. This will simultaneously increase exports and imports, creating the gains from trade that improve living standards and employment.

In addition, Australia can reduce the cost of access to other markets through substituted compliance. Australia's regulators worked with the US Commodity Futures Trading Commission (CFTC) to enable major Australian banks to substitute compliance with CFTC's rules by complying with the Australian regulatory regimes administered by the Australian Securities & Investments Commission (ASIC) and the Australian Prudential Regulation Authority (APRA).[134]

130 McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness.*
131 Stephen O'Donnell, 2007, *Goonyella Coal Chain Capacity Review.*
132 ABS 5368.0; Statistics New Zealand Table EXP006AA.
133 World Economic Forum 2014, *Global Enabling Trade Report.*
134 ASIC 2013, *Australian banks achieve positive 'substituted compliance' outcomes from the CFTC.*

5. Don't excessively tax mobile factors of production

The fragmentation of value chains will be an increasing challenge for governments as more high-value tasks are being relocated to the most competitive countries, including those which compete by offering low-tax regimes. High taxes on mobile factors of production, such as labour and capital, are risky because talent and investment can find more lucrative destinations.

For a capital-importing country, Australia's corporate tax rate is comparatively high (30 percent compared with an OECD average of 25.4 percent in 2012).[135] Our analysis on unconventional LNG projects exporting to Japan showed tax to be one of the largest drivers of the gap in breakeven costs between Australia and Canada. Finding the right mix and rate of taxes is inherently challenging, but the mix of taxes will likely need to shift towards indirect taxes such as consumption and land taxes over time.

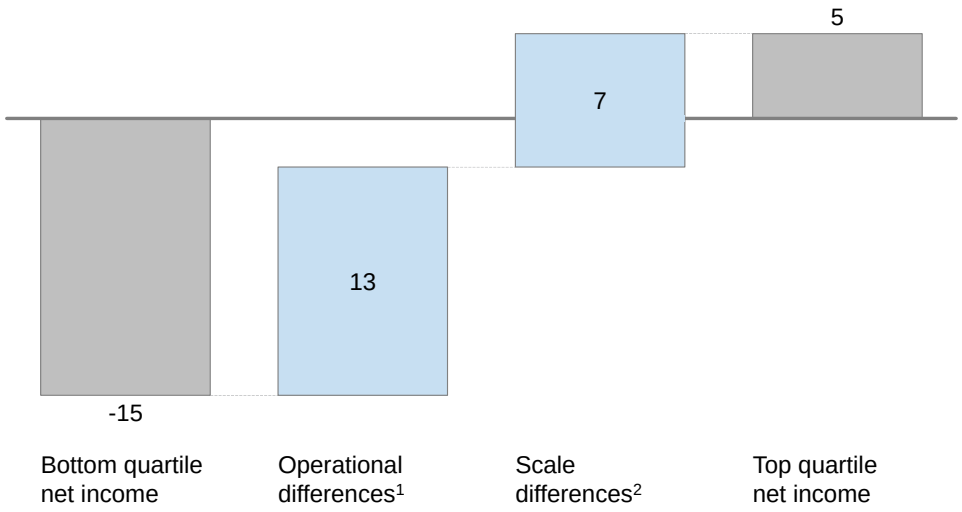
4.3 Business leaders: capture the value of innovation and collaboration

Individual firms remain the masters of their destiny. Despite the challenges of high input costs, many Australian firms survive and prosper. They are competitive because they have found ways to innovate that make them more productive than their rivals. In the same industry, leading firms can have three times the labour productivity and twice the total factor productivity of laggards.[136] For example, data for Victorian dairy farms shows that operational differences – such as those in milk production techniques, financing, and uses of the land for other agricultural income – are the key distinguisher between the top and bottom quartile farms. In 2012–13, this performance meant the difference between making a profit and a loss (Exhibit 24).

Exhibit 24

Differences in income between top and bottom dairy farms are mainly operational

Net farm income, 2012–13; Australian cents/litre



1 Includes variation in milk income, other farm income, variable costs and interest and lease charges/litre
2 Captures variation in total overhead costs/litre

SOURCE: Dairy Australia—Victorian Dairy Farm Monitor Project 2012–13

135 McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness*.
136 Chad Syverson 2013, *The importance of measuring dispersion in firm-level outcomes*. Syverson reviews analyses of US productivity data, which uses very narrow industry classifications, like saw blade manufacturing or sporting goods stores, as well as analyses in other developed and developing markets. Our own analysis, using data from McKinsey's Corporate Performance Analysis Tool, generated similar results for Australian firms.

As global competition spreads to previously insulated segments of the Australian economy, and as plentiful export opportunities emerge for Australian goods and services, Australian firms will need to innovate faster than ever. Innovation comes in many forms: changing operational practices to improve customer experience or reduce costs, developing new and different products and services, entering new markets, collaborating to find new solutions, or even transforming the underlying business model.

As competitive intensity rises, and value chains disaggregate, Australian firms will need to consider seven innovation imperatives. Not every imperative will apply to every firm; but every firm will need to address more than one.

1. **Develop privileged insights into local and foreign customers.** The explosion of data, from new devices and sensors, digital processes, online presence and social media, allows firms to develop an ever-richer understanding of individual customers.[137] World-leading retailers are distinguished by their ability to offer targeted search results and 'next product to buy' recommendations. Australian firms will need to simultaneously develop unique insights to target and serve specific customer groups, while managing consumer concerns about privacy. Similarly, marketing Australia to foreign tourists must evolve from broadcast advertising to a capability to deliver a targeted offer to a specific individual with a high-propensity to travel to a destination like Australia. Greater capabilities in advanced analytics will be required.

2. **Deeply understand specific export markets.** Almost 50 percent of global GDP growth to 2025 will be driven by only 440 cities.[138] These cities have very different demographics and consumer needs. Exporters seeking new markets will require a granular understanding of local seasons, taste and buying habits. Nestlé co-locates R&D centres in target markets and adjusts product offerings to meet local needs – resulting in market leading products like sesame-flavoured wafers and date-flavoured cereals.

3. **Radically redesign processes to delight customers and remove costs.** As the internet opens up an ever-larger range of choices, the bar for customer service will continue to rise rapidly. Delighting customers by getting things right the first time, in next to no time, will be essential to compete. In some markets, banks have compressed mortgage applications, from initiation to approval, from 5–10 days down to 15–20 minutes. Firms will need to radically rethink their core operational processes to remove redundant steps and inefficiencies, to rapidly and reliably fulfil customer requests while simultaneously reducing costs and improving productivity.

4. **Dramatically raise capital productivity.** The tide of foreign capital that propelled Australia's growth over the last decade is slowing. Declining commodity prices, as supply catches up with demand, are a major factor. But so is the stark reality that too many major resources projects have run well over budget and over schedule. To attract the next wave of investment, Australian firms will need to apply lean practices to design and engineering, construction and operations. Engineering costs alone could be reduced by 20–40 percent through integrated planning; simple and standardised processes, practices and tools; and continuous monitoring of key performance indicators.[139]

5. **Harness the opportunities from new technology.** A wealth of new technologies offers platforms to develop innovative new products and services. The range of applications is limited only by the imagination. Some Australian firms are already moving. Mining companies are managing their operations, directing remote controlled drills and monitoring machinery from operations centres located thousands of kilometres from the mine site. Remote health monitoring services, powered by faster broadband connections, are creating cheaper and more effective treatment options for chronically ill patients. Australian researchers are using next-generation genomics for faster disease detection and new treatments, for medical and agricultural applications. Rapid scanning of containers at ports will reduce throughput time with more powerful algorithms and processing power. Internet-based start-ups are creating new services from rating real estate agents to connecting small business with freelance recruiters.

137 The proliferation of data is the result of new devices (e.g. smart phones, smart energy meters, or wearable devices like a FitBit) and sensors being embedded in physical objects (like cars, trucks or in processing plants, or on packages for delivery). See McKinsey Global Institute 2011, *Big Data: the next frontier for innovation, competition and productivity*.
138 McKinsey Global Institute 2012, *Urban World: Cities and the rise of the consuming class*.
139 McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness*.

6. **Collaborate to solve joint problems and realise new opportunities.** Innovation is often the result of different perspectives coming together to find new solutions and opportunities. Collaboration with suppliers can find win-win opportunities to reduce costs. Collaboration with researchers or firms from other industries can lead to entirely new business opportunities being identified. Australian firms are often reticent to collaborate with their local competitors, either because they fear surrendering an advantage or because, in a small market, they worry that it may appear collusive. This is regrettable. Our analysis of the LNG industry showed collaboration could reduce costs by 15 percent. Collaboration opportunities include developing industry-wide standards for non-confidential equipment; jointly pre-qualifying suppliers and contract workers; and replicating a UK scheme where buyers of Oil & Gas support services enter details of services required in a common platform which allows both buyers and suppliers to plan activities around expected market demand.[140] Firms seeking to enter new markets will often benefit from collaboration as they seek to understand the market including customer preferences and local partner capabilities. For example, increasing Australia's share of the processed food market in China could benefit from a joint effort to understand the market and build a positive reputation for the quality and safety of Australian food.

7. **Develop a globally-oriented business model.** For some firms, new capabilities will not be enough. They will need to transform their entire business model. The tyranny of distance, a relatively small market, and low trade exposure have created business models that span many segments of the value chain. Many of these firms must now ask themselves confronting questions about where they genuinely add value and where they can enhance their competitiveness by drawing upon the world's capabilities. They will need to develop the capability to manage, or participate in, a global supply chain. For example, the 'value add' in construction is moving to design, project management and final assembly/commissioning, as modular engineering allows construction yards in the Philippines to perform much of the fabrication and fit-out of gas refineries bound for Australia. Managing an international supply chain will become more important than the ability to assemble and manage a large local workforce.

The innovation imperatives are urgent, but our analysis has identified two important capabilities Australian firms need to develop to embrace them. First, they must develop a stronger renewal capability, to be able to innovate and respond to changing market conditions more quickly. Second, they must strengthen implementation capabilities, to consistently capture the value of innovation.

McKinsey's Organisational Health Index (OHI) assesses the ability of an organisation to align, execute and renew itself faster than the competition. Healthy organisations are those which are able to sustain exceptional performance over time.[141] Many large Australian firms have used the OHI. To inform this report, we aggregated more than 18,000 individual responses to create the first ever snapshot of the health of Australian organisations (Exhibit 25). On two dimensions, internal alignment and quality of execution, Australian responses are comparable to the aggregate score for the US. However, the capacity for renewal is markedly lower, particularly external orientation, but also innovation and learning.[142] The specific practices which cause Australia to have low scores for external orientation and innovation and learning include:

- Understanding customers and responding to their needs
- Building and maintaining a network of external business partnerships
- Driving innovation and learning through high-priority initiatives sponsored by senior leaders
- Enabling collaboration and knowledge sharing across the organisation

140 McKinsey & Company 2013, *Extending the LNG boom: Improving Australian LNG productivity and competitiveness.*

141 Companies with top quartile organisational health are 2.2 times more likely than lower-quartile companies to have an above-median EBITDA margin (Earnings before interest, taxes, depreciation and amortisation); 2.0 times more likely to have above-median growth in enterprise value to book value, and 1.5 times more likely to have above-median growth in net income to sales. Organizational Health: the ultimate competitive advantage, *McKinsey Quarterly*, June 2011.

142 Internal alignment comprises the 'vertical' elements: Direction, Leadership and Culture & climate. Quality of execution comprises the 'central' elements: Accountability, Co-ordination and control, Leadership, Capabilities and Motivation. Capacity for renewal comprises the 'horizontal' elements: External orientation, Leadership and Innovation & learning.

Exhibit 25

Low scores for external orientation and innovation & learning mean Australian firms have lower Organisational Health than US counterparts

Australia vs. US average scores (0 = equal to US)

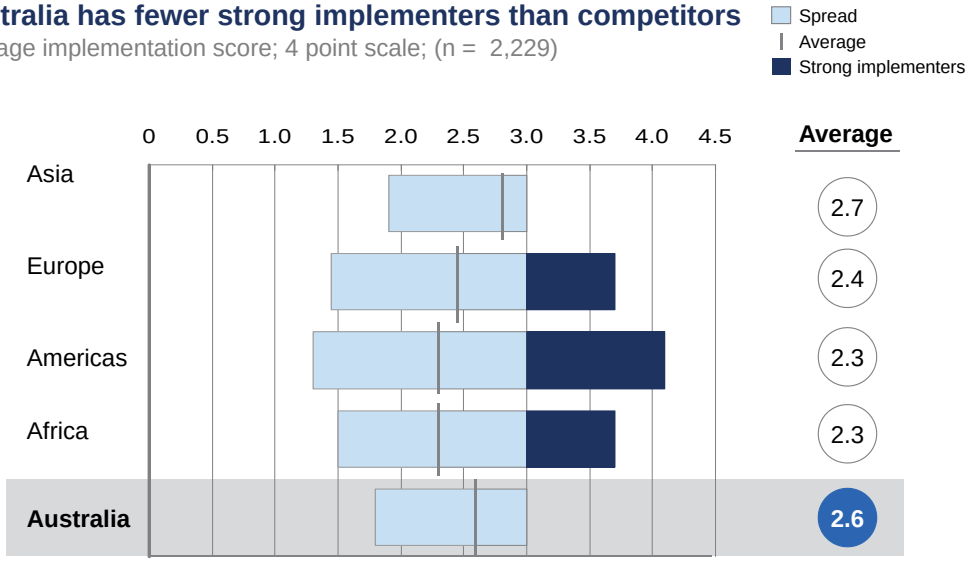
SOURCE: McKinsey OHI database, Australia, N = 18,017 (Data as of March 2014)

Improved implementation capabilities will also be required to ensure firms systematically capture and sustain opportunities identified. On average, Australia's firms have similar implementation capabilities to global competitors. But unlike the Americas and Europe, it has very few who excel (Exhibit 26). McKinsey's Global Implementation Survey revealed that firms with strong implementation capabilities are able to sustain 3.5 times more value from their priority initiatives, and generate 35 percent higher financial returns. Firms with average implementation capabilities only sustain 29 percent of the impact they expected from their priority initiatives after two years.

Exhibit 26

Australia has fewer strong implementers than competitors

Average implementation score; 4 point scale; (n = 2,229)



SOURCE: Global Implementation Survey 2014

Given the innovation imperatives most firms face, developing stronger implementation capabilities will be essential. In particular, firms will need to ruthlessly prioritise and focus on a small number of critical changes, and create very strong ownership of and commitment to these changes, building understanding and alignment at every level of the organisation.

4.4 Labour market structures and skills: create pathways to jobs of the future

Chapter 2 highlighted the fundamental changes in the type of jobs being created in the Australian economy. Production jobs, which are around a third of all jobs, are declining in number – especially in the Transitional sectors. Transaction jobs, which are around 20 percent of all jobs, have not grown. The increasing ability to automate or offshore Production and Transaction jobs means they will remain under pressure. Australia is growing employment in the less tradeable parts of the economy but these are almost all Interaction jobs – jobs with less routine tasks and more individual judgment.

To sustain employment levels and living standards, Australia must address two primary challenges. First, as the mix of jobs and sectors changes, ensuring those in Transitional sectors or job groups that are declining are not left behind. Second, helping young Australians successfully enter a changing job market for the first time.

The most important step is to create new jobs. This is why Australia must address its competitiveness challenge, to create productive new jobs that offer all working-age Australians the opportunity to participate in and benefit from employment.

Australia must create pathways to these jobs of the future. This is particularly the case for workers who have (or would have chosen) production and transaction jobs. The costs of an economy in transition will otherwise fall heavily on the individuals and communities, including manufacturing precincts, where Australia's competitiveness is weakest and trade exposure is highest. This section addresses four imperatives to create these pathways.

1. Create transparency on jobs and training

The labour market is complex, and many participants lack the information they need to make fully informed choices about education, training and careers. The types of jobs available, the skills required, and the appropriate training courses are not easily understood by students and job seekers.

Australia's workforce will consist of an increasing number of Interaction jobs. The increasing prevalence of software, data and analytics means the importance of science, technology, engineering and mathematics degrees will continue to rise, but Australia lags behind many international peers.[143] Interaction jobs don't necessarily imply a university degree. Around half the jobs which will be created by 2017 will not require a degree or diploma.[144] But there will be a significant requirement for more Certificate II-IV level qualifications, and for a focus on interpersonal and problem-solving skills.

At a national level, business, community and political leaders need to explain the fundamental shifts that are occurring in the labour market, and the implications for jobs of the future. This includes reinforcing the importance of education (secondary, tertiary and vocational), explaining that continuing education and reskilling will be ever more important, and explaining and valuing the interpersonal, entrepreneurial and problem-solving skills the workforce of the future will require.

Education providers should be required to provide comparable sets of information that track the job-placement rates and career trajectories of their graduates. This would give potential students a clear sense of what they could expect from their course of study, and would encourage education providers to think more carefully about what they teach and how they connect their students to the job market.

143 McKinsey Global Institute 2012, *The World at Work: Jobs, pay and skills for 3.5 billion people*; Ian Chubb 2013, Launch of the position paper 'STEM in the national interest: A strategic approach' (Speech), <http://www.chiefscientist.gov.au/2013/07/speech-launch-of-the-position-paper-stem-in-the-national-interest-a-strategic-approach/>.

144 McKinsey analysis using Department of Education, Employment and Workplace Relations data.

2. Ensure training and education prepares students for the jobs of the future

One of the barriers to effective education and training is the distance between education providers and employers. Too many graduates believe the course they took did not adequately equip them for work. Too many employers agree.[145] The most successful education-to-employment programs have two common features:

- Education providers and employers engage deeply with each other. Employers help with course design, and offer their employees as faculty. Education providers help students to secure hiring guarantees.

- Employers and education providers work with students early and intensely. The conventional, linear model where enrolment leads to skills, which leads to jobs is replaced by a model where employers commit to hire individuals before they are enrolled in a program to build relevant skills.[146]

To ensure vocational training is effective, some countries match funding or course accreditation to industry needs. In the Netherlands, for example, sector advisory bodies are responsible for determining whether courses meet the needs of industry and whether a course is accredited.

The shift towards Interaction jobs will require a greater focus on 'soft skills'. There is a broad spectrum of skills ranging from personal characteristics (confidence, temperament, work ethic) to social and cognitive skills (communications, problem solving). The challenge for employers and education providers is to be very specific about which ones matter for specific jobs. For a hospitality company, 'teamwork' may really mean tolerant attitudes that enable their staff to interact with a wide range of guests. For an engineering firm, teamwork can mean the ability to think and work in cross-functional teams.[147]

3. Ensure labour market structures allow workers and firms to adapt

Industry sectors and firms face profound changes from global forces like disruptive technologies, globalising supply chains and rapid emerging market growth. The exact sector by sector implications and the timing are difficult to precisely predict. Agility is essential, and firms and employees will need to be able to adapt quickly. In the 1990s, Australia moved to enterprise-level agreements to allow firms and employees greater flexibility to adapt to tariff reductions and microeconomic reform. The importance of flexibility continues to rise as global competition moves to the level of individual jobs. Australian policy makers will need to carefully consider which labour market structures will provide the necessary flexibility for workers and firms.

4. Ensure welfare and taxation arrangements support high participation rates

High rates of participation in the workforce have been an important factor in Australia's recent economic success story.[148] This is the result of a virtuous cycle, where economic growth leads to higher wages and better job prospects, which encourages more people to seek and obtain work. The rise in employment levels creates additional demand, stimulating further economic growth.

As the economic outlook becomes less certain, policy makers need to ensure the incentives created by taxation and transfer arrangements encourage participation, and those at the margins have the support required to enter the workforce.

145 McKinsey Centre for Government, *Education to Employment: Designing a System that Works*; Ian Watson 2008, *Skills in use: labour market and workplace trends in skills use in Australia, Paper presented to Jobs Australia National Conference* 2008; NCVER 2012-2013, *Outcomes of graduates six months after completing their training.*
146 McKinsey Centre for Government, *Education to Employment: Designing a System that Works.*
147 McKinsey Centre for Government, *Education to Employment: Designing a System that Works.*
148 See Chapter 1, and for more detail, McKinsey Global Institute 2012, *Beyond the Boom: Australia's Productivity Imperative.*

□ □ □

In the past decade, extraordinary demand for natural resources has fuelled rapid economic growth. The question of where the next wave of growth will come from is increasingly pressing. As disruptive technologies bring new forms of competition to previously insulated jobs and sectors, the question will become urgent. By continuing to open the economy and making the most of its comparative advantages in resource endowments and a highly skilled workforce, Australian firms can benefit from rapid growth in emerging markets and create new, more productive jobs.

Converting the opportunity to reality will take purposeful action to improve Australia's competitiveness. It will require leadership and advocacy, across the political, business, academic and community spheres, to make clear the competitiveness challenge that Australia faces, and the risks of a painful adjustment if it does not make purposeful choices. It will take courage to focus on Australia's strengths not its vulnerabilities, to argue for a more traded economy not a more isolated one, and for the creation of new jobs to provide all Australians with the opportunity to work and prosper. It will take strong leadership to make the case for continued foreign investment and skilled immigration which have been and will remain critical drivers of Australia's economic performance. It will take policy skill to assess and design regulations and market structures that allow Australian firms to be globally competitive. It will require business leaders to drive productivity and innovation: those facing increased international competition will need to move quickly to reconceive their role in a global market if they are to survive. It will require a workforce with the skills and a labour market with the flexibility to ensure all Australians have the opportunity to work, particularly those in Transitional sectors, in job groups that are declining, and young Australians seeking their first job. It will require firms, entrepreneurs, research institutions, educators and governments to collaborate and seek new opportunities.

By improving competitiveness, Australia can increase its share of existing markets, access new markets and supply new products and services. This will sustain economic growth above the long-term trend, create new jobs and raise living standards. Stronger economic growth and higher employment promote social inclusion and support the provision of social services. Australia has adapted before, but will need to move quickly and purposefully – otherwise there is a risk of a long, painful adjustment. Improving competitiveness now will ensure the Australian economy has the resilience and flexibility to prosper in a world full of opportunity.

Appendix

A. Relative Competitiveness Score methodology
B. Segmentation methodology
C. Job type methodology
D. Sector summaries
E. Economic scenario bookends

A. Relative Competitiveness Score methodology

Many reports and economic analyses focus on the importance of steady increases in productivity as an enduring driver of prosperity – which it is. But when Australian firms compete with international rivals, their ability to win depends on both productivity (the output generated from a set of inputs) and the cost of those inputs. Being ten percent more productive won't help a firm if its inputs are twice the price. We have introduced the Relative Competitiveness Score methodology to bring an analytical lens to this simple proposition. The method, and its limitations, are explained below. We acknowledge these limitations, but we hope it informs an important debate, and encourages others, including government statistical agencies, to capture the data and explore economic analyses to shed further light on the issues of competitiveness, and the disaggregation of value chains.

The Relative Competitiveness Score compares a sector's gross value added (GVA) with its total input costs relative to other countries.[149] The Relative Competitiveness Score can be decomposed into labour productivity and input costs. For all metrics, a score higher than zero indicates that Australia is more competitive, productive, or cost efficient (as the case may be) than the comparison country.

- **Relative Competitiveness Score:** Sector GVA divided by total input costs. Australia's figure is then divided by the comparator country's figure. This metric is also the equivalent of relative sector labour productivity multiplied by relative sector input cost efficiency. See Exhibit 27 for an example of such a calculation in the mining sector.

- **Relative Labour Productivity:** Sector GVA divided by total hours worked. This shows how much output value is attained for one hour of work. Australia's figure is then divided by the comparator country's figure.

- **Relative Input Cost Efficiency:** Sector hours worked divided by total input costs. This shows how many hours of work can be purchased for a set budget. Australia's figure is then divided by the comparator country's figure. For 2005, input costs include labour, capital services (amortisation), and intermediate input costs. For 2012, capital services costs were unavailable for the US, so have not been included in the trend.

Taking the EU KLEMS 2005 competitiveness as a starting point, we analysed the competitiveness trend of each country using 2005 and 2012 data from the United States Bureau of Economic Analysis and the Australian Bureau of Statistics.[150] Applying the relative improvement in labour productivity and input costs for each country to the starting point provides the 2012 Relative Competitiveness Score.[151]

149 GVA is the value of output at basic prices minus the value of intermediate consumption at purchasers' prices. GVA plus taxes and statistical discrepancy provide gross domestic product.
150 Australian Bureau of Statistics 5260 and 5204. The extrapolation is slightly less accurate as it does not include capital services costs (amortisation). This data was unavailable for the US.
151 This extrapolation approach was used as more recent data for Australian costs was unavailable, so could not be compared directly with the US. Instead, to provide a 2005-2012 comparison, an index of intermediate inputs and the cost shares of intermediate and labour inputs from ABS 5260 were used.

Exchange rate effects do not affect the Relative Competitiveness Score. Because the metric is a comparison of GVA/Input Cost, any exchange rate applied would affect both the numerator and the denominator – and be cancelled out. Exchange rate will affect the mix of whether competitive strength comes from productivity or input cost efficiency, but not the final competitiveness result.

There are several technical limitations to our analysis:

1. **Sector groupings.** The challenge of finding comparable data means that our sector groupings are broad, and competitiveness can vary within subsectors or within parts of the value chain.[152]

2. **Intra-sector productivity and cost differences.** Individual firms have very different levels of productivity and cost, so uncompetitive sectors can also include competitive firms.

3. **Choice of benchmark.** While the US is a good yardstick for the production possibility frontier for developed nations, it is not always the most relevant competitor for a particular sector or subsector. However, we measured Australia's Relative Competitiveness score against other developed economies and found similar results.

4. **Partial productivity measures.** The productivity measure focuses only on labour productivity, rather than total factor productivity. Labour productivity measures the value created from an hour's input of labour, while multifactor productivity measures the value created from a combination of labour, capital, and materials inputs. While the use of cost efficiency to contribute to competitiveness will partially offset this, multifactor productivity remains a more accurate method of evaluation. For example, where capital has been used heavily to improve output (through greater mechanisation), labour productivity will look better than where more labour is used to create the output. For example, Agriculture's Relative Competitiveness Score appears higher than the US; although Australia's multifactor productivity has been found to be lower.[153] This is due to Australia's higher reliance on capital and lower capital productivity. However, very little data exists across countries to measure relative multifactor productivity, driving our choice of labour productivity as the metric. Furthermore, in some sectors, such as financial services, it is difficult to get a robust estimate of productivity.[154]

5. **Exchange rates.** We cannot completely incorporate the effect of exchange rates. Our data sources provide costs and revenues in local currency only. As a result, if firms in some industries have a different mix of local and international currency in their cost and revenue base, this could inflate or deflate their competitiveness score. However, this is unlikely to significantly affect the results given that the Relative Competitiveness Scores from 2005 closely mirror the 2012 results despite the significant inflation of the exchange rate in the same period.

6. **Measurement error.** Some of the cost estimates are subject to measurement error. Specifically, the core data used in this analysis was based on a detailed sector analysis in 2005, which we then extrapolated to today based on subsequent movements in costs across countries.[155] However, the share of total sector costs is based on the 2005 data and this may have changed over this time in response to price, technological and market developments (e.g. rising energy prices could have led to significant improvements in energy productivity, resulting in energy use becoming a smaller share of the overall sector cost base) and as such, these movements in individual cost categories may not mirror overall changes in sector costs.

152 Broad industry classifications like 'manufacturing' encompass a range of different products – whether cost-competitive products like commodities or differentiated products like smartphone devices and apparel – and segments of the value chain – from design and engineering, through to production and after-sales service. Similarly, comparable data on important exports education and tourism were not available, although we do make some specific observations on the competitiveness of the education sector in Chapter 3.

153 Department of Agriculture, Fisheries and Forestry, 2013, *Comparing agricultural total factor productivity between Australia, Canada and the United States*.

154 Specifically, the GDP contribution of financial services is measured indirectly and is strongly influenced by the margin between average bank lending and borrowing rates, which changed significantly during the financial crisis, and therefore makes it difficult to do meaningful country comparisons.

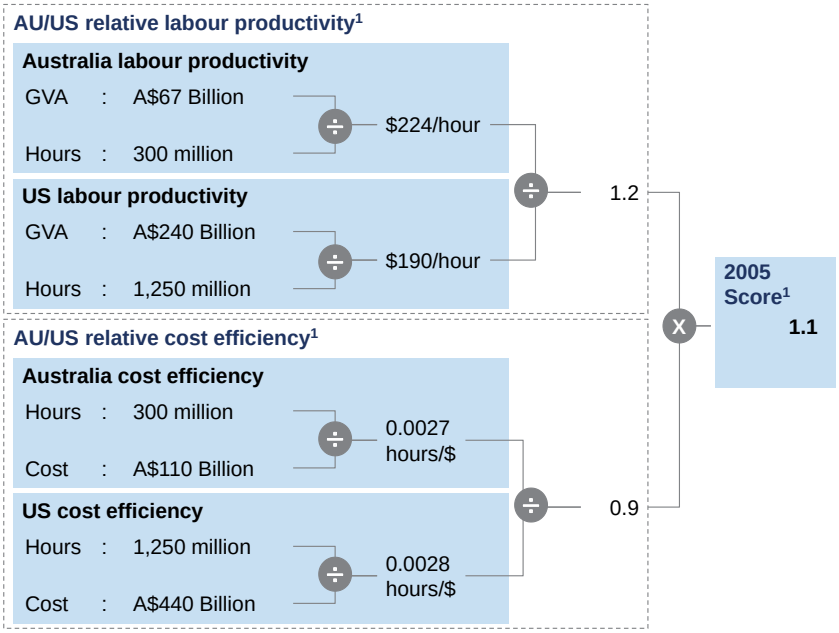
155 For a detailed discussion of this database, see Mary O'Mahony and Marcel P. Timmer, 'Output, input and productivity measures at the industry level: The EU KLEMS database', *The Economic Journal*, June 2009.

Some reviewers have asked whether the final score, which combines labour productivity and relative input cost efficiency, could be interpreted as a measure of disintermediation. More specifically, if companies have moved to outsourcing a large share of their activities, then this will reduce value-added in the sector and may result in the competitiveness score being biased downwards. We do not believe this to be the case. The labour productivity and cost measures adjust for such changes in production decisions and the only impact will be if these changes result in changes in efficiency – which is something we are keen to measure in our competitiveness assessment. For example, if firms in a given sector move towards outsourcing more of their intermediate inputs, then this will reduce value added attributed to the sector (provided those inputs are produced by firms classified in a different sector), but it will also reduce the number of employees required by those firms which have outsourced some of their inputs. Hence, labour productivity in the sector will only be impacted if there are efficiency savings that come from this disaggregation. For example, if this allows a company to focus more on higher value-added activities, then overall labour productivity should increase. This is indeed something we are keen to measure. The same logic applies to cost efficiency. If the intermediate inputs can be purchased more cheaply than they were previously produced in-house, then this will result in an improvement in cost efficiency.

Exhibit 27

Example calculation: Mining and extraction, 2005

From inputs



1 Final scores have been rebased so that 0 = equal to comparator country, by deducting 1 from the index

Note: Includes mining and oil and gas

B. Segmentation methodology

Exhibit 28

Australia's competitiveness segments

We used three lenses to distinguish sectors into segments.

The first is **trade intensity and input value**. Trade intensity – measured by the value of exports plus imports over 'total uses', the total value either produced in Australia or imported – shows the extent to which a sector is currently exposed to international competition. Although almost all industries are subject to some degree of trade, and will increasingly be so, there are some industries for which trade is an ever-present part of doing business. Sectors with lower trade exposure are considered the primarily domestic sectors. Within this group, the Enabling Industries and the Domestic Core were differentiated to understand which sectors form a 'back line' to Australia's highly traded industries. Input value is used to understand this. Input value is the percent of traded industry inputs provided by a particular sector.[156] Utilities have also been considered an Enabling Industry because, despite having low overall input value, they are critical to many of Australia's most highly traded sectors, such as energy-intense manufacturing.

The second lens is **competitiveness**, using our Relative Competitiveness Score as well as overlaying market share growth and import to export ratio. This complements the final lens, **fit with natural endowments**, to determine whether a trade intense sector is an Advantaged Performer, a Latent Potential, or a Transitional.

Endowments are features which are difficult to replicate in a short time period, and which provide Australia with a competitive advantage in certain industries. Australia's key natural endowments are its arable land, its natural resources for mining and extractive industries, and its natural beauty, as well as its broad pool of skilled labour. Australia has the most arable area per capita, globally important reserves in commodities like iron ore, coal and gas, and ranks second behind only Brazil in natural tourism resources.[157] Moreover, Australia's depth of skilled labour is well above average: 44 percent of Australians have high-level problem solving proficiency versus 34 percent in the US.[158]

156 Given the rapidly changing nature of which sectors are trade-exposed, traded industries inputs include all but a few sub-sectors. These sub-sectors have been ruled out as they have extremely low trade exposure globally and are likely to continue that low exposure. For example, printing services are almost never exported. Utilities have also been ruled out as Australia's distance from other nations makes it very difficult to trade to or from Australia.

157 WEF 2013, *Travel and Tourism Competitiveness Index*; IMD 2013, *World Competitiveness Yearbook*; USGS; BP 2013, Statistical Review of World Energy.

158 OECD 2013, *Skills Outlook*, Table A2.10a; high proficiency refers to the top two of five levels.

Exhibit 29

Sorting Australia's economy

Role	Sector	Trade intensity Percent	Input value Percent	Competitiveness (2012) Index to US	Alignment with advantages: Natural endowment	Alignment with advantages: High skills % of work
Advantaged Performers	Agriculture	15	4	0.8		7
	Mining and extraction	61	7	0.2		11
	Tourism	N/A	N/A	N/A		N/A
	International education	N/A	N/A	N/A		N/A
Latent Potentials	Food and beverage manufacturing	31	3	-0.1		11
Transitionals	Basic manufacturing	35	5	-0.1		11
	Advanced manufacturing	66	4	-0.1		11
	Commodities processing	46	12	-0.1		11
Enabling Industries	Construction	0	9	-0.4		5
	Utilities	0	2	-0.5		11
	Logistics	21	7	-0.2		9
	Finance[1]	2	8	0.1		32
	Real estate services	3	7	-0.4		32
	Professional services	6	17	-0.4		26
Domestic Core and Public	Communications	10	4	-0.2		9
	Wholesale and retail trade	5	4	-0.1		9
	Domestic services	11	5	-0.3		17
	Public services	2	2	N/A		39

1 Traditional productivity comparisons in the finance sector are difficult due to complexities measuring sector GVA

SOURCE: ABS 5209; EU KLEMS

C. Job type methodology

There are three key job types:

- **Interaction:** Involves a high level of contact and collaboration with other people, creativity and independent problem solving to respond to complex situations. Requires interpersonal, entrepreneurial, and problem-solving skills. Includes professionals such as doctors and lawyers, as well as lower-complexity service jobs, such as nursing home aides, corrections officers, and teaching assistants.

- **Production:** Involves the conversion of materials into finished products in a routinised way. Requires physical mobility, and precision at following rules. Includes low-complexity jobs such as food preparation, and higher complexity tasks such as semiconductor equipment manufacturing.

- **Transaction:** Involves exchanges that are rules-based, and can be scripted, routinised, or automated. Requires precision at following rules, and reliability at delivering a standardised product or service. Includes cashiers, toll booth operators and bank tellers, as well as higher-complexity jobs such as accountants, programmers, and medical technicians.

To estimate Australian job type dynamics to date, we classified the Australian Bureau of Statistics' eight standard job categories into the three job types, based on the primary function of each job category. As with sector-level analysis, this provides high-level results without showing the full detail at a granular level. For example, while sales jobs have been classified into transaction tasks – as the primary function is one that can be scripted – there may be differing levels of complexity and problem solving in individual positions. Similarly, technicians often have to engage in complex problem solving to diagnose and address mechanical issues. However, our findings indicate the same trend which has been experienced across developed economies: interaction jobs are on the rise, while production and transaction jobs are at risk, and are already declining.

Australian Bureau of Statistics classification mapping:

- **Interaction:** Managers, professionals, community and personal service workers.
- **Production:** Technicians and trades workers, machinery operators and drivers, labourers.
- **Transaction:** Clerical and administrative workers, and sales workers.

D. Sector summaries

Broadly, our sector classifications follow the ABS industry sector groups. However, we have made some alterations where we believe that the dynamics of particular industries are very similar or dissimilar to the rest of the ABS category.

Our 17 sectors correspond with ABS categories in the following way:

- **Agriculture:** Agriculture, forestry and fishing
- **Mining and extraction:** Coal mining, iron ore mining, oil and gas, mining services
- **Tourism and international education:** Gathered from multiple other sectors in Tourism Satellite Account. See below for methodology
- **Food and beverage manufacturing:** ABS manufacturing subcategory food, beverage and tobacco products
- **Basic manufacturing:** ABS manufacturing subcategories textile, clothing and other, wood and paper products, printing and recorded media, and non-metallic mineral products
- **Commodities processing:** ABS manufacturing subcategories petroleum, coal, chemical and rubber products, and metal products
- **Advanced manufacturing:** ABS manufacturing subcategory machinery and equipment manufacturing
- **Construction:** Construction
- **Utilities:** Electricity, gas, water and waste services
- **Logistics:** Transport, postal and warehousing
- **Finance:** Financial and insurance services
- **Real estate services:** Rental, hiring and real estate services
- **Professional services:** Professional, scientific and technical services, and administrative and support services
- **Communications:** Information media and telecommunications
- **Wholesale and retail trade:** Wholesale trade and retail trade
- **Domestic services:** Accommodation and food services, arts and recreation services, other services
- **Public services:** Healthcare and social assistance, public administration and safety, and education and training

Tourism is not a sector in most of the ABS classifications. Nevertheless, tourism GVA and employment have been provided in the Tourism Satellite Account of the ABS National Accounts, and

have been mapped to the sectors they are usually counted in. As such, the GVA and employment for tourism has been subtracted from these sectors. For exports, the sector origin has not been allocated. To determine how much to subtract from each sector, a figure has been estimated in proportion to the size of exports for each sector which contributes to tourism GVA. So, as logistics exports are 8 percent of the total exports for that group, it has been allocated 8 percent of tourism export value.

Exhibit 30

Economic role

Top third · Bottom third

Segment	Sector	Gross value add $b	Gross value add 2008-13 CAGR %	Employment '000	Employment 2009-12 CAGR %	Exports $b	Exports 2008-13 CAGR %	Trade intensity %	Productivity $/hour	Productivity 2008-13 CAGR %	Import-ance to industry %	Ratio of interactions jobs %	Ratio of interactions jobs 2008-13 bps
Advantaged performers	Agriculture	32	2.9	319	0.5	18	14.8	15	59	4.4	4	59	-1.4
	Mining and extraction	149	6.4	275	12.7	134	12.9	61	282	-3.4	7	29	1.0
	Tourism	33	3.6	520	1.4	33	3.1	91	41	2.1	N/A	50	N/A
Latent potentials	Food & beverage manufacturing	24	0.1	219	-1.0	19	2.8	31	65	1.3	3	27	4.4
Transitionals	Basic manufacturing	21	-4.8	280	-3.7	6	0.0	35			5		
	Advanced manufacturing	22	0.9	210	-0.3	16	-1.5	66			4		
	Commodities processing	36	-1.5	229	-1.1	46	-0.9	46			12		
Enabling industries	Construction	116	3.7	1,038	2.0	<1	7.1	<1	65	2.4	9	15	1.9
	Utilities	38	1.4	157	2.7	<1	N/A	<1	145	-3.2	2	34	7.5
	Logistics	66	2.2	530	0.7	1	-2.5	21	72	1.7	7	20	1.9
	Finance	121	1.7	420	1.7	3	0.0	2	180	1.5	8	55	-0.9
	Real estate services	39	3.6	196	1.9	<1	N/A	3	119	3.6	7	28	0.1
	Professional services	143	3.3	1,255	7.4	14	0.9	6	70	0.6	17	67	2.5
Domestic core	Communications	41	0.8	194	0.4	1	0.9	10	125	2.8	4	60	5.4
	Wholesale and retail trade	127	2.2	1,552	2.0	<1	N/A	5	57	2.5	4	35	2.2
	Domestic services	58	-0.1	1,178	4.2	<1	4.6	11	37	0.1	5	45	1.8
	Public services	241	3.2	3,037	2.8	1	1.3	2	57	0.3	2	73	0.1

Exhibit 31

Competitiveness

Top or >0 · Bottom 6 or <0

Segment	Sector	X:M ratio Index	X:M ratio 2008-13 bps	Export market share %	Export market share 2005-10 bps	Relative Competiti-veness Score Index	Relative Competiti-veness Score 2005-12 bps	Relative Input Cost Efficiency Index	Relative Input Cost Efficiency 2005-12 bps	Relative Labour Productivity Index	Relative Labour Productivity 2005-12 bps
Advantaged performers	Agriculture	13.7	5.9	3.2	-0.4	0.8	0.0	0.0	-0.6	0.9	0.8
	Mining and extraction	5.6	1.7	11.4	5.4	0.2	0.1	-0.2	0.1	0.4	0.2
	Tourism	1.0	-0.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Latent potentials	Food & beverage manufacturing	1.6	-0.2	2.0	-0.7	-0.1	-0.0	0.1	-0.3	-0.2	0.1
Transitionals	Basic manufacturing	0.2	-0.0	0.3	-0.1						
	Advanced manufacturing	0.2	-0.0	0.2	-0.0						
	Commodities processing	0.7	-0.2	1.1	0.1						
Enabling industries	Construction	N/A	N/A	0.1	-0.1	-0.4	-0.1	-0.6	-0.3	0.4	0.5
	Utilities	N/A	N/A	1.2	0.3	-0.5	-0.5	0.1	-0.6	-0.5	-0.1
	Logistics	0.3	-0.0	0.6	-0.5	-0.2	0.0	-0.2	-0.2	-0.0	0.2
	Finance[1]	0.9	-0.0	0.3	-0.3	0.1	0.1	-0.1	-0.3	0.2	0.4
	Real estate services	N/A	N/A	N/A	N/A	-0.4	-0.2	-0.2	-0.4	-0.2	0.1
	Professional services	0.7	-0.1	1.8	0.3	-0.4	-0.0	-0.3	-0.2	-0.2	0.2
Domestic core	Communications	0.2	-0.0	1.1	0.1	-0.2	0.0	-0.2	-0.2	-0.0	0.2
	Wholesale and retail trade	N/A	N/A	N/A	N/A	-0.1	-0.0	-0.2	-0.5	0.0	0.4
	Domestic services	0.2	-0.3	2.3	0.4	-0.3	-0.1	-0.4	-0.4	0.1	0.4
	Public services	1.0	-0.2	0.5	-0.0	N/A	N/A	N/A	N/A	N/A	N/A

1 Traditional productivity comparisons in the finance sector are difficult due to complexities measuring sector GVA

Key terms: Economic role

Measure	Description/ significance	Methodology	Source
GVA	Indicator of wealth creation	Chain volume measure taken from ABS data, 2013	ABS 5206
Employment	Indicator of Australian jobs	Total employment. 2013 figure from Department of Employment, 2009–12 CAGR from ABS Data availability of subsector level drove choice of data differentiation	Department of Employment; ABS 8155
Exports	Indicator of export value	Export goods and services from ABS classified into most closely resemblant category, 2013	ABS 5368
Trade intensity	Value of exports and imports divided by total uses	Used exports, imports and total uses at subcategory level from input-output tables, 2010. Not adjusted for tourism	ABS 5209
Productivity	Indicator of value to Australian economy of each job	Total GVA divided by total hours worked (quarterly actual hours extrapolated to annual). Adjusted for tourism (tourism hours per person assumed to be same as average economy)	ABS 5206; ABS 6291
Importance to industry	Indicator of consumption by other industries	Used input/output tables to determine percent of traded industry consumption which came from each sector, 2010. Traded industry selection described in Appendix B. Not adjusted for tourism	ABS 5209
Ratio of interactions jobs	Indicator of future competitive resilience of jobs	Classified occupations from ABS into job types, as described in Appendix C	ABS 6291

Key terms: Competitiveness

Measure	Description/ significance	Methodology	Source
X:M ratio	Indicator of how competitive export goods are compared with imports	Total exports divided by total imports 2013	ABS 5368
Export market share	Indicator of how significant Australian goods are globally	Australian exports divided by total world exports used OECD STAN goods exports and ITC, UNCTAD, WTO Joint Dataset for services exports, 2010. Not adjusted for tourism	OECD STAN Database; ITC; UNCTAD, WTO Joint Dataset
Relative competitiveness score	Indicator of how competitive Australia is compared with US	Detailed in Appendix A. Not adjusted for tourism	EU KLEMS; ABS 5260; Bureau of Economic Analysis
Relative input cost efficiency	Indicator of how costly Australia is compared with US	Detailed in Appendix A. Not adjusted for tourism	EU KLEMS; ABS 5260; Bureau of Economic Analysis
Relative labor productivity	Indicator of how productive Australia is compared with US	Detailed in Appendix A. Not adjusted for tourism	EU KLEMS; ABS 5260; Bureau of Economic Analysis

E. Economic Scenario bookends

The scenarios in Chapter 1.4 are intended to illustrate the difference between possible outcomes. They are not forecasts, and are not the result of detailed economic modelling. They include only the primary impact of the factors adjusted, and do not include any dynamic equilibrium adjustment for second-order effects or other economic factors. As such, we describe them as 'bookends' – they illustrate the range of potential outcomes under some simple changes in assumptions about the number and type of jobs per sector (and hence different labour productivity).

The base case was developed from Department of Employment forecast of number of employees and segment mix in 2018, using the average growth rate for each segment to extrapolate to 2020. This results in 12.8 million jobs in 2020. For the 1.1 million additional employees it predicts, there is a clear shift towards domestic sectors – with an incremental 800,000 jobs – and away from manufacturing (which loses 56,000 jobs) and other tradeable sectors (which only grows by 30,000 jobs).

The 'purposeful approach' bookend assumes that participation and employment rates stay at the average from 2000–2013, applied to the ABS forecasts of working age population. This leads to roughly 70,000 extra workers compared with the base case in 2020. However, instead of moving to domestic sectors, the job shift is slightly more weighted to tradeable sectors, excluding manufacturing. As a share of the economy, the remaining tradeable sectors (agriculture, mining, and tourism and international education) reach each of their peaks from the past 5 years; a total of 12.1 percent of the economy (compared with 8.9 percent in the base case). The resulting 400,000 incremental jobs in the tradeable sectors provide a substantial uptick in Australia's productivity.

The 'painful adjustment bookend' assumes that participation and employment revert to the 1990–2000 average, the equivalent of roughly 600,000 fewer jobs than in the base case. In addition, the shift towards domestic sectors is slightly accelerated, as the tradeable sectors (again excluding manufacturing) revert to their lowest share of jobs from the past 5 years; a total of 8.7 percent of the economy. This results in ~80,000 fewer jobs in the export sectors compared with base case, ~50,000 fewer than today's levels.

GVA from ownership of dwellings has been excluded from the analysis, and taxes contributing to GDP have been assumed to remain the same. All cases assume that underlying productivity growth in each sector remains at Australia's past 20 year average.

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