

Chapter 1

Improving productivity in New Zealand's economy

New Zealand ranks highly on most indicators of well-being, but incomes are below the OECD average due to low labour productivity. Low labour productivity is only partly explained by the industry composition of the NZ economy and is primarily a consequence of sustained low multi-factor productivity growth within industries, as well as weak investment. Economic geography is an important factor in New Zealand's poor productivity performance, as the small size and remoteness of the economy diminish its access to global markets, the scale and efficiency of domestic businesses, the level of competition, and the ability to benefit from innovation at the global frontier. Policy and institutions are generally supportive of productivity growth, but there are a number of areas where there is scope for reforms that would help offset the country's geographical disadvantages and improve the welfare of New Zealanders over the coming decades. This includes promoting international connections, removing barriers to fixed capital investment (including taxation), accessing benefits from agglomeration by improving urban planning and infrastructure provision, enhancing competition and increasing investment in innovation and intangibles.

Productivity growth will be a central determinant of the welfare of New Zealanders over the coming decades. Globally, productivity is expected to be the main driver of incomes, in particular via investment in technology and knowledge-based capital. Economic growth from productivity improvements contributes to welfare through increasing the income that can be earned from each hour worked, providing individuals with the option to work less or consume more goods and services. It also allows societies to honour implicit commitments to the elderly in the form of pensions, to those on low incomes in terms of avoiding poverty and to youth by way of investments in high-quality education.

Productivity growth is particularly important for New Zealand, as this is one dimension where it compares unfavourably with leading OECD countries. As described elsewhere in this Survey, New Zealand has robust institutions, good governance, generally strong policy settings, a stable macroeconomy and a world-class education system that contributes to strong human capital and workforce skills. Rare exceptions to New Zealand's success are household disposable incomes that are below the OECD average, and work/life balance, where an above-average share (14%) of New Zealanders works very long hours (OECD, 2016a), although on average employees in New Zealand work similar hours to their OECD counterparts. Despite high labour utilisation, reflecting high participation and low unemployment, GDP per capita is below the OECD average due to low productivity.

This chapter seeks to synthesise and build on the literature explaining New Zealand's poor productivity performance – including the 2009 Survey – to develop a set of specific policy recommendations that could improve its future productivity growth. The focus of this chapter is on business-sector productivity, where market forces work to align production with consumer demands. Productivity is a key determinant of the efficiency with which consumer demands are met. Efficiency of services delivery in the non-market sector is also critical to New Zealand's economic performance, but this is not covered herein. Synergies between boosting productivity and improving inclusiveness are highlighted, as there are opportunities to address inequality and weak productivity growth through win-win policies that deliver improved inclusiveness as well as productivity growth (OECD, 2016b).

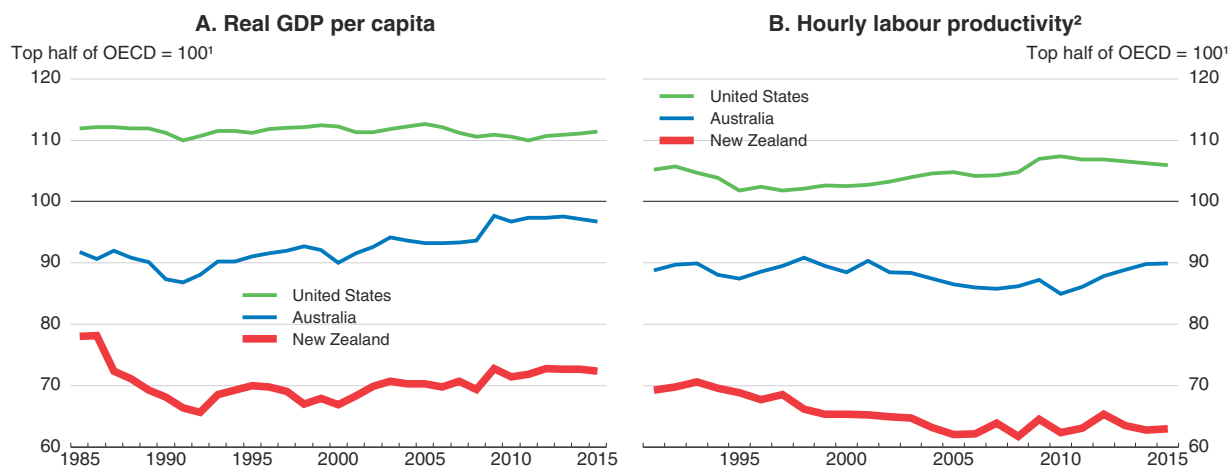
New Zealand's productivity performance in an international context

From the late 19th century until the mid-20th century, New Zealand was consistently among the three or four richest countries in the world by GDP per capita. This performance was underpinned by rents from the agricultural sector. Following the Great Depression, NZ governments adopted protectionist policies, including import tariffs, quotas and capital controls, while labour market flexibility was constrained by legislative requirements for centralised wage bargaining. These policies undermined the efficiency with which resources were allocated and made the economy less resilient in the face of shocks. New Zealand's GDP per capita ranking fell from 3rd highest in 1960 to 9th highest in 1970 (Maddison, 2001). The country's economic performance deteriorated further in the 1970s following the first oil

shock and the loss of New Zealand's major export market for agricultural products following the entry of the United Kingdom into the European Union, taking New Zealand's GDP per capita ranking down to 17th. Moreover, government debt and foreign debt began rising rapidly. To enhance long-term economic performance and economic resilience, major economic reforms were implemented from the mid-1980s to the mid-1990s, inflation was brought under control, and government debt as a share of GDP set on a steep downward path. These measures, which met OECD 'best practice', stopped the decline in New Zealand's GDP per capita ranking but did not reverse it.

GDP per capita has increased since 2010 relative to the top half of OECD countries, but only due to relative increases in hours worked (Figure 1.1). Labour productivity (as measured by GDP per hour worked) has remained flat relative to leading OECD countries since the mid-2000s. Sluggish multi-factor productivity (MFP) growth has been the main contributor to poor labour productivity growth over the last two decades, with the rate of capital deepening close to the OECD average (Figure 1.2).

Figure 1.1. GDP per capita and hourly labour productivity



1. Population-weighted average for the top 17 OECD countries, calculated using 2010 purchasing power parity exchange rates.

2. Labour productivity is measured as GDP per hour worked.

Source: OECD (2017), *Economic Policy Reforms: Going for Growth 2017*.

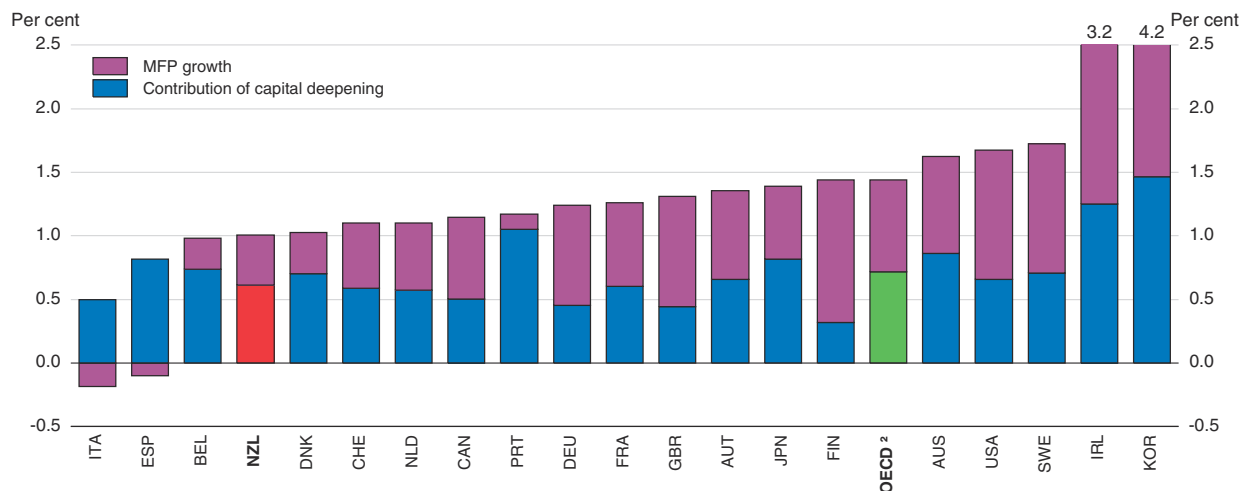
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While recent sluggish labour productivity growth is due primarily to slow MFP growth, persistent softness in investment is also a factor in New Zealand's low level of labour productivity (Box 1.1). Non-residential capital formation per capita was below 60% of the OECD average in the late 1990s and remains below 75% of the OECD average (Figure 1.3). Although it is difficult to compare capital stocks across countries directly due to different measurement approaches, sustained weak investment suggests that capital stocks are low in New Zealand compared with OECD peers. Strong growth in NZ employment over recent years means that investment would need to be even higher than elsewhere in order to achieve the same trajectory of the capital-labour ratio. Weak investment and MFP are linked, as low MFP reduces the incentive to invest and improvements in technology are often embodied in capital goods.

New Zealand's low productivity is only partly explained by the industry composition of the economy. If it maintained the same level of labour productivity by industry but had

Figure 1.2. **Labour productivity growth decomposition**

Total economy, average annual growth rate, 1995-2015¹



1. 1996-2015 for Austria; 1995-2014 for Australia, Ireland, Japan, Portugal and Spain.

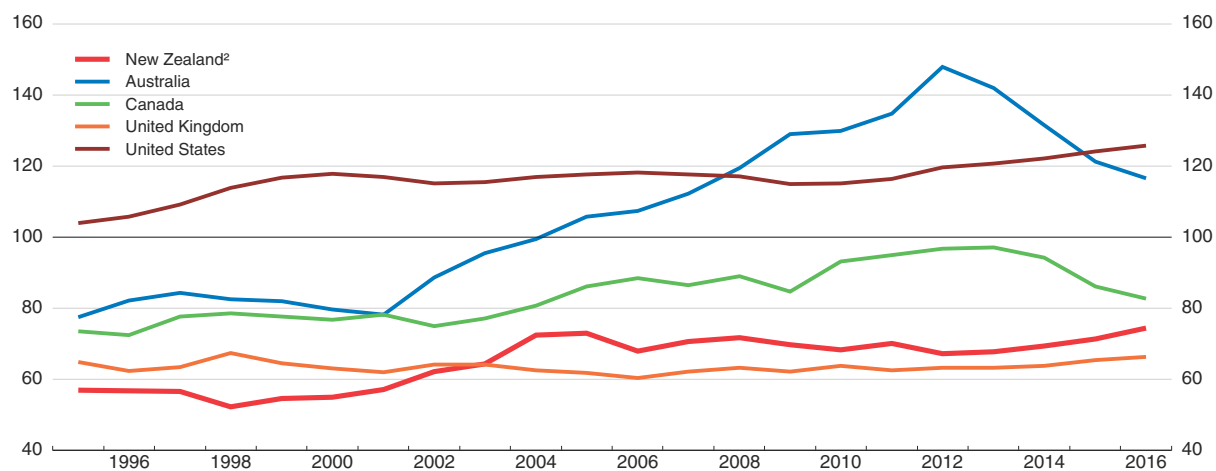
2. Average of the 20 countries for which data are available.

Source: OECD (2017), Productivity Database.

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Figure 1.3. **Gross fixed non-residential capital formation**

Per person in the labour force, OECD = 100¹



1. Data for gross non-residential capital formation are in current prices and were converted into a common currency using 2010 purchasing power parity exchange rates. The labour force includes only people aged 15-64. Data for the OECD exclude Chile, the Czech Republic, Estonia, Greece, Hungary, Iceland, Israel, Latvia, Luxembourg, Mexico, Norway, the Slovak Republic, Slovenia and Turkey.

2. Excluding investment related to the Canterbury earthquake rebuild.

Source: OECD, Economic Outlook and Labour Force Statistics Databases; A. Wood et al. (2016), "The Canterbury Rebuild Five Years on from the Christchurch Earthquake", RBNZ Bulletin, Vol. 79, No. 3, February.

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an industry structure that matched the average across the top half of OECD countries (excluding Iceland, Switzerland and the United States, for which data are unavailable), then aggregate labour productivity in New Zealand would be only around 3% higher. It would still lag the top half of OECD countries by more than 35%. However, changes in industry shares have affected the rate of productivity growth, as between 1990 and 2005 New Zealand experienced a stronger-than-average movement of employment from high to low labour productivity industries, notably a faster decline in the employment share of some relatively high productivity industries (electricity, gas, water and wastewater services; transport, storage and communications; and finance and insurance) and a slower decline (agriculture) or faster growth (education) in the employment share of some relatively low productivity industries (Meehan, 2014). Between 1996 and 2015, labour productivity grew around 50% more quickly in the traded than the non-traded sector (based on the sectoral definition in Mano and Castillo (2015)). The rate of productivity growth has slowed more in the traded sector since the global financial crisis, resulting in similar labour productivity growth across traded and non-traded sectors between 2008 and 2015.

Comparing New Zealand's labour productivity with Australia's is instructive, as both countries face similar challenges associated with remoteness from global markets, a factor that is a major contributor to New Zealand's weak productivity performance (Conway, 2016; McCann, 2009). Weak productivity in construction and finance and a smaller and less productive mining industry are the biggest drivers of the gap in productivity between New Zealand and Australia (Box 1.2). Lower productivity (by between 20% and 50%) in several of the biggest industries in New Zealand – including manufacturing, retail and wholesale trade – is also a factor.

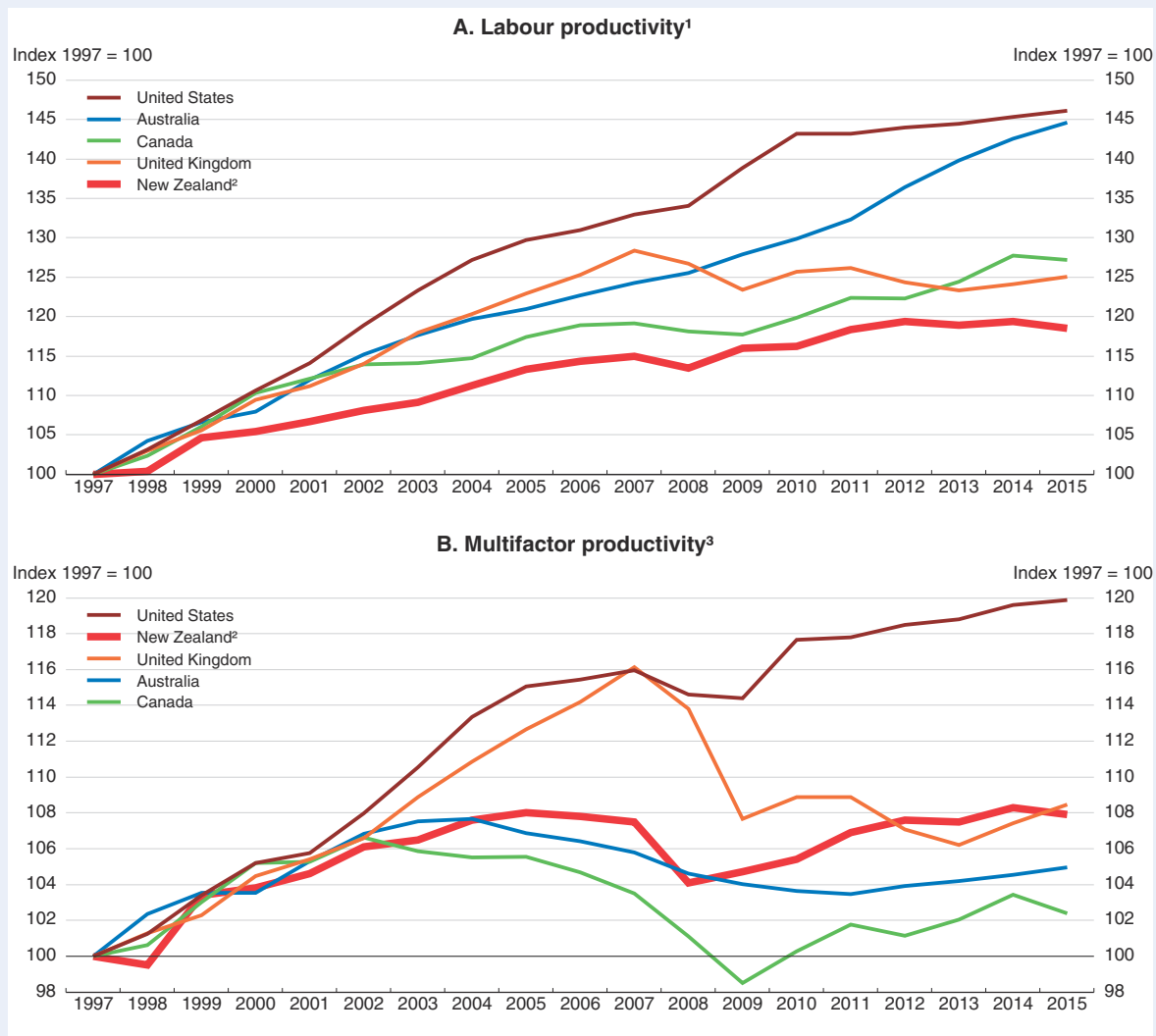
Box 1.1. **Cross-country comparison of business sector productivity**

Data on business sector productivity growth from national statistical agencies exclude productivity growth in non-business sectors such as health care and education, where measuring output is much more difficult. These data suggest that a lack of capital deepening in New Zealand was a key factor in its weak labour productivity performance since 1997 (Figure 1.4). MFP growth lagged well behind the United States, but was comparable to Australia, Canada and the United Kingdom. However, these data must be interpreted with care due to different approaches across statistical agencies.

- For New Zealand, productivity measures are based on hours paid rather than hours worked. This could affect estimates where non-paid overtime, holidays and sick leave grow at a different rate to hours paid. The choice of labour input measure can have a significant effect on productivity estimates (Statistics New Zealand and Treasury, 2010), but, in practice, hours paid and hours worked grew at similar rates during the early 2000s (Statistics New Zealand, 2010).
- Capital input estimates are based on country-specific assumptions about asset lives and depreciation profiles. There can also be differences in the assets included. For example, Statistics New Zealand includes residential buildings, land, inventories, livestock and timber in asset definitions, whereas these are all excluded from OECD productivity estimates. Capital inputs to calculate MFP for Australia and the United Kingdom exclude residential buildings.

Box 1.1. Cross-country comparison of business sector productivity (cont.)

Figure 1.4. Productivity trends in the business sector




1. Based on hours worked.

2. Year ended 31 March of the ensuing year.

3. Based on quality adjusted hours worked/composition-adjusted productivity.

Source: Australian Bureau of Statistics, Cat. 5260.0.55.002, Table 2; Statistics Canada, Table 383-0021; Statistics New Zealand, Productivity Statistics, Table 3.01; UK Office for National Statistics, Multi-factor Productivity Estimates: Experimental Estimates to 2015; US Bureau of Labor Statistics, Net Multifactor Productivity and Costs, 1987-2015.

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Box 1.2. Industry-level comparison of labour productivity in New Zealand and Australia

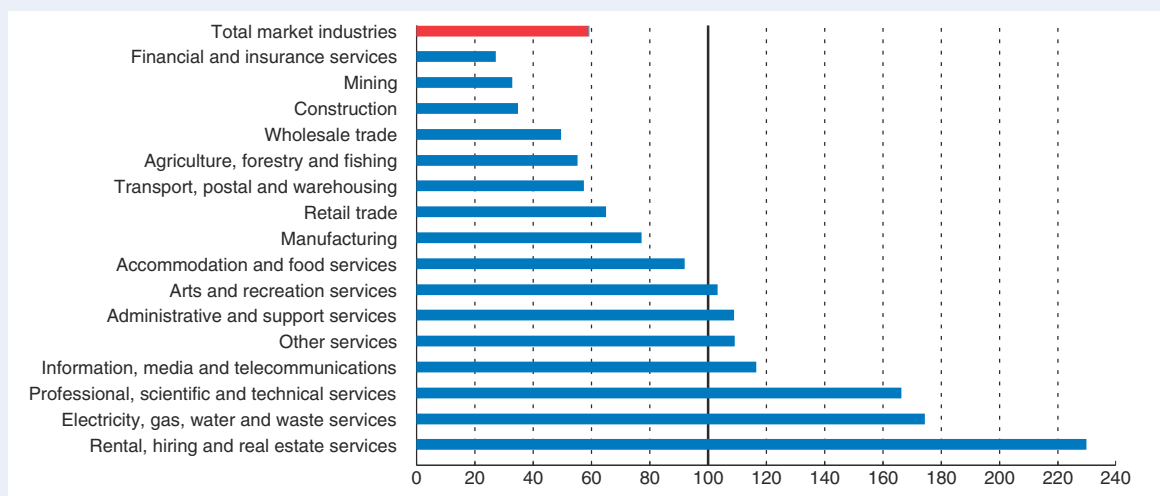
Mason (2013) undertook a shift-share analysis to decompose the gap in labour productivity (LP) between New Zealand and Australia in 2009. Lower productivity in New Zealand was separated into a component due to gaps in labour productivity within each industry i and another due to differences in employment share (S) by industry:

$$LP^{AUS} - LP^{NZL} = \frac{1}{2} \sum_i (LP_i^{AUS} - LP_i^{NZL}) (S_i^{AUS} + S_i^{NZL}) + \frac{1}{2} \sum_i (S_i^{AUS} - S_i^{NZL}) (LP_i^{AUS} + LP_i^{NZL})$$


In Figure 1.5, labour productivity and employment shares by industry have been updated to 2015 using growth rate data, retaining the same base year for industry-level output purchasing power parity exchange rates in the absence of more recent data. This analysis shows that differences in industry structure explain about one third of the labour productivity gap between the market sectors of the Australian and NZ economies in 2015, or 13 percentage points of the 40% gap in market sector productivity (Table 1.1). Differences in productivity due to industry structure are primarily explained by the large mining industry in Australia, but also its larger electricity, gas, water and waste services industry, as both of these industries have higher-than-average productivity.

Figure 1.5. **New Zealand labour productivity relative to Australia**

Australia = 100, 2015



Source: OECD estimates based on Australian Bureau of Statistics (2016), *Estimates of Industry Multifactor Productivity, 2014-15*, Cat. No. 5260.0.55.002; Australian Bureau of Statistics (2016), *Australian System of National Accounts, 2014-15*, Cat. No. 5204.0; G. Mason (2013), "Investigating New Zealand-Australia Productivity Differences: New Comparisons at Industry Level", *Working Paper 2013/02*, New Zealand Productivity Commission; Statistics New Zealand (2017), *Productivity Statistics 1978-2015*.

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The majority of the gap is explained by substantially lower labour productivity in construction and financial services, as well as a smaller and less productive mining industry in New Zealand. New Zealand's labour productivity is also lower in several of the country's largest industries, including manufacturing, retail and wholesale trade. Mason (2013) found that low labour productivity within industries in New Zealand was primarily due to lower MFP, but that almost 40% of the gap was due to lower capital intensity.

The shift-share analysis undertaken by Mason (2013) and updated here provides a broad assessment of the sources of productivity differences between New Zealand and Australia but should not be interpreted as a definitive or precise comparison of productivity. Results for individual industries are highly sensitive to the choice of purchasing power parity exchange rates and to differences in statistical approaches between

Box 1.2. Industry-level comparison of labour productivity in New Zealand and Australia
(cont.)

Table 1.1. Industry composition of market sector productivity differences

Industry	Within-industry productivity ¹	Industry structure ²
Total market industries	67.2	32.8
Financial and insurance services	25.2	5.6
Mining	12.8	18.9
Construction	33.4	4.8
Wholesale trade	2.7	-1.1
Agriculture, forestry and fishing	3.6	-4.9
Transport, postal and warehousing	8.5	3.4
Retail trade	3.4	0.5
Manufacturing	4.4	-5.3
Accommodation and food services	0.4	0.6
Arts and recreation services	-0.1	0.3
Administrative and support services	-0.5	-1.7
Other services	-0.4	1.0
Information media and telecommunications	-0.9	0.9
Professional, scientific and technical services	-10.7	2.5
Electricity, gas, water and waste services	-7.9	6.8
Rental, hiring and real estate services	-6.6	0.5

1. Share of market sector labour productivity gap between New Zealand and Australia attributed to labour productivity differences within each industry classification (negative values reflect higher labour productivity in New Zealand).
2. Share of market-sector labour productivity gap between New Zealand and Australia attributed to differences in industry shares of employment.

Source: OECD estimates using data sources cited in Figure 1.5.

the two countries. For example, the large gap in productivity in financial and insurance services is likely to overstate efficiency differences, given the dominance of the same firms in both countries and, in banking at least, comparable interest rate margins (RBNZ, 2016; RBA, 2016).

Results vary across studies according to methodology. For example, NZIER (2011) found a similar breakdown to Mason (2013) in terms of the importance of industry structure, capital intensity and MFP in explaining gaps in productivity between New Zealand and Australia, but also found that productivity in the agriculture and mining industries was higher in New Zealand than in Australia. This could be due to the use of market exchange rates rather than (theoretically preferred) purchasing power parity exchange rates. In terms of MFP, the IMF (2016a) differs from Mason (2013) in finding higher MFP in agriculture in New Zealand – placing New Zealand at the global frontier – and a much larger gap of close to 90% between Australian and NZ mining industry MFP. All three studies are consistent in finding that construction industry productivity is substantially higher in Australia than in New Zealand.

Factors contributing to New Zealand's poor productivity performance

Several key factors are evident in a substantial body of work seeking to explain New Zealand's poor productivity performance, each of which is considered below and used to frame the consideration of policy measures in the remainder of the chapter. At a broad level, New Zealand's policy settings compare favourably with those internationally – cross-country analysis has suggested that its policy settings would be consistent with GDP per capita around 20% above the OECD average (Barnes et al., 2013).

Remoteness as a barrier to global connections

Geography is an important factor in New Zealand's poor productivity. Indeed, de Serres et al. (2014) find that more than half of New Zealand's productivity gap with leading OECD countries can be explained by remote access to markets and suppliers. Somewhat counterintuitively, as spatial transactions costs have fallen, New Zealand's lack of scale and geographical remoteness have become *bigger* handicaps relative to larger and more globally connected economies that benefit most from agglomeration. As McCann (2009, p. 291) explains: "as spatial transactions costs fall in an environment of increasing returns to scale, if labour is mobile, a centre-periphery divergence forms in which the central regions exhibit agglomeration effects". As transactions costs fall further (for example, through increasing digitalisation) remoteness may become less of a handicap in some areas of economic activity. An economy's ability to benefit from innovation at the global frontier is a positive function of its degree of international connectedness (Saia et al., 2015). The policy challenge is to find measures that can facilitate the development of better global connections and greater agglomeration benefits despite New Zealand's small population and remote location.

Weak competitive pressures

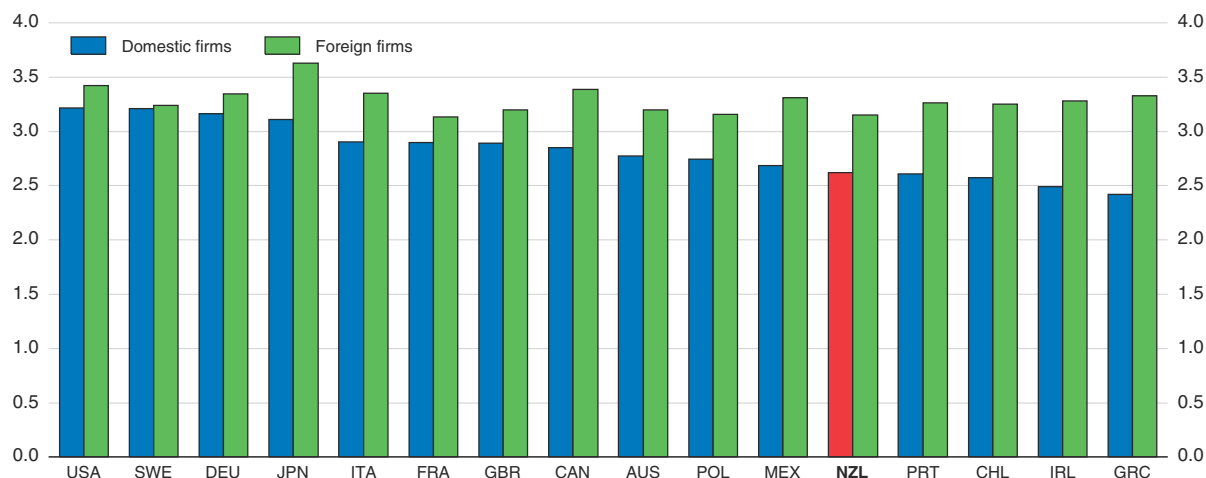
Data limitations preclude comprehensive comparison of competitive pressures across countries, but available price–cost margin data suggest that weak competition is an issue in New Zealand. The Productivity Commission (NZPC, 2014) finds an average price-cost margin across NZ industries of around 30%, which is higher than in 14 of 16 OECD countries analysed in Hoj et al. (2007). This finding is supported by analysis of profit elasticities – an alternative measure based on the sensitivity of firm profits to costs – which suggests that NZ manufacturing industries are characterised by weaker competition than in Finland and the Netherlands (but marginally stronger than in Portugal) (MBIE, 2016). Weak competitive pressures in New Zealand also have an explanation in economic geography, as a small, sparsely populated country is unlikely to be able to sustain the same intensity of competition as larger and more densely populated countries, and the distance from trading partners acts as a barrier to competitive pressures by restricting the entry of foreign providers.

Other data regarding firm performance in New Zealand are consistent with weak competitive pressures. Survey data indicate that management practices are poor relative to other OECD countries, especially among local firms (Figure 1.6). The existence of a substantial number of firms with mediocre management (Green et al., 2011) is suggestive of a lack of competitive pressure, which allows firms to survive without improving their management practices. Firm-level productivity figures indicate that the national productivity frontier has fallen further behind the global frontier and that there has been weak diffusion from the national frontier to other firms, particularly in some services industries (Conway, 2016). Stagnation in productivity growth of laggard firms may be connected to increasing barriers to entry and a decline in competitive pressures (Andrews et al., 2016).

Weak 'up or out' dynamics for firms

An issue closely related to competition is firm dynamics, whereby entry and growth of new firms and growth or decline of existing firms raise aggregate productivity growth. New Zealand has seen a strong rate of job creation by new firms (Figure 1.7, Panel A), driven by a robust start-up ratio (the number of entrants relative to the country's total employment), more than offsetting the slightly below-average size of new start-ups. Post-entry growth and survival rates are around the median of 15 countries for which comparable data are available

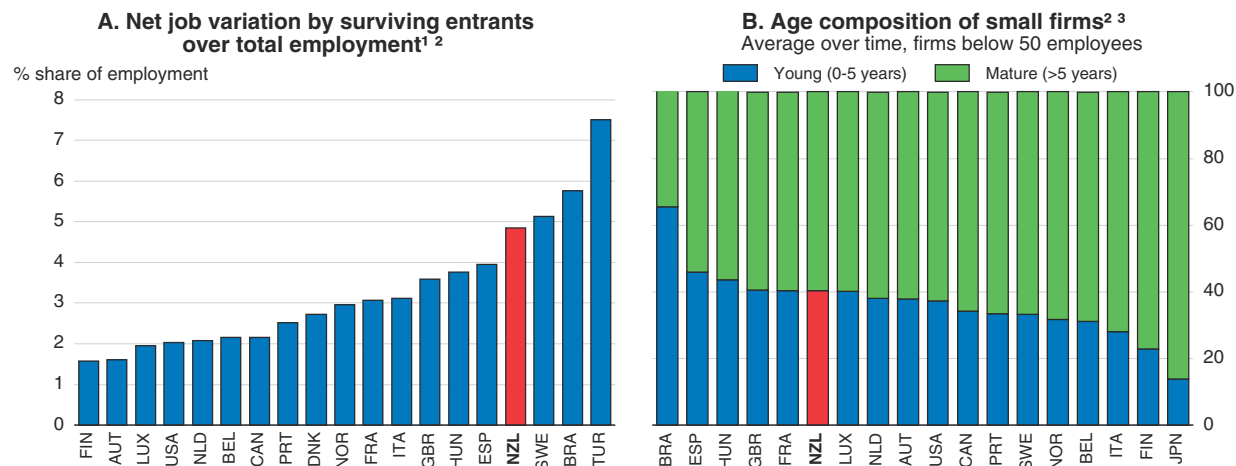
Figure 1.6. **Average management quality score in the manufacturing and retail sectors**¹
Score from 1 (worst practice) to 5 (best practice), 2004-10



1. The overall management score is an average of responses to 18 survey questions that are designed to reveal the extent to which firms: i) monitor what goes on inside the firm and use this information for continuous improvement ii) set targets and track outcomes; and iii) effectively utilise incentive structures (e.g. promote and reward employees based on performance). The sample is limited to retail and manufacturing firms with between 100 and 5 000 employees. Domestic multinational firms are excluded from this chart. The most recent (2014) survey database continues to indicate relatively poor management quality for the manufacturing industry in New Zealand. Source: N. Bloom et al. (2012), "Management Practices across Firms and Countries", NBER Working Paper Series, No. 17850, February, www.nber.org/papers/w17850.pdf; World Management Survey (2016), Survey database.

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Figure 1.7. **Job creation by new firms and age composition of small businesses**



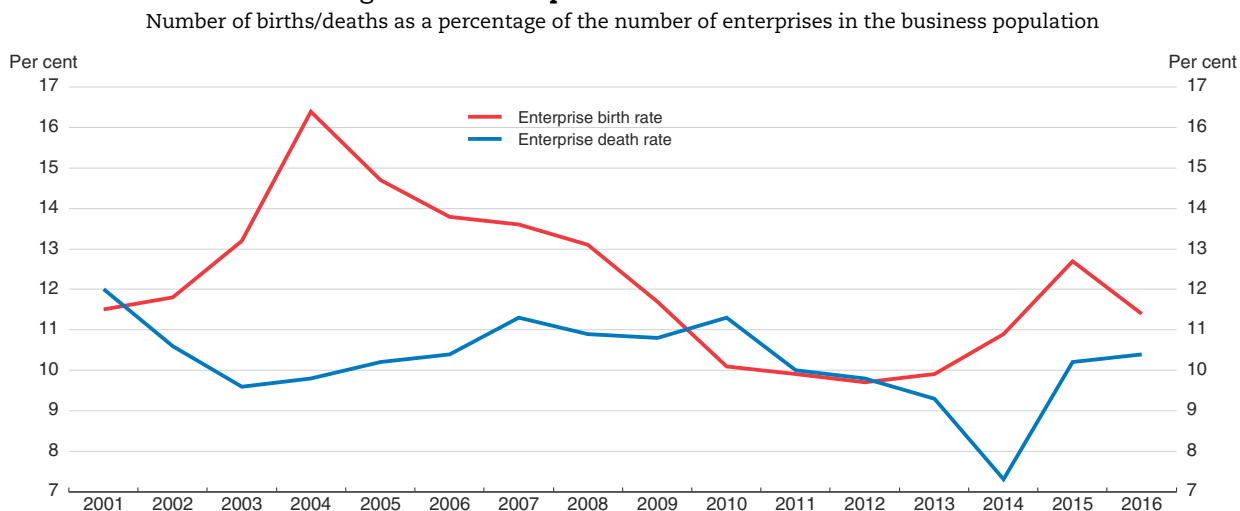
1. The graph illustrates the ratio between employment at time $t + 3$ of surviving entrants and overall country employment at time t . Figures report the average for different time periods $t = 2001, 2004$ and 2007 , conditional on their availability. Sectors covered are: manufacturing, construction, and non-financial business services.
2. Data are preliminary. Owing to methodological differences, figures may deviate from officially published national statistics. Data for Canada refer only to organic employment changes and abstract from merger and acquisition activities.
3. Share of firms by different age groups in the total number of micro and small firms (below 50 employees) in each economy on average over 2001-11 (or available years). For more details, see Figure 6 in Criscuolo et al. (2014).

Source: F. Calvino, C. Criscuolo and C. Menon (2015), "Cross-country Evidence on Start-Up Dynamics", OECD Science, Technology and Industry Working Papers, 2015/06, OECD Publishing, Paris, Figure 2, <http://dx.doi.org/10.1787/5jrxtkb9mxtb-en>; C. Criscuolo, P.N. Gal and C. Menon (2014), "The Dynamics of Employment Growth: New Evidence from 18 Countries", OECD Science, Technology and Industry Policy Papers, No. 14, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz417hj6hg6-en>.

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(Calvino et al., 2015). Post-entry growth rates are strongly correlated with framework policy conditions, so New Zealand's position around the median probably reflects strong framework policies offsetting barriers to up-scaling due to geographical remoteness and small market size. The high proportion of start-ups and young firms among small businesses in New Zealand (Panel B) is a positive indicator, as young firms are important for the creation of new jobs, productivity growth and the introduction of disruptive innovations (Haltiwanger et al., 2012; Criscuolo et al., 2014). New Zealand's strength in this area was compromised by the falling rate of entry between 2004 and 2012, but entry rates have since recovered (Figure 1.8).

Figure 1.8. **Enterprise birth and death rates**¹



1. Data are for the years ending in February, preliminary figures for 2016.

Source: Statistics New Zealand, *NZ Business Demography Statistics: At February 2016*, www.stats.govt.nz/browse_for_stats/businesses/business_characteristics/BusinessDemographyStatistics_HOTPFeb16.aspx.

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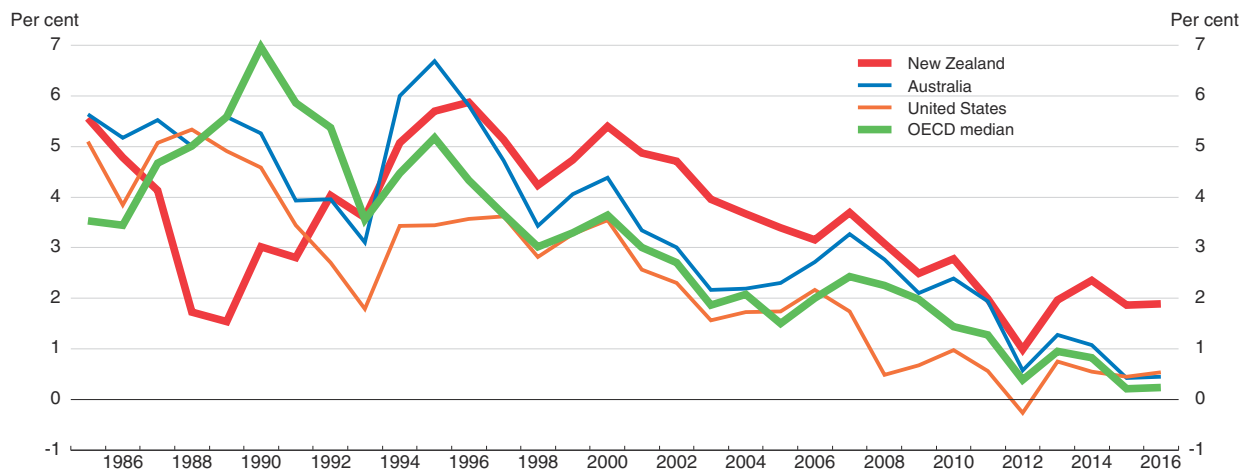
Of more concern is analysis suggesting long-run impediments in the process of productivity-enhancing allocation of labour and capital within the NZ economy. Although employment growth has been fastest among the most productive NZ firms, reallocation has not been as strong as that occurring in Europe after the 2008 financial crisis, and data suggest that firms with low MFP account for a large share of capital and employment (Conway, 2016; OECD, 2015a). The “selection effect” of more productive firms growing faster than their less productive counterparts is a key driver of aggregate productivity growth, with many studies finding it can account for more than half of aggregate productivity growth (Lentz and Mortensen, 2008; Andrews et al., 2014). Evidence of weak allocative efficiency is consistent with the relatively high rate of skills mismatch in New Zealand, as skills mismatches reduce the extent to which higher skilled workers are employed by the most productive firms (Chapter 2).

Low rates of capital investment

Business capital investment in New Zealand is low in comparison with other OECD countries. Household saving rates are low, and the shortfall between saving and investment has meant that New Zealand is reliant on foreign saving and capital inflows. This saving shortfall has placed upward pressure on interest rates (McDermott, 2013) as international investors demand a risk premium that reflects exchange rate risks and exposure to New


Zealand's large negative net international investment position (Figure 1.9; Rose, 2009). The problem is compounded to the extent that firms face a lack of other options to fund capital expenditure. Venture capital, stock and bond markets are relatively thin, although this in part reflects low saving (Figure 1.10). Poorly developed financial markets constrain the ability of innovative firms to attract resources and grow (Andrews et al., 2014), while a lack of venture capital restricts net job creation through reduced entry and slower growth of entrants and incumbents (Calvino et al., 2015).

Figure 1.9. **Comparison of long-term real interest rates**¹



1. Nominal 10-year government bond yields less five-year average inflation rates.

Source: OECD, Economic Outlook Database.

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Low research and development activity

New Zealand's R&D expenditure, especially by the business sector, is low as a share of GDP (Figure 1.11). Only around 20% of the shortfall from the OECD average can be ascribed to differences in industry composition (OECD, 2016c). While it might be reasonable for New Zealand to aspire to a lower level of R&D spending than leading OECD countries due to its industry structure, size and location, its productivity is hampered by its low rate of R&D expenditure – empirical analysis suggests that between 11% and 40% of the MFP gap between New Zealand and leading OECD countries can be explained by weak R&D investment (de Serres et al. 2014). New Zealand ranks around the middle of the OECD for investment in knowledge-based capital (Figure 1.12), performing well in software investment and trademarks but poorly in patents (de Serres et al., 2014).

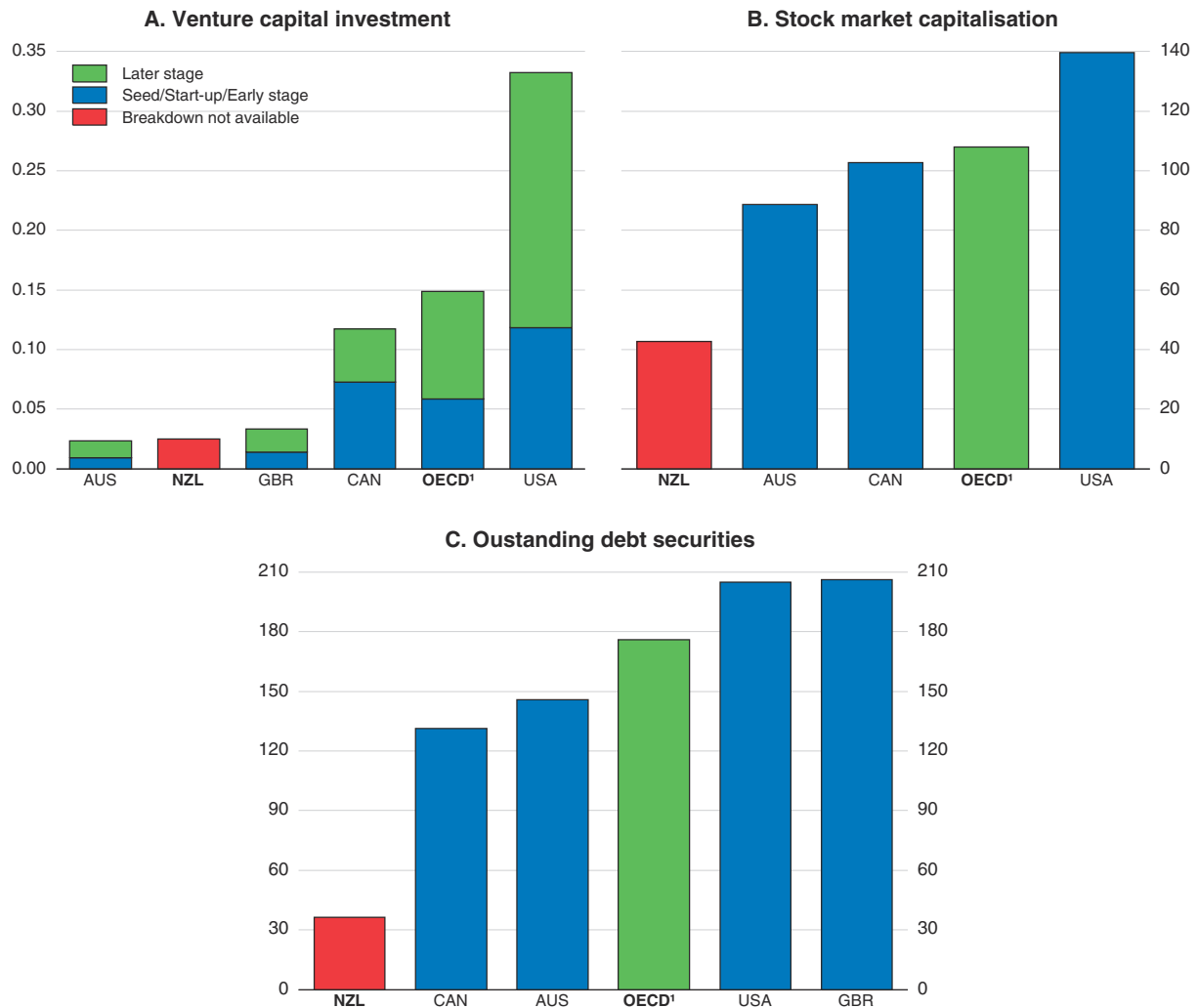
Policy measures to facilitate global connections

As a small economy, New Zealand is particularly reliant on global connections through trade, investment and migration to benefit from innovation at the global frontier, develop scale, specialise in areas of comparative advantage and stimulate competition.

Some of the costs of developing global connections are declining


Declining costs of global connections offer opportunities for New Zealand as a small remote country. For example, global average airfares declined by around 60% in real terms between 1995 and 2015 (International Aviation Transport Association, 2015). Another

Figure 1.10. **Sources of finance**
As a percentage of GDP, 2015



1. GDP-weighted average of all OECD countries for which data are available.

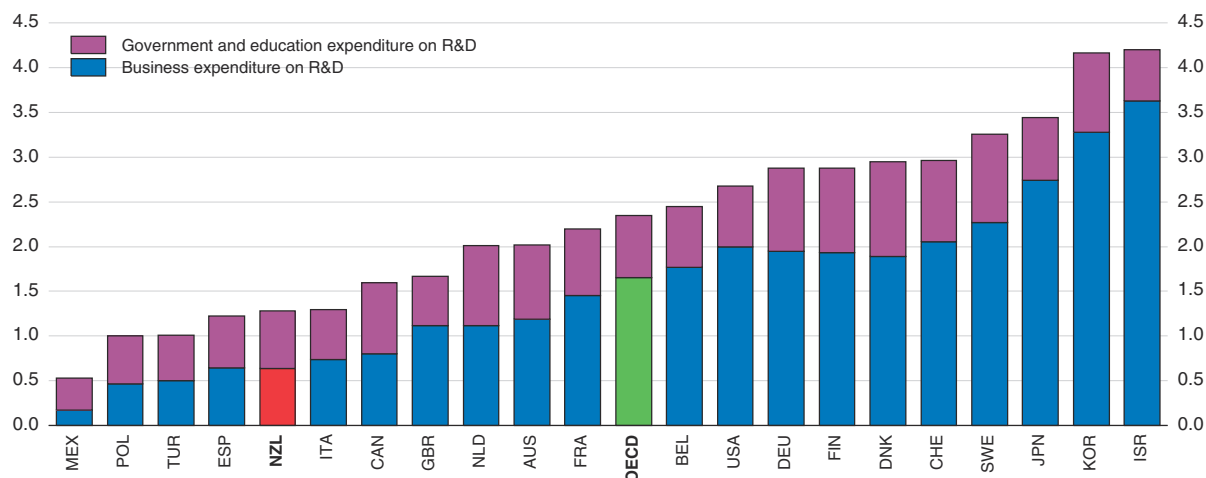
Source: OECD (2016), *Entrepreneurship at a Glance 2016*, Figure 8.1; OECD (2017), National Accounts Database; World Bank, World Development Indicators database; Bank for International Settlements, Debt Securities Statistics (<http://stats.bis.org/statx/srs/table/c1>).

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relevant area where costs have fallen is in information and communications technology (ICT). Governments have an important role in fostering greater ICT investment and diffusion of ICT services, particularly in countries that have substantial productivity gaps with respect to peers (Dabla-Norris et al., 2015). Broadband adoption has been estimated to increase the productivity of NZ firms by 7-10% (Grimes et al., 2012), and there is an increasing opportunity to export professional, scientific and technical services online, an area where New Zealand has a productivity advantage over Australia (see Box 1.2 above).

There has been a good take-up of both fixed (Figure 1.13) and mobile (Figure 1.14) broadband. The government's Ultra-Fast Broadband Initiative has contributed to a rapid increase in fibre subscriptions since 2010 (albeit from a low base). Yet, average connection speeds remain slow compared with other OECD countries (Figure 1.13, Panel C) and prices for fixed broadband are relatively high. But in terms of investment in ICT more generally, the

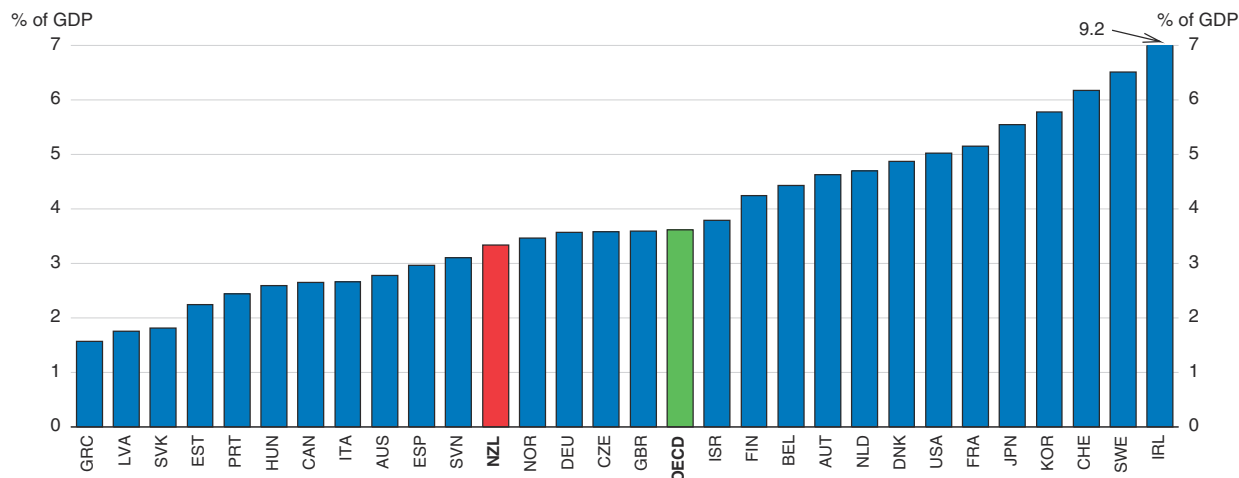
Figure 1.11. **Expenditure on research and development**
As a percentage of GDP, 2015 or latest year available



Source: Statistics New Zealand; OECD, Main Science and Technology Indicators Database, <http://oe.cd/msti>.

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Figure 1.12. **Investment in knowledge-based capital,¹ 2015²**



1. Includes R&D, mineral exploration and evaluation, computer software and databases, entertainment, literary and artistic originals, and other intellectual property products.

2. Or latest year available.

Source: OECD, National Accounts Database.

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latest available data indicate that New Zealand's investment (as a share of total non-residential gross fixed capital formation) was consistently among the three or four highest in the OECD between 2000 and 2010 (OECD, 2016c).


There are a number of other steps that the government should take to address the high price and low average speed of fixed broadband. Barriers to competition should be removed, in particular constraints on competition associated with the Telecommunications Service Obligation and the ability of the government to overrule the Commerce Commission's determinations. These restrictions contribute to New Zealand having higher barriers to trade in telecommunications than the OECD average (Figure 1.15). The current

Figure 1.13. Fixed broadband indicators



1. Prices for high use broadband (> 25/30 Mbps). For low use broadband (> 1.5/2 Mbps), New Zealand has the third highest prices in the OECD.

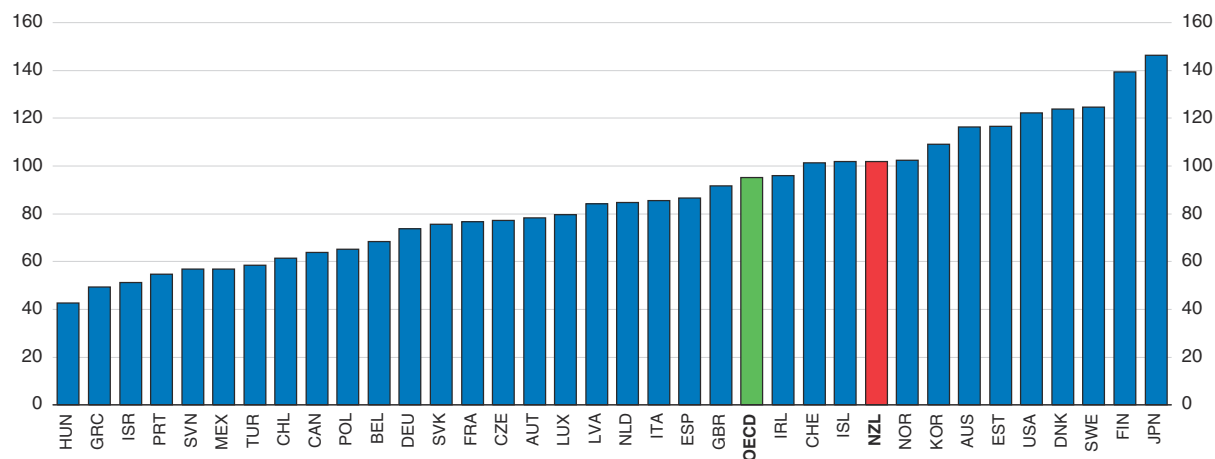
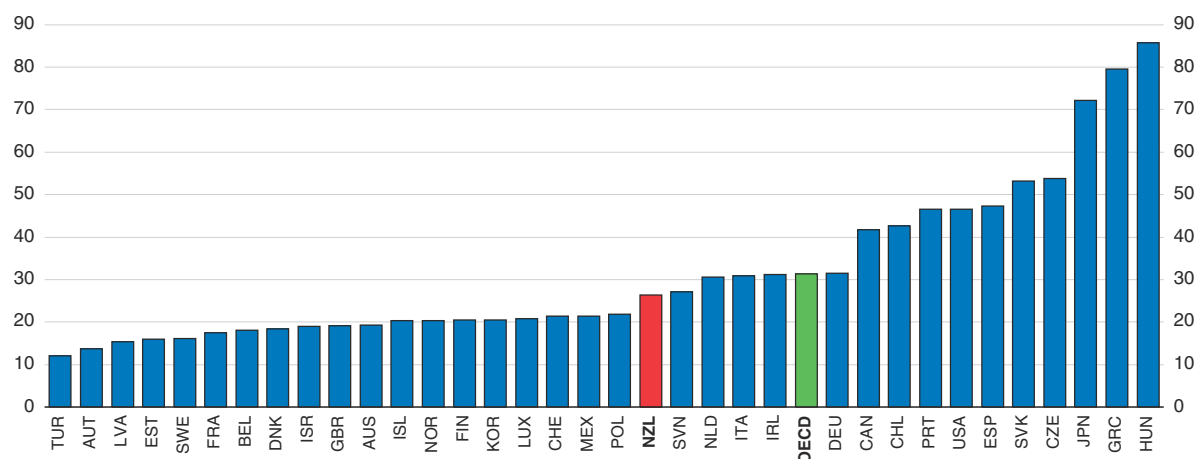
Source: OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm.

StatLink  <http://dx.doi.org/10.1787/888933497593>

review of the Telecommunications Act 2001 is an opportunity to clarify the competition policy and regulatory framework for broadband to ensure benefits for end-users through lower prices and higher connection speeds.

New Zealand has few restrictions on trade

Trade policy settings in New Zealand are supportive of international engagement and productivity growth. Tariffs are low (though there would be benefits from reducing remaining tariffs to reduce the effective distance from markets), and the NZ government is supportive of further multilateral trade agreements such as the Trans-Pacific Partnership,

Figure 1.14. **Mobile broadband indicators****A. Subscriptions per 100 inhabitants, Q2 2016****B. Prices¹ in USD PPP, May 2016**

1. Prices for a basket of 300 calls + 1 GB. Data for baskets of 30 calls + 100 MB and 900 calls + 2 GB show that New Zealand is also below the OECD average.

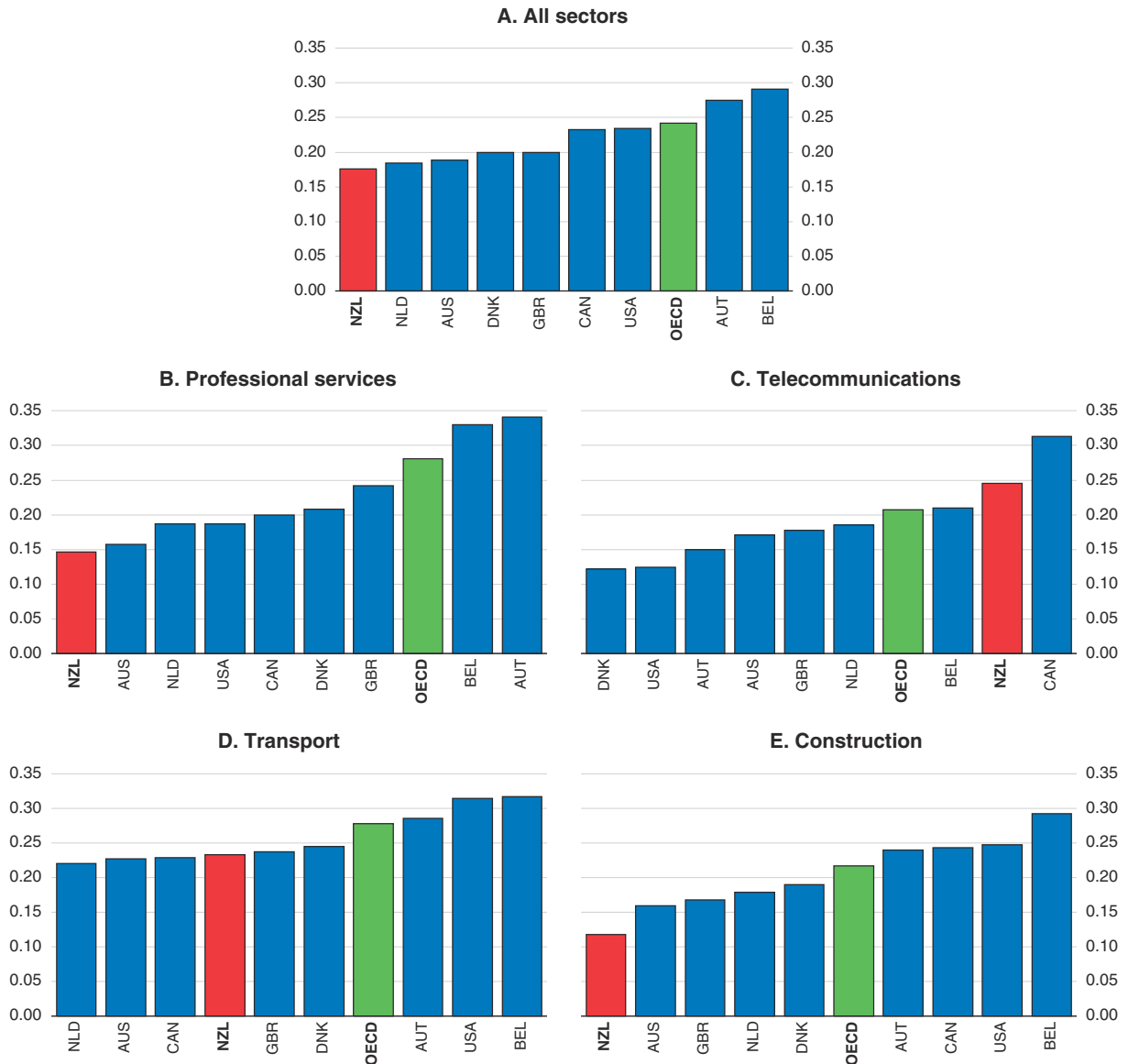
Source: OECD, Broadband Portal, www.oecd.org/sti/broadband/oecdbroadbandportal.htm.

StatLink  <http://dx.doi.org/10.1787/888933497606>


the Trade in Services Agreement and the Regional Comprehensive Economic Partnership. Restrictions on services trade are generally low, with the exception of telecommunications, as discussed above (Figure 1.15). There is scope to further ease restrictions on services trade, including by cutting the time taken to process business visas and introducing measures to reduce restrictions on foreign entry (in particular, barriers to foreign direct investment, as discussed below). While New Zealand's licensing and permits system is generally less restrictive than the OECD average (OECD, 2015b), trade in services could be enhanced by giving stronger consideration to recognising foreign licenses to practise when those licences are based on equivalent or better standards than their NZ counterparts (NZPC, 2014).

The slowdown in trade liberalisation internationally and the threat of increasing protectionism could negatively affect New Zealand's productivity growth. Non-tariff barriers to trade in other countries are of increasing importance, with the annual cost of non-tariff

Figure 1.15. **Services trade restrictiveness index by sector**
Index from 0 (open) to 1 (closed), 2016



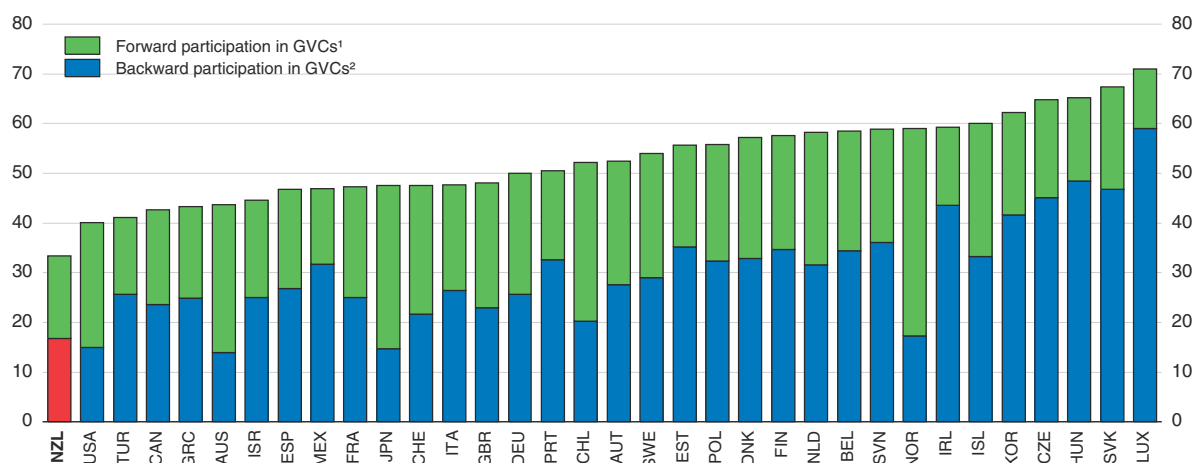
Source: OECD, Services Trade Restrictiveness Index Database.

StatLink  <http://dx.doi.org/10.1787/888933497614>

barriers in the Asia-Pacific Economic Cooperation for New Zealand exporters estimated at USD 5.9 billion (Ballingall and Pambudi, 2016). Addressing barriers to trade in other countries requires commitment and action from other governments, but the NZ government can contribute through direct co-operation, formal agreements and participation in international fora and organisations.

New Zealand has very low engagement in global value chains (GVCs) compared with other OECD countries (Figure 1.16). Such participation increases global connections and productivity by facilitating diffusion of innovation from the global frontier to national frontier firms (OECD, 2015a). Although New Zealand's GVC participation is curtailed by its remoteness

Figure 1.16. Global value chain participation, 2011



1. Domestic value added embodied in foreign exports, as a percentage of total gross exports.

2. Foreign value added embodied in exports, as a percentage of total gross exports.

Source: OECD-WTO, Trade in Value-Added Database, <http://oe.cd/tiva>.

StatLink <http://dx.doi.org/10.1787/888933497622>

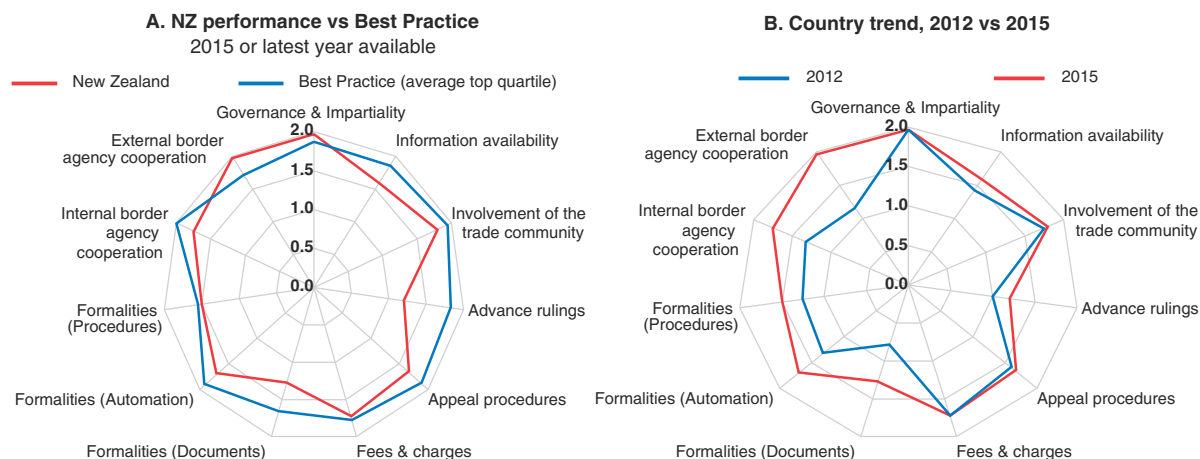
and industry structure, the removal of policy barriers could increase participation. In particular, participation in GVCs tends to be higher in countries that are more open to foreign direct investment (Kowalski et al., 2015).

There is scope to improve trade facilitation measures


New Zealand has made progress in terms of trade facilitation measures since 2012, but there is still room for improvement when compared with best practice (Figure 1.17). It ranked a lowly 37th globally for the efficiency of customs and border clearance in the World Bank's Logistics Performance Index in 2016 and 22nd on a weighted average of surveys between 2010 and 2016 (Arvis et al., 2016). This puts New Zealand more than 10 places behind other small, high-income OECD countries such as Belgium, Denmark, Finland and the Netherlands. Services trade restrictiveness is above the OECD average for logistics cargo-handling, primarily due to limitations on administrative procedures related to customs and visas for transport crew (OECD, 2017a). The cost of border compliance to import and export a single shipment is around USD 350, more than double the average for high-income OECD countries (World Bank, 2016a). Reforms with the greatest potential benefits for New Zealand relate to improving information availability, encouraging more extensive use of advance rulings and expanding the acceptance of copies of documents and electronic signatures (OECD, 2016d). There also remains scope to improve multilateral border agency co-operation. Although New Zealand places a greater emphasis on biosecurity controls than most other countries, this should not preclude simplification of procedures and greater use of technology to increase efficiency in customs processes.

There are a number of initiatives underway to improve border efficiency. This includes the Customs Service's efforts to streamline trade facilitation, its "Customs 2020" strategy and associated initiatives to provide more integrated technology-enabled services, and trials to streamline border processing for regular travellers and low-risk goods (NZ Customs Service, 2015; Guy and Wagner, 2016). The Office of the Auditor General is due to release a final report in mid-2017 on its performance audit of information sharing between border agencies.

Figure 1.17. **Trade facilitation measures**
Score from 0 (worst performance) to 2 (best performance)



Source: OECD, *Trade Facilitation Indicators*, www.oecd.org/trade/facilitation/indicators.htm.

StatLink  <http://dx.doi.org/10.1787/888933497634>

Barriers to Foreign Direct Investment should be reduced

Foreign Direct Investment (FDI) boosts the productivity of recipient countries through a number of mechanisms. Like other forms of investment, FDI funds capital formation, which increases labour productivity and living standards. It involves a greater degree of control or influence than portfolio investment and is thus more likely to be associated with a lasting relationship and less likely to trigger financial crises (Caldera Sanchez and Gori, 2016). A lasting relationship also increases the likelihood of technological, skills and managerial quality transfers. FDI can open up access to global supply chains and markets, provides additional export opportunities and promotes competition in the domestic market. Recent panel data analysis of OECD countries finds a significant positive relationship between the inward stock of FDI and labour productivity (Sila et al., 2016).

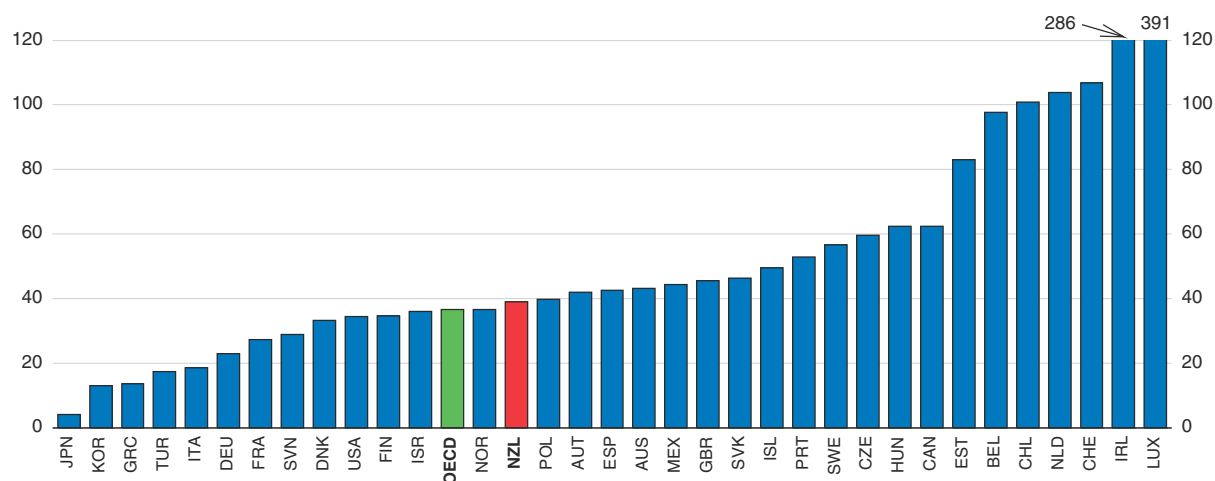
Korea is a useful example, as it was the biggest reformer of FDI policies between 1997 and 2010 among a sample of 40 developed and emerging countries, which led to a dramatic increase in its inflows of FDI (Nicolas et al., 2013). Inward FDI introduced key technologies, improved management skills and has been identified as a causal factor in the country's strong economic growth (Kim and Hwang, 2000; Koojaroenprasit, 2012). In New Zealand foreign owned firms' labour productivity is almost twice as high as domestic firms' (Doan et al., 2014), and foreign investment between 1988 and 2006 is estimated to have increased incomes by NZD 3 300 per worker and increased national wealth by NZD 14 000 per person (Makin et al., 2008). However, the evidence for productive spillovers from foreign into locally owned firms is fairly weak and concentrated in the construction and retail sectors (Doan et al., 2014). The existence of spillover benefits in these sectors is consistent with analysis of a number of European countries, which finds strong spillovers from interactions with downstream customers in construction and from interactions with upstream suppliers in retail trade (Leshner and Miroudot, 2008).

Despite the potential benefits, public attitudes and policies towards liberalisation of FDI inflows have been subject to considerable controversy, raising concerns about loss of national sovereignty and other possible adverse consequences. This is particularly the case

where FDI involves a controlling stake by often large multinational corporations over which domestic authorities, it is feared, have little power.

Inward FDI stocks in New Zealand are relatively low for a small open economy, particularly compared with such other small high-income OECD countries as Belgium, Ireland, the Netherlands and Switzerland (Figure 1.18). Inward FDI stocks are below the OECD average as a share of total inward investment (IMF, 2017). The NZ government recognises the importance of FDI, as reflected in the 2015 establishment of an investment attraction taskforce, which aims to identify and package investment opportunities and match them to foreign investors (NZ Government, 2015). Notwithstanding this support, New Zealand retains a comprehensive foreign investment screening process, something that has not substantially changed in several decades and does not exist in many other countries. Through restricting foreign entry, FDI screening is one of the key horizontal policy measures increasing New Zealand's Services Trade Restrictiveness Index (OECD, 2017a). There are further barriers in some industries, in particular in fisheries (where there is a prohibition of foreign ownership of fishing quotas) and telecommunications (where a foreign equity limit is enforced).

Figure 1.18. **Inward direct investment stock**
As a percentage of GDP, 2016 or latest available data



Source: OECD, Foreign Direct Investment Database.

StatLink  <http://dx.doi.org/10.1787/888933497262>

New Zealand's FDI screening process is poorly targeted and imposes a higher threshold for approval than required to address community concerns, and imposes significant compliance costs on investors (Treasury, 2009). The time and resources required to assess FDI applications creates transaction costs and risks deterring FDI, even where proposals would be approved. The Overseas Investment Office assesses applications from foreigners seeking to invest in sensitive land, businesses valued at more than NZD 100 million and fishing quotas. Sensitive land is defined broadly, including all non-urban land over five hectares, certain specified islands, foreshores or seabed, reserves and historic areas, as well as land over 0.4 hectares that adjoins foreshores or seabed, nature reserves, local parks and reserves. All investment proposals that meet these thresholds must be assessed against subjective criteria that include the potential purchaser's business acumen and good character. In

practice, the private benefits of FDI involving sensitive land are not taken into consideration (Heatley and Howell, 2010). Uncertainty for investors is heightened because the relevant minister has discretion as to the weight given to each factor, and, unlike in most other OECD countries, investors cannot get a non-binding preliminary opinion on whether an investment will be blocked (Wehrle and Pohl, 2016). Also unlike most other OECD countries, there are no statutory timeframes for assessing FDI applications, although the Overseas Investment Office aims to make a decision within 30 to 70 working days from the date of application (Wehrle and Pohl, 2016). Compliance costs were reduced in 2016 for re-granting or transfer of leases and for repeat investors, but further steps could be taken to reduce compliance costs and uncertainty.

The scope of the FDI screening process should be narrowed, with mandatory notification informing a public register of other FDI investment. Such a reform would foster productivity improvements by removing barriers to FDI and would align with OECD guidance that “investment restrictions should be narrowly focused on concerns related to national security” (OECD, 2009, p. 3). A number of other countries (including Argentina, Brazil, Chile, Denmark, Germany, Israel, Lithuania, Norway, Spain, Turkey and the United Kingdom) have FDI review mechanisms designed to protect national security interests in a narrow range of sectors, such as defence, or land in border areas or near strategically important facilities (Wehrle and Pohl, 2016). Where screening is retained, investor certainty would be increased by transferring the onus from the investor having to show net benefit to the government having to demonstrate economic or other harm to reject an investment proposal (Guillemette, 2009).

Community concerns about foreign investment could be addressed by progressively removing screening requirements on sectors where FDI offers the greatest potential net benefits to New Zealand and does not raise national security concerns. Experience from Korea shows that opening up FDI gradually can be a useful way to overcome community concerns. There, FDI was initially unpopular when allowed within special economic zones but became more popular as the entry of foreign firms helped to generate employment, sustain production, upgrade technologies and reform corporate governance in the wake of the Asian Financial Crisis (Nicolas et al., 2013). Special economic zones have been proposed as one way to increase FDI flows into New Zealand (Crampton and Acharya, 2015), but regional derogation would be less satisfactory than reforming the national legislation. A sectoral approach would provide an opportunity to demonstrate tangible benefits from reducing FDI restrictions while targeting sectors with the largest potential net benefits, such as the construction and retail industries. Establishing a public register of FDI investment would incur only small (primarily one-off) administrative costs and could help to alleviate community concerns, as would emphasising that the NZ government retains sovereign control over activities on New Zealand land irrespective of ownership. Where possible, the NZ government should also pursue multilateral agreements as a means to reduce FDI barriers, which was an important factor in reducing barriers in Europe.

New Zealand's investment attraction taskforce would benefit from greater private-sector engagement, as foreshadowed in its recent update (NZ Investment Attraction Taskforce, 2016). International experience with such bodies indicates the importance of a lean and efficient structure and of having a board that consists of public- and private-sector representatives (OECD, 2015c).

Mechanisms to enhance integration with Australia should be explored

The economic geography challenges facing New Zealand point to the importance of its relationship with Australia as its major trading and labour market partner (McCann, 2009). Cooperation between Australia and New Zealand is underpinned by the Closer Economic Relations Trade Agreement (CERTA) and a number of related agreements (Box 1.3).

Box 1.3. New Zealand-Australia economic relations

A series of formal and informal agreements frame co-operation between Australia and New Zealand, underpinning:

- Free trade on substantially all goods under the CERTA. No tariffs or quantitative trade restrictions on goods originating in the Free Trade Area are permitted, while subsequent agreement eliminated anti-dumping actions between the trans-Tasman partners. The value of trans-Tasman trade in goods has grown on average by 8% each year since CERTA's adoption in 1983 (Australian Productivity Commission, 2015).
- Elimination of restrictions on trade in services except for prescribed industries under the CER Services Protocol. Exceptions are air services and coastal shipping in both countries and broadcasting and television (short-wave and satellite broadcasting), third-party insurance and postal services in Australia only.
- Free movement of people under the Trans-Tasman Travel Arrangements, with Australians and New Zealanders allowed to travel, live and work in one another's country without restriction.
- Lower compliance costs, higher screening thresholds and greater legal certainty of investment under the Protocol on Investment to CERTA.
- Mutual recognition of goods and occupations under the Trans-Tasman Mutual Recognition Arrangement, which allows (with a few exceptions) that a good that may be legally sold in Australia may be sold in New Zealand and vice versa, and that a person registered to practice an occupation in Australia is entitled to practice an equivalent occupation in New Zealand and vice versa.
- Harmonisation of business law provisions, with the aim of reducing transaction costs for firms that operate in both markets, under the Memorandum of Understanding on Harmonisation of Business Law.
- Reductions in other behind-the-border restrictions on trade by reducing differences in standards, regulations and policies through agreements including the Protocol on the Harmonisation of Quarantine Administrative Procedures, the Memorandum of Understanding on Technical Barriers to Trade, the Agreement on Standards, Accreditation and Quality and the Agreement Concerning a Joint Food Standards System.
- Equality of access for government purchases under the Australia and New Zealand Government Procurement Agreement.
- New Zealand ministerial participation in a number of Australian Ministerial Councils that facilitate consultation and joint action on issues such as aboriginal affairs, justice, gender, culture, education, health, energy, environment, local government, procurement, primary industries and workplace relations.

Source: Australian Department of Foreign Affairs and Trade (2016), *Australia-New Zealand Closer Economic Relations Trade Agreement*; Australian and New Zealand Productivity Commissions (2012), *Strengthening trans-Tasman economic relations*, Joint Study, Final Report; Australian Productivity Commission (2015), *Mutual Recognition Schemes*, Research Report.

Agreements between Australia and New Zealand achieve most of the requirements for a common market, but further integration could encourage more trade and investment. The Australian and New Zealand Governments' Single Economic Market approach to closer economic relations aims to harmonise the two economies' regulatory environment to enable businesses, consumers and investors to conduct operations across the Tasman seamlessly. One clear divergence from a common market is that FDI flows in both directions remain subject to screening requirements. While there are higher thresholds specified under the Protocol on Investment, screening of Australian-sourced FDI is still required where the investment involves 'sensitive land', which, as described above, is very broadly defined. If FDI screening were narrowed to focus on national security issues, there would be scope (potentially as part of a stronger bilateral agreement) to remove screening of all trans-Tasman investment not considered to raise national security concerns. Other aspects of a common market that are still lacking include integration of competition policy and banking supervision regimes (Australian and New Zealand Productivity Commissions, 2012).

Further integration through a customs union would offer potential benefits through the abolition of rules of origin requirements on trade in goods and services between the two countries. Such requirements divert resources for administrative tasks and can carry substantial compliance costs (Cado and de Melo, 2007). Rules of origin under the CERTA are based on the change-in-tariff-classification method: for the majority of tariff lines, an exporter must satisfy the condition that there has been a specified change in tariff classification between any imported materials from third countries and the completed good being exported to Australia or New Zealand. The change-in-tariff-classification method has the advantages of simplicity, transparency and relatively low administrative costs but still has drawbacks, as tariff classifications were not designed to confer origin (Cado and de Melo, 2007).

However, forming a full customs union would carry substantial implementation costs, and there are alternative ways to reduce the cost of rules-of-origin requirements. A customs union would require common external tariffs and would also restrict the freedom of the partners to pursue trade arrangements with third countries. The Australian and New Zealand Productivity Commissions (2012) recommended waiving CERTA rules of origin for all items for which Australia's and New Zealand's tariffs are at 5% or less and considering reduction of any tariffs above 5% to that level. This would be a practical means to access gains from removing rules of origin and from lower tariffs without the upfront costs of establishing a customs union but would need to be monitored to ensure that it does not encourage costly diversion of trade in specific items through the country with lower tariffs.

Fostering competition and addressing policy barriers to agglomeration

Boosting competition offers potential improvements in productivity through reallocation of resources to the most productive firms, greater diffusion of existing technologies to laggards, better managerial performance and increased incentives for innovation. Increasing competition can also offer distributional benefits by placing downward pressure on prices, which benefits consumers over shareholders – while these two groups will overlap to a large extent, shareholders are on average wealthier than consumers, with around 90% of equities, bonds, investment funds and other household financial assets held by households in the top net worth quintile (Statistics New Zealand, 2016a). Research has linked slowing productivity and rising inequality internationally with higher firm market power (Krugman, 2015; Reich, 2015; Council of Economic Advisors, 2016).

As discussed below, competition could be sharpened by addressing barriers in urban planning, reforming competition enforcement and regulation and improving bankruptcy legislation. Priority should be given to undertaking an expert review of competition in the construction industry, given its poor productivity relative to international peers, evidence of a lack of competition and its importance to the NZ economy (Box 1.4). Reforms to boost international connections set out above are also important to foster competition through cross-border commerce and FDI.

Box 1.4. The effects of weak competition on construction industry productivity

The construction industry produces about 50% of New Zealand's capital formation (Statistics New Zealand, 2016b) and is critical to delivering the expansion of housing supply needed to meet demand. While differences in local characteristics present challenges for comparisons, productivity levels in the NZ construction industry are low relative to Australia (Box 1.2; Mason, 2013) and the United Kingdom (Mason and Osborne, 2007). Recent productivity growth in the NZ construction industry (Jaffe et al., 2016) has been insufficient to close these gaps. At a disaggregated level, labour productivity in residential construction is below that in Australia, while the performance of non-residential construction is more favourable (NZIER, 2013a). Heavy and civil construction has the biggest labour productivity gap relative to Australia (NZIER, 2013a), although differences in the types of projects across the two countries – with mining projects more important in Australia – make comparisons difficult.

The NZ government has had a longstanding work programme investigating productivity issues in construction, including the Building and Construction Productivity Taskforce established in 2008, the Building and Construction Productivity Partnership between 2011 and 2014 and, as part of the government's response to a Productivity Commission inquiry into housing affordability, a 2013 Ministry of Business, Innovation and Employment (MBIE) study of productivity and competition in the residential construction industry. One valuable initiative coming out of MBIE's study was a suspension of anti-dumping actions on residential building materials until 31 May 2017, along with a tariff concessions scheme for a range of goods used in the construction of residential houses (due for review in 2019). Given the scope for import competition to contribute to housing and productivity goals, the NZ government should extend the suspension of anti-dumping actions on residential building materials beyond 2017. The experiment with a suspension of anti-dumping actions should be reviewed to establish whether this has delivered net benefits for consumers, with potential lessons for the use of anti-dumping measures in the rest of the economy.

One explanation of low productivity in the construction industry is a lack of competition in specific markets. Small and remote regions appear highly concentrated, as does heavy and civil construction (NZIER, 2013a). Price-cost margins are suggestive of a lack of competition: margins of just under 20% are lower than in many other industries in New Zealand (NZPC, 2014) but are higher than construction industry margins in eight of nine European countries, the United States and Japan (Bouis and Klein, 2008). Evidence of poor management skills and sluggish adoption of new technology in the construction industry (NZIER, 2013a) is also consistent with a lack of competition. Market entry is unattractive to foreign firms due to the small size of the NZ market, uncertainties around regulatory barriers (in particular, barriers to FDI and the planning process) and the absence of large parcels of urban land for development.

Box 1.4. The effects of weak competition on construction industry productivity (cont.)

A detailed market study of the construction industry by the Commerce Commission could be undertaken as an exercise of its proposed power to undertake market studies (discussed below). The Commerce Commission has identified the construction industry as particularly susceptible to cartel or price-fixing conduct and has launched a website to help firms in the sector increase their understanding of competition and consumer laws (Commerce Commission, 2014). In countries where the construction industry is characterised by a few large firms, competition policy is important for a flexible supply (Andrews et al., 2011). In New Zealand long vertically integrated supply chains in the building industry may hide anti-competitive behaviour (NZIER, 2013a), and strategic practices such as the provision of (non-transparent) rebates or targeted discounts have the potential to constrain access to distribution channels for building materials (MBIE, 2013). Competition in parts of heavy and civil construction is constrained by highly concentrated markets for asphalt, bitumen storage and concrete (NZIER, 2013b); while some domestic customers have access to bitumen imports, Z Energy is the sole remaining supplier of domestically refined bitumen following its 2016 acquisition of Chevron New Zealand (Commerce Commission, 2016). These issues point to the benefits of a detailed market study by a body with competition expertise and the power to demand information (including confidential information) from industry participants.

Cutting the number of government procurement contracts and increasing in their length have been cited as risking creating entry barriers, further raising market concentration (NZIER, 2013b). Greater concentration reduces choice in future tenders and facilitates supplier collusion. Compared with the rest of the sector, older and larger firms dominate heavy and civil construction, despite no evidence that scale boosts productivity but signs that older firms have lower productivity (Jaffe et al., 2016). Procurement could be improved by developing pipelines of work of different scale to develop a pathway for entry of firms of different sizes and levels of experience, with the objective of maintaining a workably competitive market to minimise the discounted long-term costs of procurement. The government should seek to reduce bid costs and avoid placing too much weight on local experience to further facilitate market entry.

Agglomeration economies are an important source of productivity growth, particularly in cities and industrial clusters (Glaeser, 2010). Across five OECD countries, a city with double the number of residents is estimated to have an average of around 4% higher productivity (Ahrend et al., 2017). In New Zealand the productivity premium in Auckland (compared with the national average) was very close to the OECD average of around 20% for major urban regions in the early 2000s (OECD, 2006). However, labour productivity in Auckland fell relative to the rest of the country between 2000 and 2012, and the Auckland premium in terms of GDP per capita fell from an average of 13% over the period 2000 to 2004 to 6% over 2011 to 2015 (OECD, 2016e; Statistics New Zealand, 2016c). This compares with an average GDP per capita premium of 13% for cities with a population over 1 million using the latest available data (OECD, 2016f). While there could be a number of explanations – including increases in dairy production outside Auckland and capital dilution during a period of rapid population growth in Auckland – the failure of rising population to deliver economic gains relative to the rest of the country suggests that policy settings relating to urban planning and infrastructure have curbed benefits from agglomeration in New Zealand's largest city.

The urban planning system has acted as a barrier to agglomeration and competition

The urban planning system has prevented housing supply from expanding to meet demand in areas where there has been rapid population growth, contributing to rising house prices and missed benefits from agglomeration. Planning decisions have suited some local concentrated interests but have had harmful wider effects, most notably rising land and housing costs. Land prices inside Auckland's urban boundary are nearly 10 times higher than outside, while a suite of complex and restrictive land-use rules (including maximum building heights, minimum lot sizes and parking requirements) have made inner-city development more difficult and expensive (OECD, 2017b), although many of these practices have been reduced or removed through the Auckland Unitary Plan (as described below). As a consequence, housing supply responsiveness lags far behind that in North America, Sweden and Denmark (Caldera Sanchez and Johansson, 2011). High housing costs inhibit people from moving into economically successful, highly productive urban areas, which can reduce national GDP by considerable margins (OECD, 2017c). Planning restrictions that prevent densification are particularly costly, as there is a negative relationship between a region's developed area per capita and its economic growth (OECD, 2017c). In New Zealand doubling density has been estimated to be associated with an 8.6% increase in productivity (Maré, 2008), and higher density areas have been shown to incur lower infrastructure costs for roads and water supply (Adams and Chapman, 2016).

Under-provision of transport and water infrastructure has also restricted development. Inadequate supply of infrastructure is commonly cited as a problem for doing business in New Zealand (World Economic Forum, 2016). Auckland and Wellington are estimated to have the second- and third-worst traffic congestion in Australasia, despite their relatively small size (TomTom, 2016). Nine out of 10 commutes in Auckland are by car, putting substantial pressure on the road network (OECD, 2017b). New Zealand has low rates of public transport use by developed-world standards, and rates have not increased since the early 2000s (NZPC, 2017). The latest available data (from 2014) show that New Zealand is among the bottom third of OECD countries for inland transport infrastructure investment as a share of GDP (OECD, 2016g). Rapid population growth due to high rates of immigration will place additional pressures on infrastructure: projections see demand continuing to increase faster than planned capacity and congestion worsening (Auckland Transport Alignment Project, 2016). The inability of water supply, sewerage and storm-water infrastructure to keep pace with demand has restricted developers' ability to deliver housing in a timely manner (NZPC, 2017).

Transport and water infrastructure is largely the responsibility of local governments in New Zealand and constraints on their finances have restricted provision. Central government does, however, retain a role in planning and funding land transport and almost NZD 1 billion of new spending on rail infrastructure over the next four years was announced in the 2017 budget. Analysis of fiscal systems suggests that local councils generally do not recover the cost of growth-related infrastructure over a council's 10-year planning horizon, and only around half of councils currently experiencing rapid population growth face net fiscal benefits from growth over 25 years (NZPC, 2016). Fiscal benefits from population growth therefore accrue mainly to central government through increases in income and goods and services tax revenue. Heavy reliance by councils on property tax (rate) revenue for infrastructure financing discourages municipalities from accommodating or promoting growth that would push up the tax bill of the existing population (OECD, 2017b), and council benchmarks for debt servicing levels are a further constraint on infrastructure spending (NZPC, 2017).

In recognition of the problems caused by an excessively restrictive planning system, special funding and exemptions have been introduced in critical areas. A NZD 1 billion infrastructure fund has been established to bring forward new roads and water infrastructure needed for new housing (English and Smith, 2016). The Government is currently consulting on a proposal for Urban Development Authorities, which are authorities given the powers to lead intensified urban development in a specific area. Special Housing Areas (regions or districts experiencing significant housing supply or affordability problems) enable faster and more permissive resource consenting processes and more limited notification of development. However, most of the designated Special Housing Areas within Auckland are situated in greenfield areas, potentially frustrating densification objectives (OECD, 2017b). It would also be preferable to reform the planning system rather than providing exemptions.

The recent Auckland Unitary Plan will allow greater densification and some expansion of urban development limits. It represents a major step forward in spatial planning, integrating land use, housing, transport, infrastructure and other urban planning issues. Nevertheless, permitted housing density follows a strange U-shape, with a fall in areas close to the city centre but higher density further out. This form is partly the result of insufficient infrastructure in areas close to the city centre. Large investments are being made in water and transport infrastructure to rectify this problem, which should permit the Plan to be revisited in the future to permit greater densification.

Urban planning has restricted competition in urban areas by discouraging or preventing the development of commercial activity outside designated areas, applying very detailed controls on the types and sizes of businesses that can operate in particular zones and seeking to reduce retail and commercial competition from other locations (NZPC, 2017).

Reforms to the urban planning system are needed

Greater use should be made of spatial planning to integrate land use, housing, transport, infrastructure and other urban planning issues, particularly outside Auckland where spatial planning is voluntary for councils (OECD, 2017b). Spatial planning that lays out a vision for each city's development with a focus on the types and locations of land-based infrastructure required has the potential to deliver better regional co-operation and understanding, more efficient use of existing infrastructure, enhanced responsiveness and cost savings. The Productivity Commission has also recommended that the future planning system should set clear limits and standards within which development can occur to ensure the integrity of natural systems and maintain environmental quality (NZPC, 2017). Greater resources should be provided for councils to build their technical capability in areas such as environmental science and economics in order to underpin a more flexible planning system (NZPC, 2017). Upfront consultation should be used to build a case for densification and overcome opposition from vested interests, particularly in low-density areas close to cities and along public-transport corridors once infrastructure shortages are addressed. The government should also address constraints on infrastructure delivery due to excessive underground private property rights, which can increase the cost of infrastructure due to suboptimal routing (Brown, 2016).

Funding options for water and transport infrastructure should be expanded

Insufficient infrastructure investment can have a number of negative consequences for productivity. In the short run under-provision of infrastructure leads to greater use of other inputs and thus reduces productivity. In the longer run insufficient infrastructure can deter

private investment and lead to firms avoiding New Zealand as a place to do business. Providing further funding options for local governments would enhance their incentives to accommodate growth by moving the cost burden away from existing residents.

Legislation to permit further user charging for infrastructure would foster efficient use and reduce the burden on local government budgets. Rapid advances in transport and communications technology provide new opportunities to use road pricing that increases during peak times, with potential for substantial improvements in system performance (Auckland Transport Alignment Project, 2016). However, road pricing is currently limited to three toll roads, no congestion pricing applies (as has been used effectively in London, Singapore and Stockholm), and legislation restricts pricing to new roads where an alternate toll-free route is available. In the same vein, relatively few councils have introduced volumetric charges for water, and legislation that prevents councils from applying volumetric charging for wastewater should be repealed (NZPC, 2017).

More systematic use of cost-reflective “development contributions” would provide incentives for efficient development decisions and provide relief to local government budgets. Development contributions are one-off levies imposed by territorial authorities on developers to finance parts of the capital costs associated with new development. NZ development contributions do not generally reflect the true underlying cost of infrastructure supply (which differs by location and type of development) (OECD, 2017b), and recent legislative amendments prohibit their use for most types of “community infrastructure”, such as libraries and swimming pools.

Targeted rates could also be used to help fund infrastructure through land-value capture mechanisms, in which governments tax some of the property price increase due to infrastructure investment. This would allow councils to reap more of the benefits of population growth (OECD, 2015d). Land value capture mechanisms have been used to fund public infrastructure in Australia, including the Sydney Harbour Bridge. The experience there indicates that land value capture has merit as a potential funding source when a project has a sizeable group of beneficiaries beyond users. However, there can be practical difficulties maintaining levies after a project has been completed, and in matching levies to the magnitude and geographical distribution of benefits (Australian Productivity Commission, 2014).

Another way to diversify council revenue sources would be to allow land rezoning where owners are willing to pay for necessary infrastructure development. This could increase the supply of building sites while providing incentives for development to occur close to existing infrastructure networks but would need to be complemented by regulatory or market-based instruments to avoid developing ecologically valuable land. More generally, allowing councils to share in a revenue base linked to local economic activity (such as income or goods and services tax revenue) would increase their debt-servicing capacity so that they could make greater use of debt financing for infrastructure investments, the benefits of which extend over multiple generations.

Opportunities to make greater use of Public–Private Partnerships (PPPs) to finance infrastructure construction should continue to be investigated. PPPs can offer benefits through access to private technology and innovation (including internationally through FDI), enhanced private sector incentives to deliver projects on time and within budget, introducing competition “for the market”, and encouraging better use of pricing and other efficiency-enhancing mechanisms (Australian Productivity Commission, 2014). However, the

small scale of projects and limited council experience and capability may restrict the benefits from PPPs in New Zealand. Successfully assessing risks and determining where to assign them is a complex task that requires substantial capacity in the procuring agency, which is presently lacking at the local government level (NZPC, 2017). There are a number of ways that this problem could be addressed, including developing capacity in local governments, accessing advice from a central agency (such as the Treasury's PPP team), or developing a central agency to source, procure and manage PPP contracts as in Canada.

Leveraging the productivity potential of regional and Māori economies

Regions are important in understanding New Zealand's productivity performance. Some regions have relatively lower GDP per capita and poor productivity performance (OECD, 2016e). Regional economic development based on partnership between central government agencies and local stakeholders can enhance productivity in different types of regions by better integrating and adapting public investments and service provision to local conditions. The NZ government has recently initiated a series of regional economic surveys under the Regional Growth Programme, followed by action plans led by local governments. Policy tools range from road and broadband infrastructure to business development support (in general and specific programmes for the primary sector, tourism, and the Māori population), investment attraction, regional research institutes and clusters. The Regional Economic Development Ministers' Group helps to ensure that regional issues are taken into account in policymaking at the central government level. This approach is consistent with the OECD's regional development policy framework, which emphasises the importance of partnership across levels of government to provide opportunity through a focus on region-specific assets (OECD, 2017d). Regional policy needs to remain focused on effectively meeting the specific needs of all regions, rather than redistribution toward and subsidies for lagging regions, which undermine productivity.

A key driver of several regional economies in New Zealand is Māori economic development. Māori represent 15% of the NZ population and, on average, are younger, have lower incomes and poorer social and health outcomes than non-Māori. A new Action Plan under New Zealand's strategy for boosting Māori economic performance – the Crown-Māori Economic Growth Partnership – will be released this year with the objective of growing a more productive, innovative and internationally connected Māori economic sector. It will be important that quantifiable targets be established for government actions in partnership with Māori and that this initiative be integrated with wider regional development efforts such as the Regional Growth Programme.

Reforming competition enforcement and regulation

As New Zealand's competition enforcement and regulatory agency, the Commerce Commission has a crucial role in fostering competition. Consultation is currently underway to allow the Commerce Commission to undertake market studies, which would help markets work better, especially when obstacles and distortions to competition are not caused by competition law violations (OECD, 2016h). Clear definition of the purpose and goals of market studies, the involvement of stakeholders, adequate funding and the capacity to demand information (including confidential information) will be important to drive the success of this initiative (International Competition Network, 2012). Other actions to support competition include passing the Commerce (Cartels and Other Matters) Amendment Bill, which would clarify the scope of prohibited cartel behaviour and remove exemptions from

the Commerce Act that allow price fixing in international shipping. As argued in previous *Surveys*, the exemption from Commerce Act provisions for airlines under the Civil Aviation Act should also be revoked (OECD, 2011).

The structure of the Commerce Commission – with a board of Commissioners responsible for decision making and management of operations delegated to a Chief Executive – broadly conforms to the OECD's best practice principles for the governance of regulators (OECD, 2014), but reforms could strengthen its independence and accountability. Current arrangements set out in the Commerce Act 1986 and the Crown Entities Act 2004 leave substantial discretion to the government of the day regarding appointments. The Commission's independence could be reinforced by requiring that an independent panel select nominees for Commissioner positions (as described in OECD, 2016i), followed by selection by the relevant Minister based on clear criteria. However, the limited pool of qualified people in New Zealand could be a constraint on implementing such a process. There are no limits on reappointment of Commissioners, which is contrary to the OECD's best practice principles. Continuity and institutional memory would be better served through staggered terms for Commissioners and the Chief Executive. While independent judicial appeal mechanisms through the High Court already exist for various Commerce Commission determinations, accountability could be enhanced by introducing periodic independent assessment of Commerce Commission decisions, as also recommended in previous *Surveys*.

The legislative treatment of firms with market power should be reviewed in order to determine how well the current provisions are addressing behaviour that undermines competition in New Zealand markets, and whether any change in this approach is required. Currently, New Zealand's (and Australia's) treatment of firms with market power is unusual. Firms are prohibited from taking advantage of market power only if they are doing so for the purpose of restricting entry, preventing or deterring competitive conduct or eliminating a competitor. Framing the law around intent can be problematic as proving the purpose of commercial conduct has proven difficult for competition regulators. In Australia amending legislation has been drafted to add a mechanism that brings firms under scrutiny based on the effect of commercial conduct on competition (an "effects test") (Harper et al., 2015).

Improving the insolvency regime

Efficient insolvency regimes contribute to productivity through facilitating reallocation of resources and should: i) incentivise restructuring of viable firms and liquidation of non-viable ones; ii) balance the interest of parties involved to ensure an equitable resolution without discouraging future risk-taking; and iii) provide a timely resolution of insolvency (Adalet McGowan and Andrews, 2016). New Zealand scores close to the OECD average on the OECD's indicator of the efficiency of insolvency regimes, leaving some room for improvement (Andrews et al., 2017). Facilitating liquidation of non-viable firms can be expected to reduce productivity disparities across firms, which can have inclusiveness benefits in the medium-term as lower productivity disparities are associated with less labour income inequality (OECD, 2016j).

New Zealand's insolvency regime should be reformed to address its weaknesses. The time taken to resolve an insolvency case in New Zealand is longer than in leading countries such as Japan, Ireland, Canada, Belgium and Finland (World Bank, 2016b). According to the OECD's indicator of insolvency regimes, arrangements for new financing and special procedures for SMEs are the least efficient aspects of the New Zealand regime (Andrews et al., 2017).

No priority is given to credit obtained after commencement of insolvency proceedings. This may impede continued trading of viable businesses by constraining access to credit – international best practice is to give priority to new financing ahead of pre-existing unsecured creditors. Consideration should be given to introducing separate insolvency regimes for SMEs and large firms. Reserving formal insolvency proceedings for firms of sufficient scale to cover the fixed costs involved is a key design feature that can potentially provide for more timely and cost-effective resolution of SMEs (Andrews et al. 2017). Conversely, where the NZ insolvency regime is already targeted toward the needs of SMEs, this could limit its suitability for large firms, which account for over 30% of employment (based on firms with 250 employees or more; OECD 2016k). Under New Zealand's insolvency regime a restructuring plan can be imposed on dissenting creditors by a majority, which is beneficial as this can boost aggregate productivity growth by promoting the timely restructuring of viable firms that encounter temporary financial difficulties. However, there is no requirement that dissenting creditors receive at least as much under a restructuring plan as they would under liquidation, which can have an adverse effect on credit supply.

There is also scope to improve New Zealand's personal insolvency regime, which affects the ability of entrepreneurs and small business owners to get a fresh start. Cross-country evidence suggests that entrepreneur-friendly insolvency laws can increase self-employment rates, increase small business owners' use of insolvency proceedings and attract better entrepreneurs (Adalet McGowan and Andrews, 2016). Consideration should be given to reducing the discharge period, which at three years is longer than in the United States, United Kingdom or Canada, and to relaxing bankruptcy conditions: there are currently few exemptions for pre-bankruptcy assets as well as strict restrictions on civil and economic liberties prior to discharge.

Facilitating capital investment

Barriers to investment associated with the tax system and SME financing contribute to New Zealand's weak rate of capital investment and hence its low labour productivity. Evidence from OECD countries indicates that high corporate taxes and weak financial development are associated with lower capital stocks (Egert, 2017). Along with the removal of barriers to FDI, measures to facilitate capital investment have the potential to boost wages and thus inclusiveness as labour productivity increases with a higher capital-labour ratio.

Tax reform could boost capital investment

New Zealand's broad-based, low-rate tax system is simple and efficient, but there are opportunities for reforms to improve its efficiency and equity while boosting productivity through greater capital investment. However, the last major system review was undertaken during 2009 (Tax Working Group, 2010). Now would be an appropriate time to take another detailed look at the system in the light of trends in international taxation and improvements in technology and data sharing.

The exclusion of imputed rents and capital gains from the tax base and generous tax provisions that allow rental property investors to offset short-term losses against other income favour housing investment and contribute to New Zealand's relatively low saving rate (OECD, 2011). Under simple assumptions, high-income earners pay a real effective tax rate of over 40% on bank deposits, compared with 25% on investment in rental housing and 0% on owner-occupied housing (Treasury, 2010). Generous tax treatment of housing can have adverse efficiency effects by distorting the allocation of saving and investment, as well as

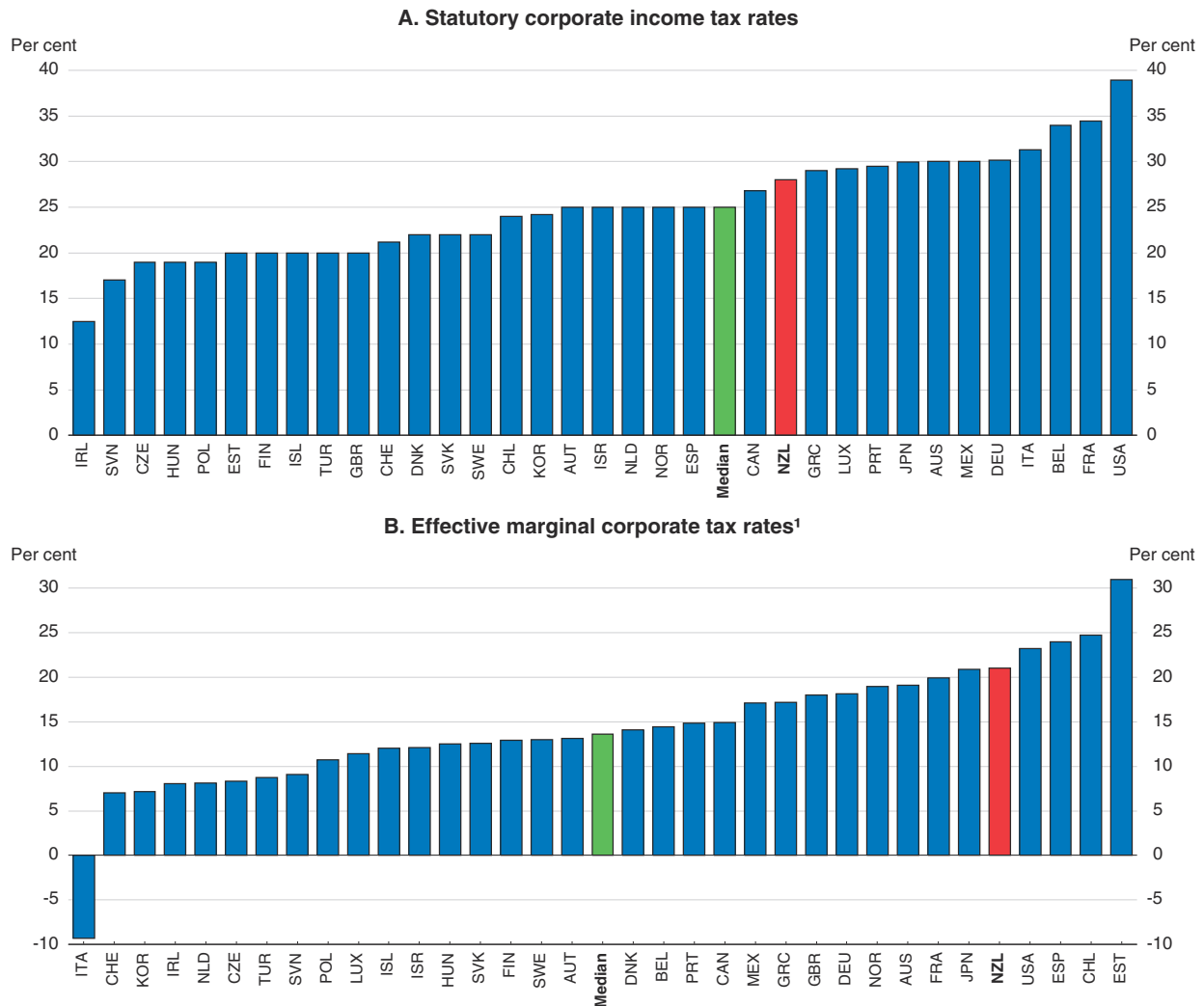
regressive distributional implications (Andrews et al., 2011). The tax-favoured nature of home ownership may have contributed to the sharp increase in the real price of NZ housing over the past 20 years and is likely to have encouraged excessive leveraging in pursuit of tax-preferred income (Brook, 2014). Real house price rises lower saving because capital gains (excluded from saving) increase homeowners' net worth, stimulating their consumption, and may reduce saving by recent house purchasers due to their need to finance higher interest payments on larger mortgages. The positive effect of house price growth on consumption has been estimated to be particularly strong in New Zealand (BIS, 2017).

New Zealand's high effective corporate tax rate increases the user cost of capital and thus reduces aggregate investment, FDI and entrepreneurial activity (Djankov et al., 2010), with substantial negative implications for economic growth (Johansson, 2016; Bartolini et al., 2017). As the Tax Working Group (2010) highlighted, it is difficult for New Zealand, as a small country, to maintain a high corporate tax rate while other countries continue to lower theirs. That trend has continued: five OECD countries implemented general corporate income tax reductions in 2015, and four have announced rate cuts in the coming years (OECD, 2016). New Zealand's corporate tax rate of 28% is above the OECD median of 25% in 2016 (Figure 1.19, Panel A). The effective marginal corporate tax rate, which is more relevant for investment decisions, is considerably less competitive (Panel B). In contrast to most other countries, the effective tax rate is not much lower than the nominal rate in New Zealand owing to its relatively broad corporate income tax base. As having a broad tax base reduces the efficiency cost of taxation, the focus of measures to reduce the effective corporate tax rate should be on lowering the nominal rate (although there might also be scope to lower the effective rate by increasing building depreciation allowances towards the true economic rate). While the negative effect of New Zealand's high effective corporate tax rate is reduced because its remoteness often makes location decisions depend more on factors other than tax, a high corporate tax rate also increases incentives for multinational firms to shift profits abroad through tax planning (Inland Revenue and Treasury, 2016). Tax avoidance by multinational companies is estimated to have cost New Zealand more than NZD 600 million in 2013, or around 7% of total corporate tax revenue (Cobham and Jansky, 2017).

A lower effective corporate tax rate could increase the attractiveness of investing in New Zealand. Revenue raised from corporate taxation was just over 4% of GDP in the year to June 2016 (Treasury, 2016), so a cut to match the OECD median rate would reduce revenue by around 0.4% of GDP. However, the overall fiscal cost would be lower, as the cost of dividend imputation would also fall. Considering the capital tax base and the corporate tax rate as part of a holistic review of the tax system would allow trade-offs with other tax cuts to be considered, for example reductions in personal tax rates. A review could also consider other tax bases such as land (which is immobile and therefore taxing it is non-distortionary), capital gains and negative environmental externalities. One downside of a corporate tax cut is that some of the benefits accrue to foreign investors. From a productivity perspective, however, benefits for foreigners are important to attract foreign capital and boost labour productivity through raising the capital-labour ratio.

Another issue to consider is the scope to boost productivity by ensuring that tax provisions encourage saving. The NZ government has a strong record on saving, but not the private sector. Removing regulatory and infrastructure barriers to the expansion of housing supply (as discussed above) would reduce capital gains on property, obliging households to save more out of current income to meet their consumption objectives in retirement. The 2011 *Survey* advanced a number of policy options to address low private

Figure 1.19. Corporate income tax rates, 2016



1. The effective marginal corporate tax rate is the percentage increase in the cost of capital of a marginal investment – that is, an investment that pays just enough to make the investment worthwhile – as a result of the corporate income tax rate and tax base.

Source: OECD, Tax Database; Oxford University Centre for Business Taxation, CBT tax database.

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saving, including extending automatic enrolment in the national retirement savings scheme (Kiwisaver) to all employees and considering an increase in the default contribution rate, as well as decreasing taxation of returns on non-housing saving vehicles (OECD, 2011). Reducing the tax rate on saving and corporate income would require other reforms that increase revenue, such as a capital gains tax or a land tax (Brook, 2014). Introducing a broad-based capital gains tax would address the favourable treatment of housing investment relative to deposits but would also increase taxation of saving and involve a number of trade-offs considered in previous studies (Table 1.2).

SME and entrepreneurship financing

As noted above, young firms are crucially important for the introduction of disruptive innovations, resource reallocation, the creation of new jobs and enhancing productivity

Table 1.2. Key advantages and disadvantages of introducing a broad-based capital gains tax

Based on a capital gains tax on realisation with no indexation for inflation

Advantages	Disadvantages
Increase progressivity of the tax system. ¹	Inefficient lock-in due to incentive to hold on to assets to avoid paying capital gains tax.
Improve horizontal equity by taxing income whether it is earned on capital gains or otherwise.	Taxes accrue on nominal as well as real gains. ²
Improve efficiency through reducing tax-driven incentive to make investments in assets that provide capital gains rather than income, in particular housing.	In the absence of other tax changes, can discourage saving and investment through reducing post-tax returns, particularly if there are strict limits around relief for capital losses.
Reduce incentive to shelter income from tax by transforming ordinary income into capital gain.	Taxing gains on shares has potential for some double taxation of retained profits on which company tax has already been paid. ³

1. US and Australian evidence indicates that taxation of capital gains is highly progressive. This is likely to be the case for New Zealand too, as the distribution of wealth is more unequal than that of income: the top 20% of NZ households own almost 70% of net wealth and more than 75% of net wealth excluding owner-occupied dwellings (Statistics NZ, 2016c).
2. This is a feature of a nominal tax system more broadly and is more important for taxation of interest-bearing assets. Because capital gains taxed on realisation benefit from deferral of tax payments, real after-tax gains increase over time and thus capital gains are less affected by taxation of nominal gains than are interest-bearing assets (Burman, 2009).
3. Retained profits are not subject to full double taxation to the extent that there is a value placed on unused imputation credits that can be used for future dividends, as this value will be capitalised into the value of the company and thus increase capital gains (Burman and White, 2009).

Source: OECD (2006), *Taxation of Capital Gains of Individuals: Policy Considerations and Approaches*, OECD Tax Policy Studies No. 14; OECD (2011), *OECD Economic Surveys New Zealand*, OECD Publishing; Tax Working Group (2010), *A Tax System for New Zealand's Future*, Report of the Victoria University of Wellington Tax Working Group; Treasury and Inland Revenue (2009), "The Taxation of Capital Gains", *Background Paper for the Tax Working Group*.

growth. More developed markets for seed and early-stage venture capital are positively associated with resource flows to patenting firms (Andrews et al., 2014) and are associated with a larger size of new-entrant firms and higher post-entry growth (Calvino et al., 2015). There is a case for public support for venture capital investment on the grounds that it generates knowledge spill-over benefits that are not taken into account by investors, with international estimates indicating that venture capital generates three times as much innovation as an equal amount of corporate R&D (Lerner, 2010). Start-up financing in New Zealand is supported by the government's NZ Venture Investment Fund (NZVIF), which invests alongside private venture capital funds (through the NZD 260 million Venture Capital Fund) and angel investors (through the NZD 40 million Seed Co-Investment Fund). While NZ venture capital investment has grown, it remains below the OECD median (Figure 1.10).

A strength of the NZVIF model is that it pairs government funding with private-sector investors who are likely to be much better placed than the government to choose investment opportunities and provide mentoring to businesses. Returns for private investors are leveraged as NZVIF shares fully in losses but can take a lower share of gains where investors exercise their option to buy out NZVIF investment. International studies show that a mix of public and private venture capital funding can have a positive impact on the provision of venture capital, but further analysis is needed to understand the drivers of those results (Wilson, 2015). Successful venture capital programmes internationally, such as Australia's Innovation Investment Funds and the US Small Business Innovation Research Program, have had similar designs (OECD, 2016m).

The government should closely monitor outcomes under the Venture Capital and Seed Co-Investment Funds. Further funding may be required, but care is needed to make sure

additional funding is incremental and justified by a market-failure rationale. An impact assessment of the extent to which NZVIF investments have provided direct and spillover benefits would be worthwhile. It is also important for governments to help overcome market failures in SME and entrepreneurship financing. In particular, government should address SMEs' skills gaps in finance and provide information for credit-risk assessment of SME financing in order to encourage investors' participation (OECD, 2015e).

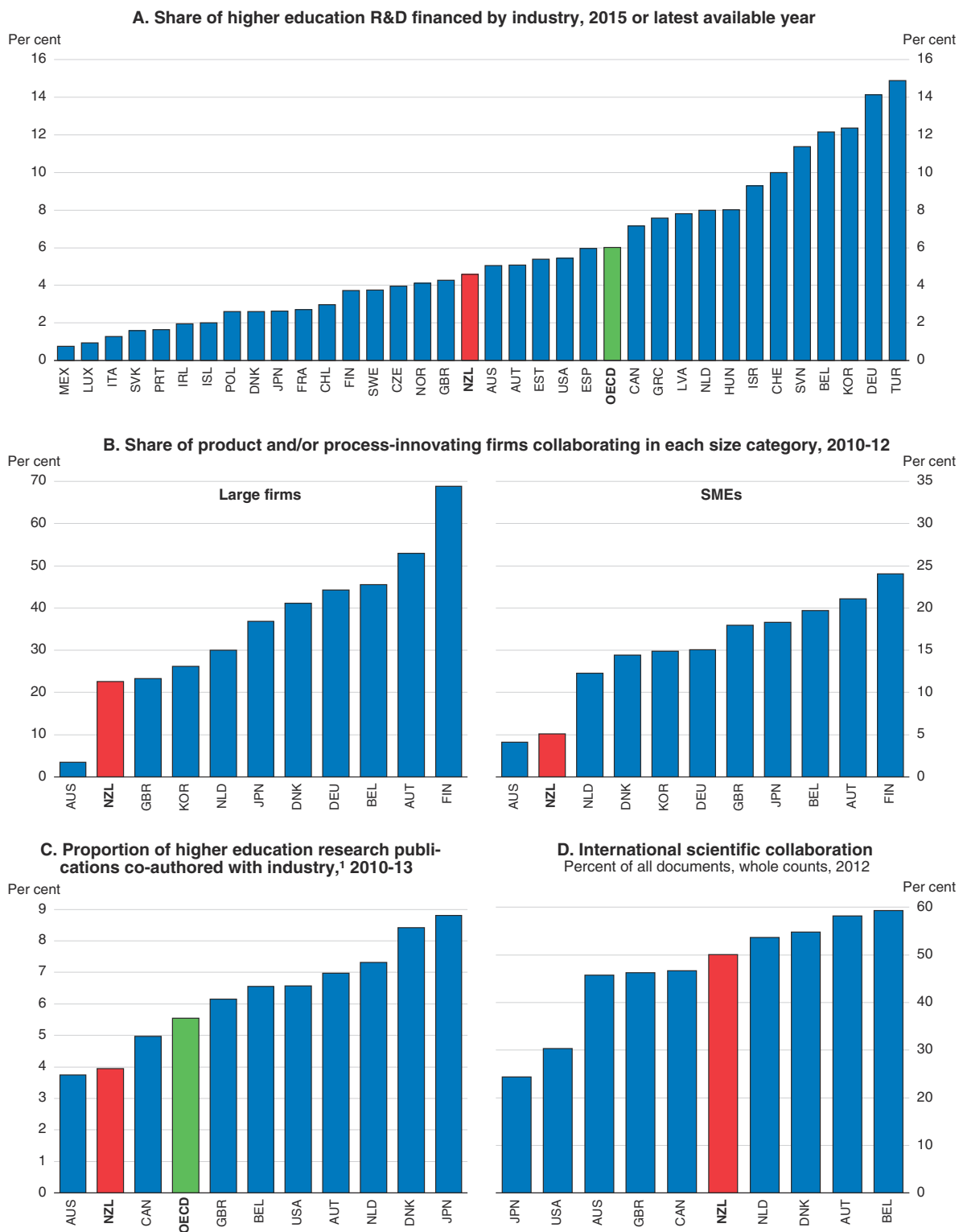
Investment in innovation

As highlighted above, NZ R&D expenditure is low compared with other OECD countries, particularly business expenditure on R&D. While this may reflect geographic factors and industry composition to some extent, low R&D spending is associated with weak MFP growth and hinders the adoption of foreign technologies. There is a limited amount of collaboration between firms and higher education or research institutions, both in terms of the share of higher education R&D funded by industry and the share of firms collaborating, in particular for small firms (Figure 1.20, Panels A and B). Only a small proportion of higher education research publications are co-authored with industry (Panel C). Collaboration between firms and research institutions is particularly important for small businesses that otherwise might not have access to advanced machinery and skilled personnel (OECD, 2015a). The lack of collaboration is thus especially concerning, given the importance of small firms to the NZ economy. International collaboration by researchers in New Zealand is above the OECD median (Figure 1.20, Panel D). However, authors from small countries are more likely to engage in international collaboration, and more intensive collaboration among many small OECD peers suggests there is potential for further improvement if NZ researchers can use digital technologies to overcome the disadvantage of being located further from potential international collaborators.

Current policy provides relatively low levels of support

Government support for business R&D in New Zealand is unusual compared with other OECD countries in terms of both the low level of support and the absence of R&D tax incentives that provide an enhanced (i.e. greater than 100%) allowance for eligible expenses (Figure 1.21). The R&D tax loss credit that took effect in the 2015-16 tax year does provide favourable treatment for R&D expenditure by allowing net losses to be "cashed out" instead of carried forward. However, this applies only under very specific conditions: the firm must make a net loss, have at least 20% of total expenditure on R&D labour expenditure and meet further corporate eligibility conditions. R&D performed by NZ firms grew by more than 8% per year between 2010 and 2016 but remains well below that of most other OECD countries. Government funding of business R&D is low not just in absolute terms but also as a proportion of business R&D (11%, compared with an OECD average of more than 13%). Assistance is primarily delivered through Callaghan Innovation, a government agency that administers R&D grants. R&D growth grants are available to businesses that have spent at least 1.5% of their revenue in the last two financial years on R&D, while project grants are targeted at firms that are not eligible for a growth grant, such as firms undertaking their first R&D (Callaghan Innovation, 2015). The cost of marginal R&D projects in New Zealand can be reduced by 20% if the business receives a growth grant, or as much as 40% where a business is eligible for a project grant. Where marginal R&D is not eligible for grants – for example, firms with annual R&D spending of more than NZD 25 million per year – there is zero reduction in the marginal cost. The NZ government has committed to increasing its expenditure on R&D (NZ Government, 2016).

Figure 1.20. **Collaboration by NZ researchers**



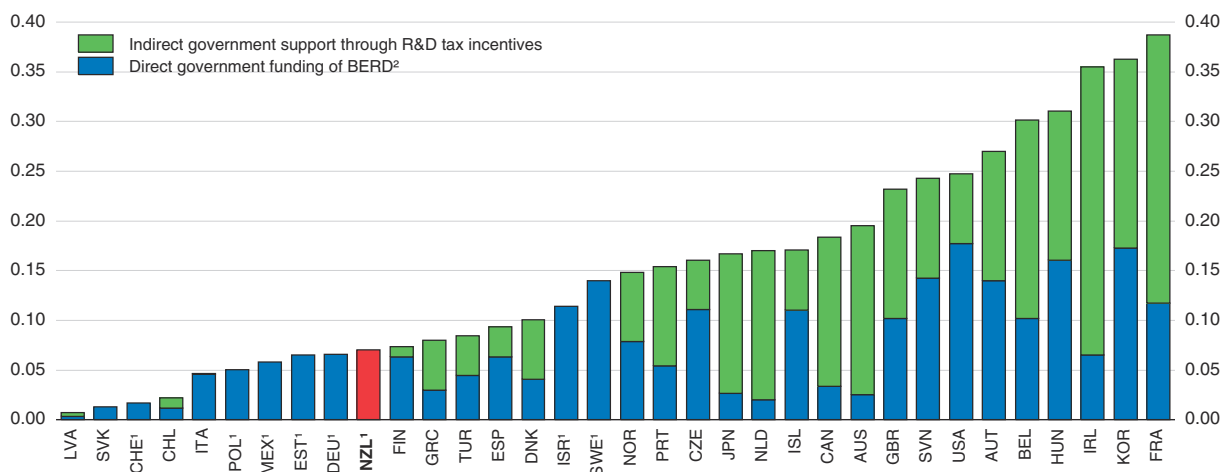
1. Includes universities having produced more than 5000 publications during 2010-13.

Source: Statistics New Zealand; OECD, Main Science and Technology Indicators Database; OECD (2015), *OECD Science, Technology and Industry Scoreboard 2015*, Figures 3.3.1 and 3.10.1; Leiden University (2016), *CWTS Leiden Ranking 2016*.

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Figure 1.21. **Direct and indirect funding of business R&D by governments**

As a percentage of GDP, 2014 or latest available data



1. Estonia, Germany, Mexico, New Zealand and Switzerland did not provide any indirect government support through R&D tax incentives. For Israel, the R&D component of incentives cannot be identified separately at present. No data on the cost of expenditure-based R&D tax incentive support are currently available for Poland and Sweden. Data on direct government support for New Zealand are for the year to March 2016.

2. Business enterprise expenditure on R&D.

Source: OECD (2017), *R&D Tax Incentive Indicators*, <http://oe.cd/rntax> and *Main Science and Technology Indicators*, <http://oe.cd/msti>; Statistics New Zealand.

StatLink  <http://dx.doi.org/10.1787/888933497282>

The Innovative New Zealand package provided additional science and innovation funding in the 2016 and 2017 budgets, including increased funding for R&D grants to meet rising demand while maintaining the same rate of support.

Increasing support for R&D could boost productivity, but evidence for New Zealand remains mixed

While there is a need to tailor the level of support to specific country settings, empirical studies suggest that a socially efficient correction for market failures should reduce the marginal cost of R&D by around 50% (IME, 2016b). Fiscal support for R&D is typically justified on the basis of addressing market failures associated with difficulties for firms to fully appropriate returns to R&D investment (spillovers) and difficulties in finding external finance, particularly for small or young firms (OECD, 2016n). Higher R&D spending is inclusive in that it is associated with higher disposable income for households across the income distribution (OECD, 2016j). Increasing innovation in an economy also improves income mobility, providing opportunities for people throughout the income distribution (Aghion et al., 2015, 2016).

Evidence regarding the benefits of R&D for NZ firms is somewhat mixed. There is little evidence that higher intangible investment (which includes, but is not limited to, R&D investment) is associated with higher productivity or profitability (Chappell and Jaffe, 2016). Receipt of an R&D grant significantly increases the probability of applying for a patent or introducing new goods and services but has much weaker effects on process innovation (Jaffe and Le, 2015) and has no significant effect on average productivity across all firms (Wakeman, 2017a). There is evidence that innovative NZ firms grow faster than other firms but still struggle to improve their productivity (Wakeman, 2017b). While none of these

studies sought to estimate the spillover benefits from R&D – and thus the optimal level of government support – the lack of benefit accruing to NZ firms suggests that spillovers from NZ R&D may also be small. These results are consistent with the finding that factors relating to New Zealand's size, distance from major economic centres, industry composition and small average firm size militate against R&D activity (Crawford, 2007). It is also consistent with returns to innovation increasing with market size (Acemoglu and Linn, 2004).

The average rate of support for R&D of 11%, as noted above, is well below the socially efficient level indicated by international empirical studies. There is thus scope for productivity gains from increasing the overall level of support and an immediate need to remove the annual cap on R&D growth grants in order to promote firm growth and spill-overs from R&D by large firms, which play a leading role in carrying out large-scale innovations.

Grant assistance for R&D could be complemented by a broad-based R&D tax incentive, as grants and tax incentives have different strengths (Table 1.3). One advantage of introducing an R&D tax incentive that provides an enhanced allowance for R&D expenditure is that it could reduce the administrative burden of R&D support. In 2015-16 Callaghan Innovation spent more than NZD 13 million on business R&D contract management, accounting for more than 8% of the total value of grants awarded (Callaghan Innovation, 2016). Most OECD countries use a combination of direct grants and R&D tax incentives to support business R&D (Figure 1.21). Whether grants or tax incentives are preferred, the innovation and R&D funding system should be streamlined with a view to reducing transaction and administrative costs (OECD, 2017b).

Table 1.3. Relative strengths of tax incentives and grants to support business R&D

Tax incentives to support R&D	Grants to support R&D
Broad-based scheme that minimises administrative costs and avoids the need for governments to pick winners, with attendant costs from rent-seeking and lobbying.	Scope to target specific areas with bigger spillovers and/or public goods.
More suited to encouraging R&D activities oriented to development of applications that have the potential to be brought to the market within a reasonable timeframe.	Better for supporting the research component of R&D, which occurs earlier in the process and typically carries bigger spillovers.
Open-ended entitlements that do not generally require annual spending authorisation and can therefore maintain marginal incentives for further R&D spending.	Provides immediate benefits to capital-constrained start-ups.

Further adjustments to innovation policy are warranted

As a small country New Zealand is likely to be at the forefront of research only in some specific areas, and it is likely to be cheaper and more effective to import knowledge (embodied in goods imports or through FDI) in many other areas. This heightens the importance of focusing R&D in specific areas, as well as the importance of a rigorous and transparent selection process. The 2015-25 National Statement of Science Investment partially shifted research funding from budget allocations for research institutions to contestable funding open to all institutions and science fields so as to improve R&D spending efficiency and support impact-driven science (MBIE, 2015). This has the potential to improve value for money by increasing research quality and relevance but should be monitored to ensure that uncertain funding does not negatively affect career development and retention of human resources for science and technology, as occurred previously for some Crown Research Institutes (OECD, 2007). New Zealand already allocates more public funds through

project-based funding than institutional block funding, in contrast to most other OECD countries (OECD, 2016o).

Fiscal and other support could improve collaboration between research institutions and industry in New Zealand, with potential productivity benefits through sharing of risk, exploiting economies of scale and scope, and addressing information asymmetries between firms. Initiatives to encourage this type of collaboration can also shrink the productivity gap between less and more productive firms, potentially reducing labour income inequality (OECD, 2016j). Existing initiatives include student grants administered by Callaghan Innovation, financial incentives for industry linkages, and funding for Centres of Research Excellence and to commercialise publicly funded research through the Commercialisation Partner Network. These types of initiatives offer potential benefits, particularly where there is stable long-term support for particular R&D collaborations (Innovation Policy Platform, 2016).

There is a need for government to strengthen financial incentives for industry linkages, as incentives for career success within tertiary institutions remain focused on scientific publications. This could be pursued by including industry linkages more explicitly as a criterion in evaluation for the Performance-Based Research Fund, as for 'knowledge exchange' funding in the United Kingdom and the allocation of Research Block Grants in Australia, with the allocation of the latter to be based on a greater weight for research income from business and other end-users from 2017 (OECD, 2017e). The Australian Government also plans to promote, through engagement with universities, revision of the appointment and promotion arrangements for academics so that time spent in business is given greater recognition (Australian Government, 2016a).

Finally, there are potential benefits from greater coordination between support for start-ups provided by Callaghan Innovation and by the NZVIF. Callaghan Innovation provides such support through several programmes including business incubators and accelerators, which rely on good mentoring to help start-ups develop to a point where angel or venture capital funding might be attracted. The overlap between these programmes and angel and venture capital funding through NZVIF means that the two organisations need to work more closely together. For example, the limited number of people with the requisite skills and experience to act as mentors is a strong argument for Callaghan and NZVIF working together to shortlist experts best placed to assist the start-ups that their programmes are supporting.

Recommendations to improve productivity in New Zealand's economy

(Key recommendations are in bolded italics)

Promote international connections

- ***Progressively narrow screening of foreign investment. Continue to reduce compliance costs and boost predictability for investors.***
- Reform trade facilitation through improving information availability, making more extensive use of advance rulings, expanding acceptance of copies of documents and improving multilateral border agency co-operation.
- Waive rules-of-origin requirements for trade between New Zealand and Australia on all items for which tariffs in both countries are at 5% or less, and reduce any tariffs above 5% to that level.

Recommendations to improve productivity in New Zealand's economy (cont.)

(Key recommendations are in bolded italics)

Promote benefits from agglomeration

- **Enhance councils' incentives to accommodate growth, for example by sharing in a tax base linked to local economic activity. Apply user charging more broadly for infrastructure, including congestion charging.**
- Pursue further options to broaden funding for infrastructure, including targeted property taxes that capture increases in land value from the provision of new amenities and more cost-reflective developer contributions. Further develop alternative delivery models, such as Public-Private Partnerships.
- Make greater use of spatial planning to coordinate new housing development with infrastructure provision.

Drive productivity improvements through enhanced competition

- **Review the merits of refocusing competition law on the effects of potentially anti-competitive conduct, as opposed to its intent.**
- **Provide the Commerce Commission with the power and resources to undertake market studies.**
- Facilitate competition in construction through a Commerce Commission market study into the industry and extending suspension of anti-dumping actions on residential building materials beyond 2017.
- Reduce the time taken to resolve insolvency cases, and investigate whether continued trading of viable firms is impeded by not giving priority for new financing ahead of pre-existing unsecured creditors. Consider introducing separate insolvency regimes for SMEs and large firms.

Reform the tax system to remove barriers to capital investment

- **Undertake a tax review that considers corporate and personal income tax settings and potential new tax bases.**

Increase investment in innovation

- **Increase fiscal support for business research and development.**
- **Maintain or increase long-term support for successful collaboration between research institutions and industry.**
- Remove the annual cap on growth grants for research and development.

Bibliography

- Acemoglu, D. and J. Linn (2004), "Market Size in Innovation: Evidence from the Pharmaceutical Industry", *Quarterly Journal of Economics*, Vol. 119, No. 3, pp. 1048-90.
- Adalet McGowan, M. and D. Andrews (2016), "Insolvency Regimes and Productivity Growth: A Framework for Analysis", *OECD Economics Department Working Papers*, No. 1309, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jlv2jqhxgq6-en>.
- Adams, M. and R. Chapman (2016), "Do Denser Urban Areas Save on Infrastructure? Evidence from New Zealand Territorial Authorities", *Policy Quarterly*, Vol. 12, No. 4, pp. 63-70.
- Aghion, P., U. Akcigit, A. Bergeaud, R. Blundell and D. Hémous (2015), "Innovation and Top Income Inequality", *NBER Working Papers*, No. 21247.
- Aghion, P., U. Akcigit, A. Hyytinen and O. Toivanen (2016), "Living the 'American Dream' in Finland: The Social Mobility of Innovators", Presentation at the Annual Meeting of the American Economic Association, San Francisco.

- Ahrend, R., E. Farchy, I. Kaplanis and A. Lembcke (2017), "What Makes Cities More Productive? Agglomeration economies and the role of urban governance: Evidence from 5 OECD Countries", *OECD Productivity Working Papers*, No. 2017-02, OECD Publishing, Paris.
- Andrews, D., M. Adalet McGowan and V. Millot (2017), "Insolvency Regimes, Zombie Firms and Capital Reallocation", *OECD Economics Department Working Papers*, OECD Publishing, Paris, forthcoming.
- Andrews, D., A. Caldera Sánchez and Å. Johansson (2011), "Housing Markets and Structural Policies in OECD Countries", *OECD Economics Department Working Papers*, No. 836, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5kgk8t2k9vf3-en>.
- Andrews, D. and F. Cingano (2014), "Public Policy and Resource Allocation: Evidence from Firms in OECD Countries", *Economic Policy*, April 2014, pp. 253-96.
- Andrews, D., C. Criscuolo and P. Gal P (2016), "The Best versus the Rest: The Global Productivity Slowdown, Divergence across Firms and the Role of Public Policy", *OECD Productivity Working Papers*, No. 2016-05, OECD Publishing, Paris.
- Andrews, D., C. Criscuolo and C. Menon (2014), "Do Resources Flow to Patenting Firms?: Cross-Country Evidence from Firm Level Data", *OECD Economics Department Working Papers*, No. 1127, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz2lpmk0gs6-en>.
- Arvis, J., D. Saslavsky, L. Ojala, B. Shepherd, C. Busch, A. Raj and T. Naula (2016), *Connecting to Compete 2016: Trade Logistics in the Global Economy*, The World Bank, Washington, DC.
- Auckland Transport Alignment Project (2016), *Auckland Transport Alignment Project: Supporting Information*, www.transport.govt.nz/assets/Uploads/Land/Documents/ATAP-Supporting-Information.pdf.
- Australian Government (2016a), "Delivering a High-Performing Research Sector in Australia: Watt Review Response", May.
- Australian and New Zealand Productivity Commissions (2012), *Strengthening Trans-Tasman Economic Relations*, Joint Study, Final Report.
- Australian Productivity Commission (2014), *Public Infrastructure*, Inquiry Report, Melbourne.
- Australian Productivity Commission (2015), *Mutual Recognition Schemes*, Research Report, Melbourne.
- Ballinal, J. and D. Pambudi (2016), "Quantifying the Costs of Non-Tariff Measures in the Asia-Pacific Region: Initial Estimates", *NZIER Public Discussion Paper*, Working Paper No. 2016/4, Wellington.
- Barnes, S., R. Bouis, P. Briard, S. Dougherty and M. Eris (2013), "The GDP Impact of Reform: A Simple Simulation Framework", *OECD Economics Department Working Papers*, No. 834, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5kgk9qjnhkmt-en>.
- Bartolini, D., O. Akgun, B. Cournède, A. Johansson and J.-M. Fournier (2017), "Tax Policy and Long-Term Economic Growth", *OECD Economics Department Working Papers*, Paris, forthcoming.
- BIS (2017), *BIS Quarterly Review March 2017: International Banking and Financial Market Developments*, Basel.
- Bouis, R. and C. Klein (2008), "La concurrence favorise-t-elle les gains de productivité? Analyse sectorielle dans les pays de l'OCDE", *Economie et Statistique*, No. 419-420, pp. 73-99.
- Brook, A. (2014), "Options to Address New Zealand's Saving-Investment Imbalance", *New Zealand Treasury Working Paper*, No. 14/17, Wellington.
- Brown, W. (2016), "When tunnel vision is blind", *National Business Review*, September 16.
- Burman, L. (2009), "Taxing capital gains in Australia: assessment and recommendations." in: *Australian Business Tax Reform in Retrospect & Prospect*, Thomson Reuters, Sydney.
- Burman, L. and D. White (2009), "Taxing Capital Gains in New Zealand: Assessment and Recommendations", *Background Paper for Consideration at the Third Session of the Tax Working Group*, Wellington.
- Cado, O. and J. de Melo (2007), "Why OECD Countries Should Reform Rules of Origin", *The World Bank Research Observer*, Vol. 23, No. 1, pp. 77-105.
- Caldera Sanchez, A. and F. Gori (2016), "Can Reforms Promoting Growth Increase Financial Fragility? An Empirical Assessment", *OECD Economics Department Working Papers*, No. 1340, OECD Publishing, Paris.
- Caldera Sánchez, A. and Å. Johansson (2011), "The Price Responsiveness of Housing Supply in OECD Countries", *OECD Economics Department Working Papers*, No. 837, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5kgk9qhrnm33-en>.
- Callaghan Innovation (2015), *Guidelines: Ministerial Direction for Business R&D Grants*, Wellington.

- Callaghan Innovation (2016), *Annual Report 2016*, Auckland.
- Calvino, F., C. Criscuolo and C. Menon (2015), "Cross-country evidence on start-up dynamics", *OECD Science, Technology and Industry Working Papers*, No. 2015/06, OECD Publishing, Paris.
- Chappell, N. and A. Jaffe (2016), "Intangible Investment and Firm Performance", *Motu Working Paper*, No. 16-14, Wellington.
- Cobham, A. and P. Jansky (2017), "Global distribution of revenue loss from tax avoidance", *WIDER Working Paper*, No. 2017/55, United Nations University World Institute for Development Economics Research, Helsinki.
- Commerce Commission (2014), "Commerce Commission Launches Website for Construction Industry", *Media Release*, 7 May, Wellington.
- Commerce Commission (2016), *Z Energy cleared to acquire Chevron subject to divestments*, Media Release, www.comcom.govt.nz/the-commission/media-centre/media-releases/detail/2016/z-energy-cleared-to-acquire-chevron-subject-to-divestments.
- Conway, P. (2016), "Achieving New Zealand's Productivity Potential", *Productivity Commission Research Paper*, No. 2016/1, Wellington.
- Council of Economic Advisers (2016), *2016 Economic Report of the President*, US Government Printing Office, Washington, DC.
- Crampton, E. and K. Acharya (2015), *In the Zone: Creating a Toolbox for Regional Prosperity*, The New Zealand Initiative, Wellington.
- Crawford, R., R. Fabling, A. Grimes and N. Bonner (2007), "National R&D and Patenting: Is New Zealand an Outlier?", *New Zealand Economic Papers*, Vol. 41, No. 1, pp. 69-90, <http://dx.doi.org/10.1080/00779950709558499>.
- Criscuolo, C., P.N. Gal and C. Menon (2014), "The Dynamics of Employment Growth: New Evidence from 18 Countries", *OECD Science, Technology and Industry Policy Papers*, No. 14, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jz417hj6hg6-en>.
- Dabla-Norris, E., S. Guo, V. Haksar, M. Kim, K. Kochhar, K. Wiseman and A. Zdzienicka (2015), "The New Normal: A Sector-Level Perspective on Productivity Trends in Advanced Countries", *IMF Staff Discussion Note*, SDN/15/03, Washington.
- de Serres, A., N. Yashiro and H. Boulhol (2014), "An International Perspective on New Zealand's Productivity Paradox", *NZPC Working Paper*, No. 2014/1.
- Djankov, S., T. Ganser, C. McLiesh, R. Ramalho and A. Shleifer (2010), "The Effect of Corporate Taxes on Investment and Entrepreneurship", *American Economic Journal: Macroeconomics* 2, July, pp. 31-64.
- Doan, T., K. Iyer and D. Maré (2014), "Productivity spillovers from foreign direct investment in New Zealand", *Ministry of Business, Innovation and Employment Occasional Paper*, No. 14/01, Wellington.
- Egert, B. (2017), "Regulation, institutions and aggregate investment: New evidence from OECD countries", *OECD Economics Department Working Paper*, OECD Publishing, Paris, forthcoming.
- English, B. and N. Smith (2016). *\$1b fund to accelerate housing infrastructure*, www.beehive.govt.nz/release/1b-fund-accelerate-housing-infrastructure.
- Glaeser, E. (2010), "Introduction", in *Agglomeration Economics*, The University of Chicago Press, www.nber.org/books/glae08-1.
- Green, R., R. Agarwal, P. Brown, H. Tan and K. Randhawa (2011), "Management Matters in New Zealand: How Does Manufacturing Measure Up?", *Ministry of Economic Development Occasional Paper*, No. 11/03, Wellington.
- Grimes, A., C. Ren and P. Stevens (2012), "The need for speed: impacts of internet connectivity on firm productivity", *Journal of Productivity Analysis*, Vol. 37, pp. 187-201.
- Guillemette, Y. (2009), "Structural Policies to Overcome Geographic Barriers and Create Prosperity in New Zealand", *OECD Economics Department Working Papers*, No. 696, OECD Publishing, Paris, <http://dx.doi.org/10.1787/224223031816>.
- Guy, N. and N. Wagner (2016), "Low-risk travellers streamlined at the border", *Budget release*, 26 May, www.beehive.govt.nz/release/low-risk-travellers-streamlined-border.
- Haltiwanger, J., R. Jarmin and J. Miranda (2012), "Who Creates Jobs? Small versus Large versus Young". *Review of Economics and Statistics*, Vol. 95, No. 2, pp. 347-61, http://dx.doi.org/10.1162/REST_a_00288.

- Harper, I., P. Anderson, S. McCluskey and M. O'Bryan QC (2015), *Competition Policy Review, Final Report*, Commonwealth of Australia, March.
- Heatley, D. and B. Howell (2010), "Overseas Investment: Is New Zealand Open for Business?", New Zealand Institute for the Study of Competition and Regulation.
- Høj, J., M. Jimenez, M. Maher, G. Nicoletti and M. Wise (2007), "Product Market Competition in the OECD Countries: Taking Stock and Moving Forward", *OECD Economics Department Working Papers*, No. 575, OECD Publishing, Paris, <http://dx.doi.org/10.1787/108734233645>.
- International Aviation Transport Association (2015), *Annual Review 2015*, Miami.
- International Competition Network (2012), *Market Studies Good Practice Handbook*, Advocacy Working Group, Rio de Janeiro.
- IMF (2016a), *New Zealand: Selected Issues*, IMF Country Report No. 16/40, Washington.
- IMF (2016b), *Fiscal Monitor: Acting Now, Acting Together*, April, Washington
- IMF (2017), *International Investment Position by Indicator*, IMF Data Warehouse.
- Innovation Policy Platform (2016), *R&D collaboration of universities and PRIs with firms*, www.innovationpolicyplatform.org/content/rd-collaboration-universities-and-pris-firms.
- Inland Revenue and Treasury (2016), *New Zealand's Taxation Framework for Inbound Investment: A Draft Overview of Current Tax Policy Settings*, Wellington.
- Jaffe, A. and T. Le (2015), "The Impact of R&D Subsidy on Innovation: a Study of New Zealand Firms", *NBER Working Paper*, No. 21479, www.nber.org/papers/w21479.
- Jaffe, A., T. Le and N. Chappell (2016), "Productivity distribution and drivers of productivity growth in the construction industry", *Motu Working Paper*, No. 16-08, Wellington.
- Johansson, Å. (2016), "Public Finance, Economic Growth and Inequality: A Survey of the Evidence", *OECD Economics Department Working Papers*, No. 1346, OECD Publishing, Paris, <http://dx.doi.org/10.1787/094bdaa5-en>.
- Kim, J. and S. Hwang (2000), "The Role of Foreign Direct Investment in Korea's Economic Development: Productivity Effects and Implications for the Currency Crisis", in *The Role of Foreign Direct Investment in East Asian Economic Development*, NBER-EASE Vol. 9, University of Chicago Press.
- Koojaroenprasit, S. (2012), "The Impact of Foreign Direct Investment on Economic Growth: A Case Study of South Korea", *International Journal of Business and Social Science*, Vol. 3, No. 21, pp. 8-19.
- Kowalski, P., J. Lopez Gonzalez, A. Ragoussis, and C. Ugarte (2015), "Participation of Developing Countries in Global Value Chains: Implications for Trade and Trade-Related Policies." *OECD Trade Policy Paper*, No. 179, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5js33lfw0xxn-en>.
- Krugman, P. (2015), "Challenging the Oligarchy", *The New York Review of Books*, 17 December.
- Lentz, R. and D. Mortensen (2008), "An Empirical Model of Growth Through Product Innovation", *Econometrica*, Vol. 76, No. 6, pp. 1317-73.
- Lerner, J. (2010), "The Future of Public Efforts to Boost Entrepreneurship and Venture Capital", *Small Business Economics*, Vol. 35, Issue 3, pp. 255-64.
- Leshner, M. and S. Miroudot, (2008), "FDI spillovers and their interrelationship with trade", *OECD Trade Policy Working Paper*, No. 80, www.oecd.org/dataoecd/63/42/41457019.pdf.
- Maddison, A. (2001), *The World Economy: A Millennial Perspective*, OECD Development Centre, Paris.
- Makin, A., W. Zhang and G. Scobie (2008), "The contribution of foreign borrowing to the New Zealand Economy", *NZ Treasury Working Paper*, No. 08/03, Wellington.
- Mano, R. and M. Castillo (2015), "The Level of Productivity in Traded and Non-Traded Sectors for a Large Panel of Countries", *IMF Working Paper*, Washington.
- Maré, D. (2008), "Labour Productivity in Auckland Firms", *Ministry of Economic Development Occasional Paper*, No. 08/09, Wellington.
- Mason, G. (2013), "Investigating New Zealand–Australia Productivity Differences: New Comparisons at Industry Level", *Working Paper*, No. 2013/02, NZ Productivity Commission, Wellington.
- Mason, G. and M. Osborne (2007), "Productivity, Capital-Intensity and Labour Quality at Sector Level in New Zealand and the UK", *New Zealand Treasury Working Paper*, No. 07/01, Wellington.

- McCann, P. (2009), "Economic Geography, Globalisation and New Zealand's Productivity Paradox", *New Zealand Economic Papers*, Vol. 43, No. 3, pp. 279-314.
- McDermott, J. (2013), "Understanding the New Zealand Exchange Rate", speech delivered by John McDermott, Assistant Governor and Head of Economics at the Reserve Bank of New Zealand to Federated Farmers, Wellington, November.
- Ministry of Business, Innovation and Employment (MBIE) (2013), "Residential Construction Sector: Market Study", *Options Paper*, Wellington.
- MBIE (2015), *National Statement of Science Investment: 2015-2025*, Wellington.
- MBIE (2016), "Competition in New Zealand Industries: Measurement and Evidence", *Occasional Paper 16/01*, Wellington.
- Meehan, L. (2014). "Structural Change and New Zealand's Productivity Performance", *NZPC Research Note*, No. 2014/4, Wellington.
- Nicolas, F., S. Thomsen and M. Bang (2013), "Lessons from Investment Policy Reform in Korea", *OECD Working Papers on International Investment*, No. 2013/02, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k4376zqcpf1-en>.
- NZ Customs Service (2015), *Annual Report 2014-15*, Wellington.
- NZ Government (2015), *International Investment for Growth*, Business Growth Agenda, Wellington.
- NZ Government (2016), *Business Growth Agenda: Towards 2025*, Wellington, www.mbie.govt.nz/info-services/business/business-growth-agenda/towards-2025.
- NZ Investment Attraction Taskforce (2016), *Update November 2016*, www.nzte.govt.nz/media/7090601/1042-investment-taskforce-ar-web.pdf.
- NZIER (2011), "Industry productivity and the Australia–New Zealand income gap", *NZIER Public Discussion Document*, Working Paper No. 2011/3, Wellington.
- NZIER (2013a), "Construction Productivity: An Evidence Base for Research and Policy Issues", *NZIER Report to the Building & Construction Sector Productivity Partnership*, Wellington.
- NZIER (2013b), "Construction Industry Study: Implications for Cost Escalation in Road Building, Maintenance and Operation", *NZIER Final Report to the Ministry of Transport*, Wellington.
- NZPC (NZ Productivity Commission) (2014), *Boosting Productivity in the Services Sector*, Inquiry Report, Wellington.
- NZPC (2016), *Better Urban Planning*, Draft Report, Wellington.
- NZPC (2017), *Better Urban Planning*, Inquiry Report, Wellington.
- OECD (2006), *Taxation of Capital Gains of Individuals: Policy Considerations and Approaches*, *OECD Tax Policy Studies No. 14*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264029507-en>.
- OECD (2007), *Reviews of Innovation Policy: New Zealand*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/19934211-en>.
- OECD (2009), *Guidelines for Recipient Country Investment Policies Relating to National Security*, Recommendation adopted by the OECD Council on 25 May, OECD Investment Division, Paris.
- OECD (2011), *OECD Economic Surveys: New Zealand*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-nzl-2011-en.
- OECD (2014), *The Governance of Regulators*, *OECD Best Practice Principles for Regulatory Policy*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264209015-en>.
- OECD (2015a), *The Future of Productivity*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264248533-en>.
- OECD (2015b), *Indicators of Product Market Regulation*, Paris, www.oecd.org/economy/growth/indicatorsofproductmarketregulationhomepage.htm.
- OECD (2015c), *Policy Framework for Investment 2015 Edition*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264208667-en>.
- OECD (2015d), *OECD Economic Surveys New Zealand*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-nzl-2015-en.
- OECD (2015e), *New Approaches to SME and Entrepreneurship Financing: Broadening the Range of Instruments*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264240957-en>.

- OECD (2016a), *Better Life Index: New Zealand*, www.oecdbetterlifeindex.org/countries/new-zealand/.
- OECD (2016b), *The Productivity–Inclusiveness Nexus*, OECD Publishing, Paris.
- OECD (2016c), “Business Enterprise R&D Expenditure by Industry (ISIC 4)”, *Research and Development Statistics*, https://stats.oecd.org/Index.aspx?DataSetCode=BERD_INDUSTRY_ISIC4.
- OECD (2016d), *Trade Facilitation Indicators*, www.oecd.org/trade/facilitation/indicators.htm.
- OECD (2016e), *OECD Regional Outlook 2016: Productive Regions for Inclusive Societies*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264260245-en>.
- OECD (2016f), “Metropolitan Areas Database”, *Regional Statistics and Indicators*, www.oecd.org/gov/regional-policy/regionalstatisticsandindicators.htm.
- OECD (2016g), “Infrastructure Investment”, *OECD Data*, <https://data.oecd.org/transport/infrastructure-investment.htm>.
- OECD (2016h), *Competition and Market Studies in Latin America: The case of Chile, Colombia, Costa Rica, Mexico, Panama and Peru*, OECD Publishing, Paris.
- OECD (2016i), *Being an Independent Regulator, The Governance of Regulators*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264255401-en>.
- OECD (2016j), “Promoting Productivity and Equality: A Twin Challenge”, *OECD Economic Outlook*, Vol. 2016, Issue 1, OECD Publishing, Paris.
- OECD (2016k), *Entrepreneurship at a Glance 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/entrepreneur_aag-2016-en.
- OECD (2016l), *Tax Policy Reforms in the OECD 2016*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264260399-en>.
- OECD (2016m), *OECD Economic Surveys Canada*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-can-2016-en.
- OECD (2016n), *OECD Business and Finance Outlook 2016*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264257573-en>.
- OECD (2016o), “New Zealand”, in *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris http://dx.doi.org/10.1787/sti_in_outlook-2016-en.
- OECD (2017a), *OECD Services Trade Restrictiveness Index (STRI): New Zealand*, Trade and Agriculture Directorate, Paris.
- OECD (2017b), *Environmental Performance Review: New Zealand*, OECD Publishing, Paris.
- OECD (2017c), *The Governance of Land Use*, Joint work of the Working Party on Rural Policy and the Working Party on Urban Policy, OECD Publishing, Paris.
- OECD (2017d), *Regional Development Policy*, www.oecd.org/gov/regional-policy/regionaldevelopment.htm.
- OECD (2017e), *OECD Economic Surveys Australia*, OECD Publishing, Paris.
- Reich, R.B. (2015), *Saving Capitalism: For the Many, not the Few*, Knopf, New York.
- Reserve Bank of Australia (RBA) (2016), “The Australian economy and financial markets”, *Chart Pack*, Sydney.
- Reserve Bank of New Zealand (RBNZ) (2016), “S20 banks: summary income statement and related ratios”, *Statistics*, Wellington, www.rbnz.govt.nz/statistics/s20.
- Rose, D. (2009), “Overseas Indebtedness, Country Risk and Interest Rates”, *Policy Quarterly*, Vol. 5, Issue 1, pp. 3-8.
- Saia, A., D. Andrews and S. Albrizio (2015), “Productivity Spillovers from the Global Frontier and Public Policy: Industry-Level Evidence”, *Economics Department Working Papers*, No. 1238, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5js03hkvxhmr-en>.
- Sila, U., H. Morgavi and J. Dall’Orso (2016), “Trends in Productivity and Sources of Productivity Growth in Slovenia”, *Economics Department Working Papers*, No. 1368, OECD Publishing, Paris, <http://dx.doi.org/10.1787/a6691907-en>.
- Statistics New Zealand (2010), *Labour Hours Paid for Productivity Statistics*, Wellington.
- Statistics New Zealand (2016a), *Household Net Worth Statistics: Year Ended June 2015*, Wellington. www.stats.govt.nz/browse_for_stats/people_and_communities/Households/HouseholdNetWorthStatistics_HOTPYearJun15.aspx.

- Statistics New Zealand (2016b), *National Accounts: Income and Expenditure*, www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/NationalAccountsIncomeExpenditure_MRYeMar15.aspx.
- Statistics New Zealand (2016c), *National Accounts: Regional GDP*, www.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/regional-gdp-info-releases.aspx.
- Statistics New Zealand and Treasury (2010), *Taking on the West Island: How Does New Zealand's Labour Productivity Stack Up?*, Wellington.
- Tax Working Group (2010), *A Tax System for New Zealand's Future*, Report of the Victoria University of Wellington Tax Working Group, Wellington.
- TomTom (2016), *TomTom Traffic Index*, www.tomtom.com/en_gb/trafficindex/list.
- Treasury (2009), *Review of the Overseas Investment Screening Regime*, Policy Document and Regulatory Impact Statement, draft www.treasury.govt.nz/publications/informationreleases/overseasinvestment/pdfs/oi-cpa-ris-oir.pdf.
- Treasury (2010), *Saving in New Zealand – Issues and Options*, New Zealand Government, Wellington.
- Treasury (2016), *Financial Statements for the Government of New Zealand for the Year Ended 30 June 2016*, Wellington, www.treasury.govt.nz/government/financialstatements/yearend/jun16.
- Wakeman, S. (2017a), "The Impact of R&D Grants on the Performance of New Zealand Firms", *Productivity Commission Research Note*, No. 2016/5, Wellington, forthcoming.
- Wakeman, S. (2017b), "Innovation and the Performance of New Zealand Firms", *Productivity Commission Staff Working Paper*, No. 2016/2, Wellington, forthcoming.
- Wehrlé, F. and J. Pohl (2016), "Investment Policies Related to National Security: A Survey of Country Practices", *OECD Working Papers on International Investment*, No. 2016/02, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5jlwrrf038nx-en>
- Wilson, K.E. (2015), "Policy Lessons from Financing Innovative Firms", *OECD Science, Technology and Industry Policy Papers*, No. 24, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5js03z8zrh9p-en>.
- World Bank (2016a), *Doing Business 2017: Equal Opportunity for All*, 14th Edition, Washington.
- World Bank (2016b), "Resolving Insolvency", *Doing Business: Measuring Business Regulations*, www.doingbusiness.org/data/exploretopics/resolving-insolvency.
- World Economic Forum (2016), *The Global Competitiveness Report 2016-17*, Insight Report, K. Schwab (ed.), Geneva.



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