

Putting Productivity First

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Putting Productivity First

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Summary

Productivity matters for New Zealanders' living standards

“Productivity and the growth of productivity must be the first economic consideration at all times, not the last. That is the source of technological innovation, jobs, and wealth”.¹ A country’s ability to raise its standard of living depends on its ability to raise output per hour of work, the amount and value of goods and services each hour worked produces. This is not solely so that firms become increasingly internationally competitive; productivity is a fundamental driver of quality of life. Incomes are inevitably linked to workers’ productivity and a more productive labour force leads to higher wages.

A large proportion of New Zealand’s recent economic growth has been driven by increases in labour utilisation.² Whilst this has many economic and social advantages, it is not a sustainable source of long-run growth. New Zealand is nearing the limit to which economic growth can be driven by increased labour participation. Future growth will increasingly need to be derived from increases in productivity.

For several decades, long-term productivity growth has not lived up to aspirations and New Zealand has been low down the OECD league table that measures productivity performance. A number of interrelated factors are important for raising productivity, and there are no quick fixes or silver bullets. A broad range of steps impacting productivity on a number of fronts are required and it may take several years before any benefits are seen in measures of productivity.

And a focus on five drivers will help address the challenge to lift productivity performance

New Zealand’s productivity performance would benefit from a focus on five drivers of productivity, with consideration under each driver given to the role of international connections: Enterprise, Innovation, Skills, Investment and Natural resources.

This paper is the first in a series of papers that set out the key drivers that influence productivity performance and the ways in which it can be improved. It sets the scene for more detailed work on productivity performance and on each of the drivers outlined here. The paper aims to focus attention on the issues that economic theory and evidence suggest are of importance for New Zealand’s economy.

¹ William E. Simon, former US Secretary of the Treasury.

² See Section 2.1, Economic Development Indicators 2007, Ministry of Economic Development.

Summary messages: for overall productivity performance and for each driver

Productivity performance

- New Zealand is currently 22nd out of the 30 OECD countries as measured by GDP per hour worked (a measure of productivity) and GDP per capita (a measure of material welfare). On average, an hour worked in New Zealand produces approximately 30 per cent less output than an hour worked in Australia.
- This is not a new phenomenon; New Zealand has had a consistent productivity shortfall by international comparison since the 1970's. A focus on those factors that drive productivity performance will help improve New Zealand productivity and raise standards of living over a longer time horizon.

Enterprise

Entrepreneurs are the driving force in the economy, identifying and taking advantage of a broad range of market opportunities

- In international benchmarks, New Zealand scores well for its entrepreneurial framework, such as competition policy and the ease of doing business, and achieves a high degree of market entry and exit. Barriers to competition should be maintained at low levels and the promotion of competition should remain an important consideration when formulating policies that impact on the level of competition in product markets or for corporate control.
- The tax system affects the quality of the business environment by altering incentives to engage in economic activity of many varieties; for firms to invest in physical capital and research and development and for individuals to acquire skills. Understanding the impact of the tax system on the drivers of productivity is important when formulating tax policy.
- Good regulatory management requires that the regulatory environment improves over time and remains fit for purpose. This requires not only providing quality assurance on the flow of new regulation, but also systematically reviewing the existing stock of regulation.

Innovation

Innovation includes a range of firm innovations including new processes, new business models and new technologies

- New Zealand has a reasonably strong academic research base but there remains a low level of commercialisation of innovations. While business research and development has been increasing, it is still low by international comparison.
- In order to upgrade firms' innovation performance it is fundamental that firms leverage off external sources of ideas, both internationally (New Zealand produces less than one per cent of all global research) and from the public research base. Policies that strengthen the interactions between firms and research institutions will help the adoption of new ideas.

Investment

Investment directly impacts on how much a firm can produce and on the productivity of labour by increasing the amount of capital and technology available to each worker

- New Zealand has a relatively low capital stock per worker. While rates of investment have been increasing, they are only equal to the average rate within the OECD and lag countries such as Australia, Ireland and Spain.
- Encouraging entrepreneurship, greater use of innovation and international linkages will improve the number of investment opportunities. Policies that promote savings and reduce the volatility of the exchange rate cycle can lower the cost of capital.

Skills

Better-skilled individuals are more productive, earn higher wages, increase a firm's ability to adopt new technologies and increase the returns to investment in capital

- The education level of New Zealand's workforce is above the OECD median and improving, but there is a large group of children not achieving their potential and a large subset of the adult population with low literacy and foundation skills that limit their productivity.
- Productivity gains over the long term will come from improving the quality of early years' education, and from targeting support to disadvantaged and at-risk children. But this needs to be followed up by ongoing engagement in quality education and training both in school and after young people enter the workforce.

Natural Resources

The management of natural resources in a sustainable way allows resources to flow to their most productive uses while achieving environmental goals

- New Zealand has an enviable environment, but pressures are starting to appear on multiple fronts: changes in social and cultural expectations, international consumer trends, climate change pressures and emerging capacity constraints for some resources, particularly freshwater.
- An important focus is ensuring a comprehensive integrated framework which identifies crucial trade offs across goals, and facilitates a smooth economic adjustment in achieving these trade-offs. This would enable resource users to make informed, flexible and efficient decisions to ensure productive use of resources, while achieving environmental goals.

International Connections

Size and distance matter and are important considerations across each of the five drivers

- International connections are important for all five drivers of productivity. New Zealand's size and geographical location can explain up to 75 per cent of the gap in GDP per capita relative to other OECD countries. International flows of goods and services, finance, ideas and people can help New Zealand to access scarce skills, raw materials, intermediate goods and services, leading-edge technologies, new production techniques and other factors that influence the drivers of productivity.
- Domestic policy-settings such as immigration policy and foreign ownership rules impact directly on the level of international connections. In addition, more indirect policy settings, such as social and environmental policy, tax and regulation also play an important role in attracting individuals and firms to locate in New Zealand.

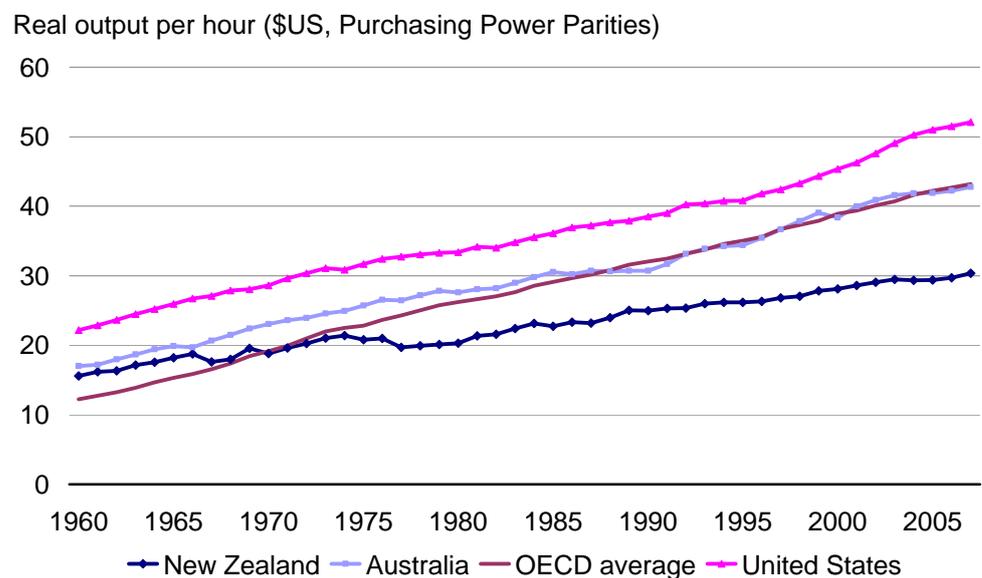
New Zealand's Productivity Challenge

New Zealand's productivity performance has been relatively poor for decades

New Zealand is currently 22nd out of the 30 OECD countries in terms of GDP per hour worked (a basic measure of productivity), and also in GDP per capita (a basic measure of material welfare).³ An hour worked in New Zealand produces approximately 30 per cent less output than an hour worked in Australia and around 45 per cent less than an hour worked in the USA. Lower levels of productivity have a clear impact on wages. The average wage in Australia is approximately one third higher than in New Zealand.

This is not a recent phenomenon; New Zealand's productivity performance has been an issue for some time (see Figure 1). Trend labour productivity performance over the last two decades has been approximately one to two per cent annually, but this performance has been insufficient to close the gap in productivity with the more advanced economies. However, New Zealand has achieved high levels of employment growth during recent times and while this has social and economic benefits, it has the effect of dampening average productivity as new employees tend to be less productive. The New Zealand Treasury Paper, *New Zealand's Productivity Performance*, provides a more detailed discussion.

Figure 1 - Level of labour productivity (output per hour)



Source: The Conference Board and Groningen Growth and Development Centre, Total Economy Database, January 2008

³ *Economic Policy Reforms: Going For Growth 2008*, OECD.

Governments share a key role in improving productivity growth

Governments share a key role in responding to the challenge of improving productivity growth; they have a range of policy levers that can enable firms to increase productivity and standards of living. Governments can encourage firms to engage in entrepreneurial activity by removing barriers to entrepreneurship and allowing markets to signal new business opportunities and smarter ways of operating. Beyond this, governments can provide the stability, flexibility and support that individuals, firms and markets require in order to invest, in both skills and capital, to ensure those investments are put to the most productive use, and to innovate, identify new market opportunities and bear risk.

A changing world places an increased emphasis on productivity

While productivity improvements are desirable even in an unchanging world, the increasingly open global economy, rising environmental concerns and demographic changes present both opportunities and challenges for the New Zealand economy and place increased emphasis on the need to continually improve productivity.

Emerging economies are offering new market opportunities for New Zealand firms

Globalisation is set to continue as international flows of goods, services, finance and ideas continue to increase and as the production chain becomes increasingly integrated across countries. These trends offer opportunities to access growing demand in new markets, adopt cutting-edge technologies and specialise in areas of the economy where New Zealand is most efficient. Globalisation will also pose new challenges as developing countries continue to move up the value chain, conducting more research and development (R&D), product development and supply-chain management. A more globalised world provides greater rewards for those who can increase productivity and increases the risks for those who fail to perform.

Globalisation is not new, but the speed of growth and the scale of impact of the Asian economies, most notably India and China, make this phase of globalisation unprecedented. The integration of China into the global economy adds hundreds of millions of increasingly skilled workers into the global labour force. This shift in the centre of economic gravity, away from Europe and towards Asia, has the potential to improve the position of New Zealand relative to key markets and to lessen the negative impact of economic geography. It will also increase competition as some domestic markets will become easier to supply from overseas, which puts a premium on building a competitive business environment. Differences in language, political systems, culture, values, history and size may act as barriers to economic integration and provide New Zealand firms with new challenges to overcome in accessing markets.

Innovative firms can help mitigate the risks of climate change while achieving economic growth

Environmental risks and opportunities are rising, from both global climate change and New Zealand's reliance on natural resources, particularly freshwater and petroleum products. To be sustainable, future economic growth must be compatible with environmental objectives. The Stern Review estimates the economic costs of unabated climate change will be particularly severe;⁴ action is required on a global scale to reduce global warming and to mitigate its economic effects. However, increased action and environmental concern create opportunities for innovative firms to capitalise on international demand for products with low environmental impact and make new technologies and modes of production profitable. As a country that is heavily reliant on natural resources for its continued prosperity, New Zealand faces a challenge in achieving both environmental and economic objectives.

Productivity growth will reduce the impact of increasing dependency ratios

Today, there are ten people of working age for every five people who are not of working age. In 2030, there will be fewer than eight people of working age for every five who are not.⁵ Demographic changes and an aging population have the potential to reduce economic growth as those in work support a greater number of people out of the labour market. Productivity growth will lessen the impact of increasing dependency ratios. It is hoped that productivity will increase as falling labour utilisation rates lead to increased demand for capital as a substitute for labour, and the workforce skills profile improves as cohorts of more highly-skilled younger workers enter the labour market.

Evidence points to five areas that drive productivity

Productivity theory and evidence, policy analysis, and the New Zealand context suggest that a number of factors are critical for improving New Zealand's productivity growth.

A stable base to encourage investment is fundamental...

The basis for robust productivity growth rests on a stable and certain macroeconomic platform and on the quality of New Zealand institutions. A stable macroeconomic environment, underpinned by well-designed fiscal and monetary policies, provides the base required for economic agents to make decisions, to invest, innovate and undertake new ventures, with the certainty that their returns will not be undermined by a weaker future economy.

Quality institutions, such as the structure of property rights and the existence of well-functioning markets, are a prerequisite. The quality of institutions is a central explanation of the differences in income and growth rates among countries. Institutions provide a basis for many of the drivers of productivity. For example, secure property rights are a prerequisite for investment in capital and innovation.

⁴ *Stern Review on the Economics of Climate Change*, 2006.

⁵ Calculated from Statistics New Zealand estimates.

...underpinned with microeconomic policies to provide flexibility and support

Macroeconomic stability and sound institutional arrangements provide the core on which individuals and firms can plan and invest. Effective microeconomic policies are also necessary to create a business environment that rewards enterprise and innovation and provides the resources and flexibility for firms to identify economic opportunities and to move to take advantage of them.

While many factors impact on productivity, evidence suggests that skills, innovation and investment are particularly important in determining productivity performance. In addition, given New Zealand's reliance on the primary sector, the sustainable management of natural resources is important in meeting both economic and environmental objectives. These factors do not impact on productivity in isolation, but are interrelated; advances in one area will alter the returns and incentives for activity under the other drivers of productivity. Ultimately, it is the entrepreneur who combines these factors of production, new ideas, skills and capital, in order to drive productivity growth.

Skills play a fundamental role in raising labour productivity

Human capital accumulation is important for productivity in its own right, and also has a key role in innovation and technological progress. Evidence is becoming increasingly clear that a large proportion of the differences in GDP per capita growth between countries can be explained by differences in human capital achievement. Education and training have been emphasised as central to the accumulation of knowledge and ideas; higher skills foster greater levels of innovation and entrepreneurship and increase the ability of the economy to absorb, implement and adapt ideas generated by others. The appropriate skill mix in part depends on a sector's distance from the technology frontier, with a decision on whether to create innovation or to absorb and adapt knowledge from abroad. Skill formation is a cumulative process over the life course. The greatest returns come from improving the quality of education in the early years but this needs to be maintained by ongoing quality in later years.

Technological progress relies on investment in innovation, capital and skills

Advances in knowledge, new products and processes and organisational technologies are central to long-run growth; this progress occurs through innovation and decisions made at the firm level about how capital and labour are combined to make output through the entrepreneurial process. Technological progress is, in part, determined by the level of investment in innovation, capital and skills. Innovation and knowledge spillovers, whereby the discovery or demonstration of a technology is adopted by a wider set of firms, are increasingly considered to be highly important for productivity growth. The rate of return to society from R&D activities is typically in the order of 90 to 100 per cent, well above the private return of 20 to 30 per cent.⁶

⁶ Blakeley, Nic, Geoff Lewis and Duncan Mills "The Economics of Knowledge: What makes Ideas Special for Economic Growth" New Zealand Treasury Policy Perspectives Paper 05/05.

The business environment should support enterprise and innovation

Firm turnover drives productivity growth. New firms seek out and develop new profitable ventures: well-performing firms grow and increase their market share and poorer-performing firms exit the market, and their resources are reallocated to more productive uses. The OECD suggests that this turnover results in up to 50 per cent of a country's labour productivity growth.⁷ Creative destruction requires a business environment that supports enterprise and innovation. Entrepreneurs drive this creative destruction because of their role in demanding factor inputs, determining the balance between factors, and driving the efficiency with which they are combined.

Regulatory frameworks encourage sustainable use of natural resources

Regulatory and economic frameworks that encourage sustainable investment over time, and quick responses to emerging resource constraints and new opportunities to invest in natural resources are critical for productivity. As environmental considerations may constrain growth in some sectors, it will become increasingly important that the frameworks for managing environmental constraints are consistent with resources being applied in their most productive use. An increased scarcity of natural resources combined with rising concern for the natural environment also indicates that good management of natural resources will be critical for future economic success. However, it is important to note that sustainable natural resource management need not be at the cost of economic growth. Growing environmental pressures can be managed in such a way as to achieve both environmental and economic goals.

Five drivers of productivity

From this consideration of the process of economic growth, five broad drivers of productivity emerge. These drivers provide a useful way to assess and develop policies to improve the productivity performance of New Zealand. In summary, they are:

- **Enterprise** – Entrepreneurs identify and realise new market opportunities, create investment opportunities and drive innovation.
- **Innovation** - Innovators generate, adopt and adapt new ideas and create investment and entrepreneurial opportunities.
- **Skills** – Skills enhance labour's contribution to growth, improve the economy's ability to innovate and adopt new ideas and increase investment opportunities.
- **Investment** - Investment improves and enlarges the capital stock, is an input in the entrepreneurial process and increases the returns to skill acquisition.
- **Natural Resources** - Sustainable resource management increases the opportunities and mitigates the risks associated with the increasing cost and declining availability of natural resources and with consumers' growing demand for environmentally sustainable products.

⁷ Ahn, Sangoon, "Firm Dynamics and Productivity Growth: A Review of Micro Evidence from OECD Countries", OECD Economics Department Working Papers No. 297.

The remainder of the paper focuses first on the importance of international connections across all of these drivers and on a deeper discussion of each driver in turn.

Adapting policy approaches to New Zealand circumstances

The most remote OECD economy in the world

The five drivers of productivity are to a greater or lesser extent applicable to all countries, and it is important to consider how New Zealand's specific characteristics alter the emphasis among the drivers, compared with other economies. The largest factors that differentiate New Zealand from other developed nations are its geographical location and size. With four million people, the population of New Zealand is ten times smaller than the average OECD country, and with 10,000 kilometres to the USA or China and even 2,250 kilometres to Australia, New Zealand is a considerable distance from its main trading partners. While the cost of transporting goods, services and ideas has reduced dramatically and allowed for greater levels of trade and financial flows, evidence suggests that distance and size still play an important part in determining New Zealand's prosperity.

Economic geography and international connections are important for New Zealand's productivity performance

The costs of transport and communication have fallen

In 1872 a 20 word telegram from Australia to England cost the considerable sum of £9. Even in 1934 the same telegram would cost ten shillings, still a substantial sum of money.⁸ Now, information can be communicated at nearly zero cost through the internet. At the same time that these technologies have connected the global economy, many countries have opened their borders to greater levels of international trade and flows of foreign investment. Since 1988, average applied tariff rates have more than halved in the United States and fallen by over 70 per cent in the EU.⁹ New Zealand now trades with over 200 countries and territories.¹⁰

But distance and size still matter

This has led some to claim that the geographical distance from markets is no longer an important determinant of a country's economic performance and living standards. However, research suggests that countries that are smaller and further away from international markets are likely to be poorer than countries that have larger domestic markets and are closer to international markets. New Zealand's relatively small domestic market limits the extent to which firms can exploit internal economies of scale, benefit from product market competition and gain from specialisation. Further, as transport costs fall and globalisation allows for the clustering of activities, it

⁸ Livingstone, K., "The Wired National Continent: the communication revolution and federating Australia", Melbourne, Oxford University Press, 1996.

⁹ World Bank data.

¹⁰ New Zealand External Trade Statistics, 2007.

may be that less economic activity is located in more peripheral locations such as New Zealand. New Zealand's size and global position may explain as much as 75 per cent of the per capita income gap with the average OECD economy.¹¹

New Zealand's connections with the rest of the world are an important source of people, resources and ideas

Size and distance can be overcome. International connections, flows of goods and services, resources, people, and ideas can help bridge the distance, providing access to markets and new sources of knowledge that firms need in order to reach an efficient scale or access the most recent technologies. International connections enable greater specialisation and allow entrepreneurs to find global markets for their products. Greater contact with international firms and sources of labour provide a conduit for the flow of information and new ideas. An open economy provides the constant discipline and challenge of fresh ideas, perspectives and products.

Policy settings can have a direct impact on these flows...

The way in which domestic policy settings can enhance these flows is critical for productivity performance and involves the closer consideration of a wide range of important policy issues. There are policy settings that exert control over international flows of resources and have a direct impact on the level of international connections. Immigration policy determines which people are permitted to settle for extended periods in New Zealand to work and study. Foreign investment rules impose conditions on certain classes of foreign direct investment (FDI) by overseas persons.

Other less direct policy settings can impact on the ease of accessing international resource flows. For example, regulatory harmonisation and cooperation with other countries help reduce the cost of transacting with and from other jurisdictions and increase access to foreign markets. The success of education policy settings will influence the stock of human capital and the attractiveness of New Zealand workers in overseas and regional labour markets. Competition policy settings can affect infrastructure underlying the flows of goods, services and people.

...and a range of policies impact on New Zealand's attractiveness as a location to live and work

Finally, some policies impact on the attractiveness of New Zealand as a place for individuals and firms to locate. For example, environmental and social policies and conditions influence the attractiveness of New Zealand as a place to live, and tax policy influences the monetary returns from working and doing business in New Zealand.

Acknowledging that economic geography plays an important role in determining our productivity performance is important when considering policy settings under each of the five drivers of productivity. New Zealand's optimal policy settings are not likely to be the same as those of other countries that sit on the edge of large international markets or that can provide a domestic market of hundreds of millions of people. Under each of the drivers of productivity, set out below, the promotion of greater international connections should be considered as a way to improve productivity performance.

¹¹ *Economic Policy Reforms: Going For Growth 2008*, OECD.

Creating an entrepreneurial culture

Like all start-up enterprises, the New Zealand company, Icebreaker started with an idea, in this case, that merino wool could be used in outdoor clothing. But the scientific breakthrough was not enough to create worldwide success. Icebreaker went on to create a strong brand name, enter global markets, forge relationships with other leading manufacturers around the world, develop new products and market the brand successfully in over 30 countries, selling in 2000 stores.

This is just one example of a firm starting up, seeking out new business opportunities, taking some risks and, eventually, providing the vision and motivation for others to do the same. However, enterprise is broader than just start-ups. The individuals that identify new working practices or seek out new investment opportunities are also entrepreneurs, even if they work in large multinational organisations.

New Zealand's enterprise performance

New Zealand is an easy place to do business...

New Zealand scores consistently well in providing the conditions for high levels of entrepreneurship. The World Bank ranks New Zealand as one of the best countries in the world for ease of doing business. In 2008 New Zealand is ranked second overall, scoring particularly well on ease of starting a business, dealing with licenses, registering property, getting credit and protecting investors.¹² The World Economic Forum's Global Competitiveness Report ranks New Zealand 24th out of 131 countries, ranking highly in health and primary education, financial market sophistication, labour market efficiency, institutions and goods market efficiency.¹³

...and has a strong competitive environment that helps to drive entrepreneurship

A competitive environment drives improved firm performance. It creates the incentives for innovation and entrepreneurship, rewards those who take risks and demands continuous improvement from firms in order that they remain competitive. It provides the impetus for all productivity enhancing actions. The potential for new entrants into product markets, competition for corporate control and the need to access capital markets for sources of funds create an increased need for continual firm improvement and help drive increased productivity.

Overall, product markets work well and New Zealand has put in place well designed laws and institutions that provide a solid framework to underpin competition and promote efficiency. On measures of competition focused on barriers to entry, New Zealand compares well, ranking 7th out of 24 OECD countries for promoting competition.¹⁴ However, a number of

¹² *Doing Business 2008*, The World Bank.

¹³ *The Global Competitiveness Report 2007-08*, World Economic Forum.

¹⁴ Conway, P., V. Janod and G. Nicoletti, "Product Market Regulation in OECD Countries, 1998 to 2003" 2005, OECD Economics Department Working Paper No 419.

other smaller OECD countries, such as Denmark, Ireland and Iceland, have improved more rapidly and now rate more favourably. Whilst barriers to entry are low, some sectors are dominated by a small number of firms. This is in part due to New Zealand's small domestic market and distance from potential competitors. Transport and information costs act like tariff barriers which, in conjunction with a small market, provide shelter from competition for some firms.

The competitive framework for corporate control is strong and New Zealand is open to flows of foreign investment. As a percentage of GDP, the stock of FDI in New Zealand was higher than Australia, the UK and the United States in 2004.¹⁵ However, the corporate structures of a few large and economically significant firms may be sheltering them from capital and corporate control market pressures, to varying degrees, due to firm or sector specific circumstances. These protections diminish competition and reduce the incentives for managers to improve the performance of firms.

New Zealand has a strong
entrepreneurial spirit

The business environment provides the basis for a strong entrepreneurial culture: the number of small firms and the rate of business start-up are comparable, or slightly greater, than in other OECD countries. New Zealand has a higher than average level of creative destruction: average annual firm turnover is 24.1 per cent, higher, but not considerably so, than the USA, Canada and the UK.¹⁶ Firm turnover adds positively to productivity growth; firms that enter and survive beyond their second year achieve rapid productivity growth, while firms that exit tend to have declining productivity and below average productivity at the point of exit.¹⁷ Creative destruction is a productivity-enhancing force, but it is also important to consider any potential barriers to growth that could be increasing the level of firm exit and constraining the growth of firms.

Although there are a number of positives for New Zealand's entrepreneurial climate, some measures suggest that there is room for improvement. Whilst further research is required, there are indications that productivity performance of larger firms may be poor as measured by value added and return on assets.¹⁸ This could be due to economic geography reasons, with a small market unable to provide the level of competition or benefits of scale required by the largest firms, or by a shortage of managerial talent, or frictions in financial markets. For instance, the average number of employees in firms with more than 500 employees is 2532 in the UK, 3321 in the USA and 1594 in New Zealand, suggesting that the size of the local

¹⁵ OECD Factbook, 2007.

¹⁶ Mills, Duncan, and Jason Timmins, "Firm Dynamics in New Zealand: A Comparative Analysis with OECD Countries", New Zealand Treasury Working Paper 04/11.

¹⁷ Law, David, and Nathan McLellan, "The Contributions from Firm Entry, Exit and Continuation to Labour Productivity Growth in New Zealand", New Zealand Treasury Working Paper 05/01.

¹⁸ Simmons, Geoff, "The Impact of Scale and Remoteness on New Zealand's Industrial Structure and Firm Performance" in Jacques Poot, ed., *On the Edge of the Global Economy*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar, 2004.

market combined with barriers to internationalising are inhibiting large firms from achieving growth.¹⁹

Policy Considerations

Skilled labour, efficient capital markets and a fertile research base provide the means to take advantage of a number of entrepreneurial opportunities

To build on this success and further promote entrepreneurship, New Zealand must continue to promote a climate that creates positive attitudes to risk and fosters the skills and vision that entrepreneurs require in order to identify potential opportunities. A skilled labour force, a fertile research base and deep financial markets provide entrepreneurs with the resources they require to realise the opportunities they have identified. A stable macro economy with a strong competition framework provides the conditions for entrepreneurs to invest with certainty and introduces the rigour of the market to provide the incentives to perform. The tax, regulation and industrial policy settings can reward entrepreneurship and provide the support and flexibility that entrepreneurial activity requires.

A strong competitive environment will help to drive firm performance

Given New Zealand's small market size and geographical isolation, continued consideration should be given to the level of competition faced by New Zealand firms. Barriers to competition should be maintained at low levels and promoting competition should remain an important consideration in formulating policies that impact on the level of competition in both product markets and markets for corporate control. Policies that support the integration of New Zealand's domestic markets for goods, services and factors of production with international markets will be particularly important.

A sound tax system is important for the overall quality of the business environment

The tax system can affect productivity by altering the decisions that individuals and companies make, many of which are vital in creating an attractive business environment for both domestic and international firms. These decisions can include whether to acquire skills, whether to invest in physical capital and research and development, or whether to engage in other productivity enhancing activities. Tax changes that enhance the incentives to acquire skills and invest will improve the business environment and provide the incentives to undertake a broad range of entrepreneurial activities.

Assessment of the stock and flow of regulation can help maintain a regulatory environment that is fit for purpose

Regulation affects the availability of business opportunities, the costs of pursuing them, and the returns from doing so. New Zealand is generally regarded as having low compliance costs and low barriers to enterprise. In some areas, for example, telecommunications and energy markets, New Zealand's regulations are relatively new and evolving rapidly, and as such, their performance may be expected to develop as both regulators and industry build experience.

Good regulatory management requires that the regulatory environment improves over time and remains fit for purpose. This requires not only

¹⁹ Mills, Duncan, and Jason Timmins, "Firm Dynamics in New Zealand: A Comparative Analysis with OECD Countries", New Zealand Treasury Working Paper 04/11

providing quality assurance on the flow of new regulation, but also systematically reviewing the existing stock of regulation. Regulation should provide a genuine benefit to society, where the benefits of regulating exceed the costs and no alternative method offers a better way of achieving the desired outcome.

New ideas are the driving force of productivity

In February 1882, The Dunedin sailed with a cargo of frozen mutton and lamb from the Totara estate near Oamaru, reaching London in May 1882 with the meat in perfect condition. Today, this is unremarkable, but in the earlier part of the 19th century it was unthinkable. The invention of refrigeration altered the industrial landscape of New Zealand. It made small farms more profitable as sheep could be raised for the export of both meat and wool. Given a different set of financial incentives, farmers did what rational economic agents do; they altered their production methods, shifting from the rearing of Merino sheep towards Romneys that produced more meat. In less than 20 years, the export value of meat had grown to half the export value of wool. The innovation drove a revolution in New Zealand, and left many farmers considerably better off.²⁰

Worldwide, resources devoted to innovation are increasing. Real gross domestic expenditure on research and development increased by approximately 3.6 per cent per annum in the OECD between 1995 and 2005, and by 18.5 per cent per annum in China (albeit this was from a much lower base).²¹ These increases in scientific endeavour are producing results that affect both business and consumers by providing the basis for technological breakthroughs that offer consumers and businesses new products and solutions. The number of triadic patents (patents registered in the USA, the EU and Japan collectively) has increased from less than 35,000 per annum in 1995 to over 53,000 per annum in 2005.²² Increases in global knowledge provide New Zealand firms with massive opportunities to upgrade their businesses, but also present the risk that if New Zealand's innovation performance is poor, there are other countries and new locations ready to compete.

New Zealand's innovation performance

The innovation framework is
sound and business R&D
has grown rapidly...

²⁰ Michael King, *The Penguin History of New Zealand*.

²¹ Science, Technology and Industry Scoreboard 2007, OECD.

²² Science, Technology and Industry Scoreboard 2007, OECD.

New Zealand's wider innovation framework is considered sound, such as policies affecting competition and firm dynamics, and the infrastructure for public research investment.²³ NZ has a strong research base: it is ranked 9th out of 23 OECD countries for the number of science and engineering articles per million inhabitants and is ranked 7th in the number of researchers per 1000 people employed.^{24,25} Business R&D has been increasing rapidly; it grew at an annual rate of seven per cent from 1995 to 2004, much faster than Australia, the UK, the US and the OECD average, and 52 per cent of firms report some form of innovation, comparable to other OECD countries.^{26, 27}

...but business R&D remains low by international comparison

Despite recent growth, business R&D is still very low by international standards at 0.49 per cent of GDP compared to the OECD average of 1.49 per cent.²⁸ The number of patents per million inhabitants is also low; suggesting that commercialisation of the research base is a challenge.²⁹

R&D is just the start, investing in education and ICT allows the application of this knowledge

Innovation is more than just research and development though; investments in higher education enable innovative solutions to be implemented and investments in capital, such as information and communication technologies, enable the spread of new ideas. The OECD measures investment in knowledge to be expenditure in R&D, higher education and software collectively. On this metric New Zealand performs better than a focus solely on R&D would suggest.

²³ OECD Review of Innovation Policy: New Zealand 2007.

²⁴ OECD Science, Technology and Industry Outlook 2006.

²⁵ OECD Science, Technology and Industry Outlook 2005.

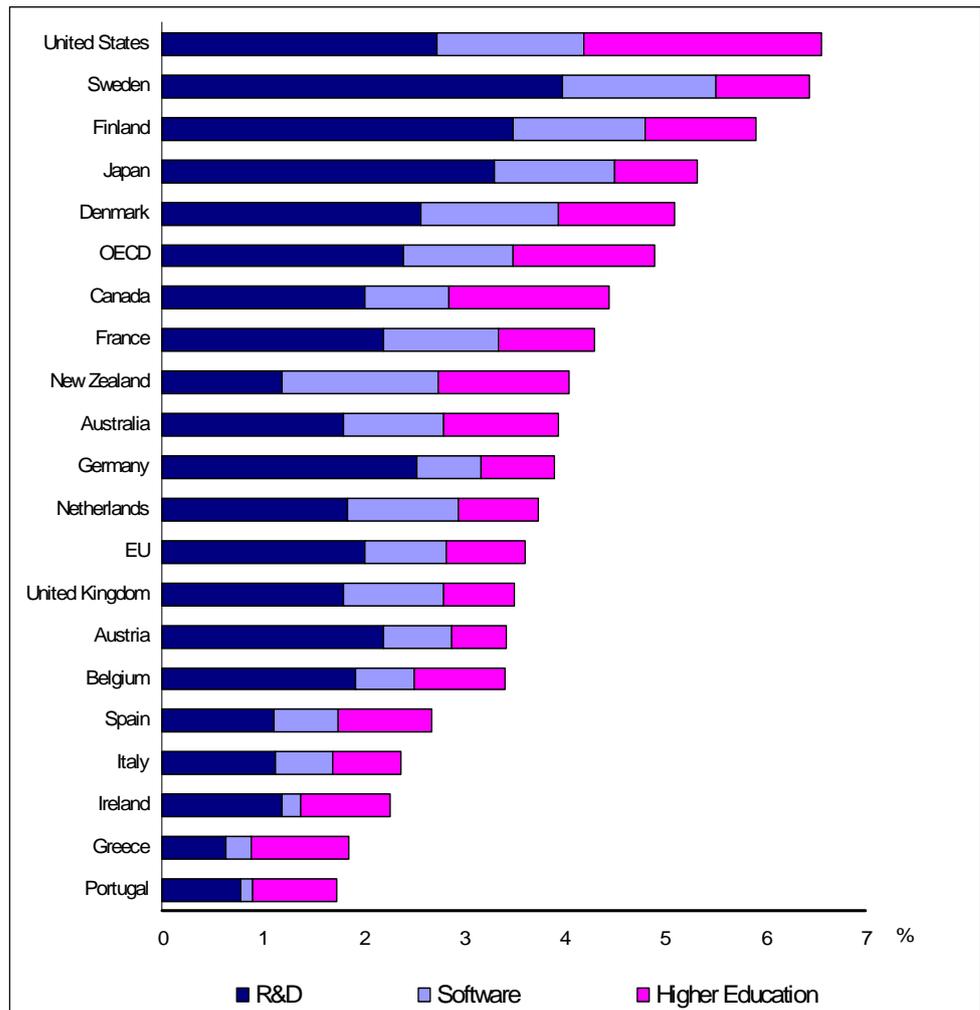
²⁶ Statistics New Zealand, Innovation in New Zealand 2005.

²⁷ OECD Science, Technology and Industry Outlook 2006.

²⁸ OECD in Figures 2006-07.

²⁹ OECD Science, Technology and Industry Outlook 2006.

Figure 2 - Investment in Knowledge 2004



Source: Statistics New Zealand, OECD at a Glance 2007

Policy considerations

In a small economy, New Zealand firms must leverage from external sources of knowledge

The innovation system needs to maximise the opportunities for firms and individuals to leverage from externally-undertaken research including public research institutions, international research and through fostering learning between industries and firms within New Zealand. The new tax credit aims to help further lift the low level of firms' own R&D, increase their openness to new ideas and improve their ability to absorb external knowledge. New Zealand is responsible for only 0.16 per cent of R&D in the OECD and undertakes a tiny proportion of global innovation;³⁰ therefore policy must go beyond domestically-sourced innovation and encourage international linkages that give access to the most up-to-date technology that is available globally.

³⁰ OECD Main Science and Technology Indicators Dataset, 2005.

Leveraging off the public sector

The output from public research institutions must be market-facing and responsive to firms' needs. Policies that help provide networking opportunities between firms and researchers and that help to build the internal capabilities that firms require, will help improve the widespread adoption of new profitable ideas. Public R&D is a high proportion of total R&D, making knowledge exchange with the private sector important to get good returns on that investment. In 2005, New Zealand had the highest percentage in the OECD of R&D undertaken by public research organisations but funded by business.³¹ This is a good aspect of links between firms and public research organisations. However, stronger links are needed and some factors could still present barriers to firm innovation, for example; uncertainty of returns from innovation due to exchange rate volatility or regulations; capital market underdevelopment inhibiting access to finance, connections and expertise; and the lack of advanced broadband products and services at competitive prices.

Leveraging off the global knowledge pool

In all but a few sectors New Zealand is behind the technological frontier.³² However, it is unreasonable to expect all sectors in a small economy to be at the fore of technological breakthroughs. The speed at which firms adopt new technologies developed elsewhere is fundamental in maintaining high levels of productivity and closing the productivity gap with comparator countries. The challenge for most New Zealand firms is to adopt and adapt technologies from overseas rather than create new scientific knowledge domestically. Policies aimed at helping firms to acquire the information and to build the national and international connections that will aid them to introduce the most productive technologies and practices could have a large impact on the adoption of innovation.

A broad approach to skills

Success in education really pays off. Completing an extra year at the end of secondary school appears to boost a person's lifetime income by around 10 per cent.³³ These individual gains from education appear to be a genuine pay-off for higher skills; they are not just part of a "zero sum game" where people use qualifications to compete for the best jobs without actually increasing their productivity. Some major long-term studies are now showing similar large pay-offs from quality early childhood education and other measures to improve early childhood development, especially for disadvantaged children.³⁴ Recent evidence is pointing to a much stronger

³¹ OECD, Main Science and Technology Indicators, 2006.

³² Mason, Geoff and Matthew Osborne, "Productivity, Capital-Intensity and Labour Quality at Sector Level in New Zealand and the UK" New Zealand Treasury Working Paper 07/01.

³³ Oreopoulos, Philip. "Do Dropouts Drop Out Too Soon? Wealth, Health and Happiness from Compulsory Schooling" Journal of Public Economics 2007.

³⁴ Heckman, James and Dimitriy Masterov. "The Productivity Argument for Investing in Young Children" NBER Working Paper #13016, April 2007.

role for differences in educational quality and people's skills in explaining differences in countries' long-term growth performance.

New Zealand's skills performance

Good performance in secondary and tertiary education is lifting the average qualification level...

The education level of New Zealand's workforce is above the OECD median and improving. At secondary school, the mean performance of 15 year olds in scientific, mathematical and reading literacy is near the top of the OECD.³⁵ At tertiary level, New Zealand is producing graduates at a rate that is amongst the highest in the OECD.³⁶ Significant increases in participation rates are now being reflected in overall working age qualifications: the percentage of the adult population with a bachelor's degree as their highest qualification is above the OECD average.³⁷

...but not everyone is benefiting

However, there is a large group of poorer performers. New Zealand has a large variance in student achievement and some groups, including Maori and Pasifika, perform well below the national average. While New Zealand is near the top of the OECD tables for average achievement at age 15, approximately 40 per cent of students leave school without gaining a Level 2 qualification or better, and New Zealand has amongst the lowest rates of participation in education and training for those aged 15-20.³⁸ The growing international evidence on the value of completing school and continuing in education suggests that having so many young people disengaging from education at this age will be detrimental to New Zealand's long-term skills and productivity.

Educational improvement is needed for both those currently in education and for the stock of workers who have left formal education, emphasising the importance of a package of interventions rather than just targeting one age group.

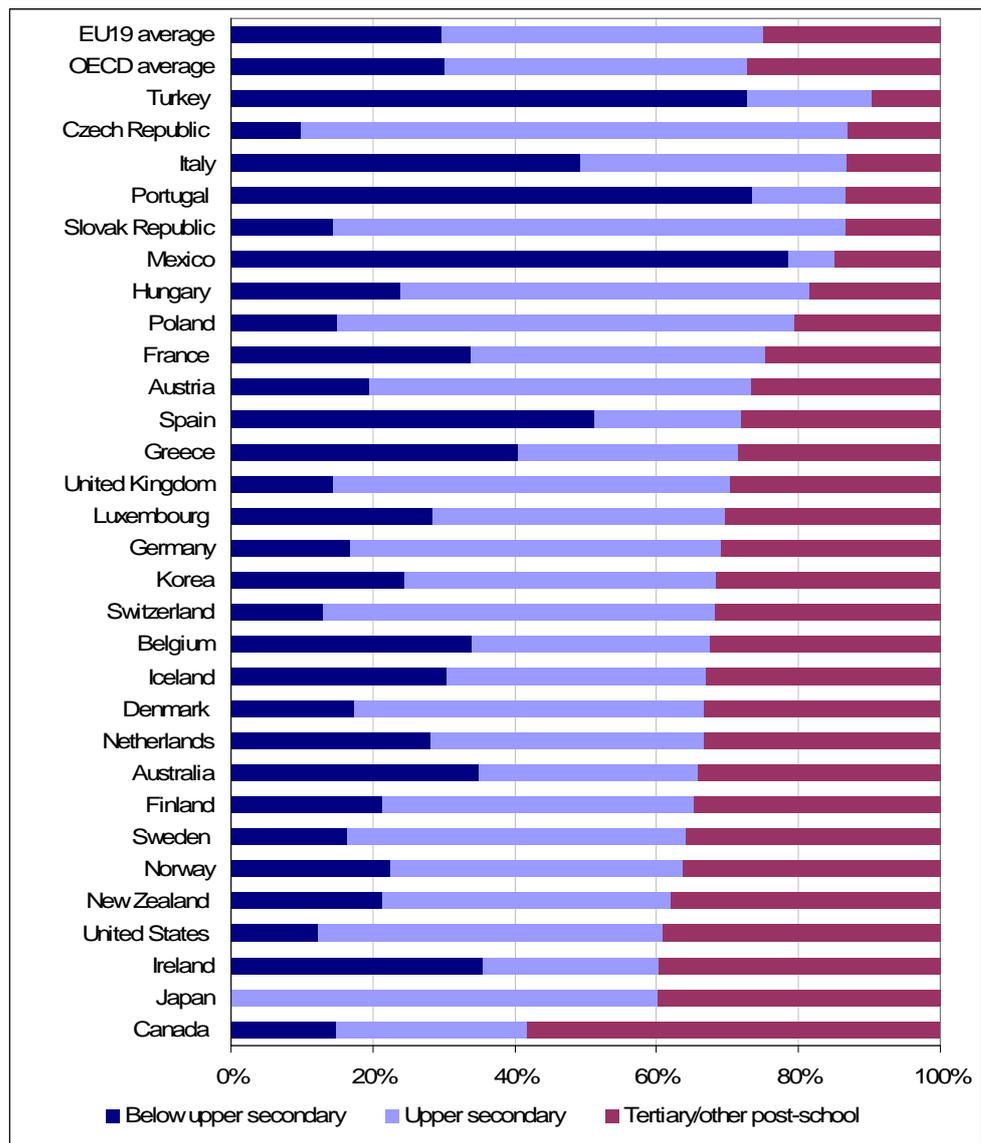
³⁵ OECD, Learning for Tomorrow's World.

³⁶ OECD, Education at a Glance 2006.

³⁷ Ibid.

³⁸ Education at a Glance OECD Indicators 2007 indicator C1.3.

Figure 3 - Educational Attainment of the Adult Population (2005)



Source: Education at a Glance 2007, OECD

Policy considerations

Education and skills
accumulate over the course
of a lifetime

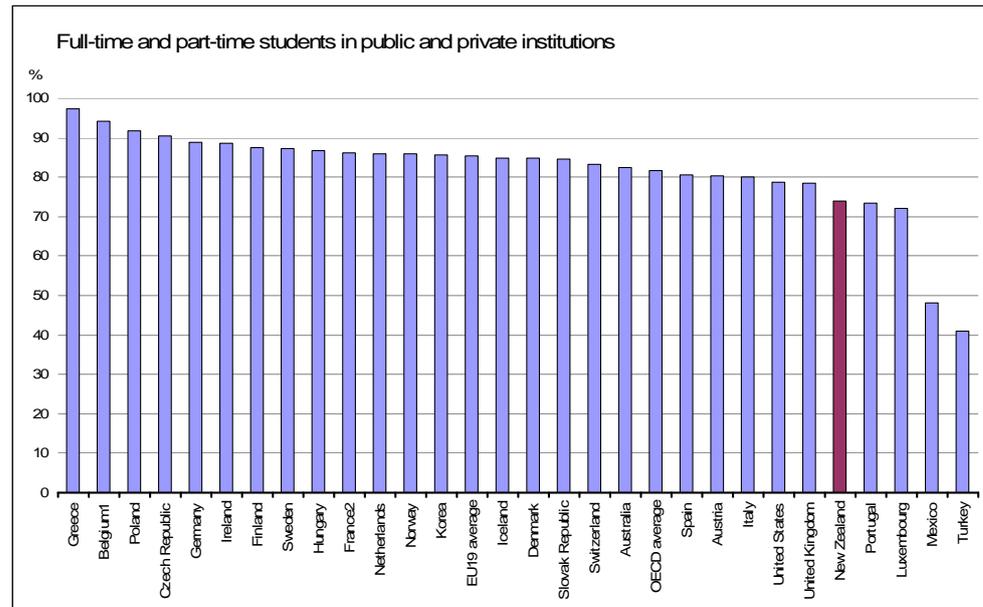
Human capital and skill formation is a cumulative process over the life course. There is increasingly strong evidence that the greatest gains over the long term will come from improving the quality of education in the early years, and from targeting support to disadvantaged and at-risk children.³⁹ This needs to be followed up by ongoing engagement in quality education and training in school, in the workforce and in the critical transition point between the two.

³⁹ For example, James Heckman and Dimitriy Masterov: "The Productivity Argument for Investing In Young Children" NBER Working Paper 13016, April 2007.

Early education is growing rapidly

New Zealand has high rates of participation in early childhood education both by international comparison and compared to historic levels within New Zealand. The sector is seeing rapid growth both in hours of participation and in quality standards. An important challenge at present is to ensure that the strains of this broad growth, such as capacity constraints and teacher supply shortages, do not fall disproportionately on children from disadvantaged backgrounds.

Figure 4 - Enrolment rates of 15 to 19 year olds 2004



Source: Education at a Glance 2007, OECD

At secondary school, improvements in retention rates are important

Improving retention and achievement in secondary schools, and ensuring more young people remain engaged in education and training as they make the transition to work, is a priority for New Zealand's future skills base. This is likely to require greater flexibility and responsiveness in senior secondary schools, and efforts to share best-practice and strengthen accountability for retention. There is wide variation in secondary schools' retention rates, even accounting for differences such as the socio-economic status of the area and school type.

The quality of tertiary is high but completion rates need to be improved

Tertiary education is important and has close links to innovation and already has an extensive agenda of policy change underway. Overall quality and participation is relatively strong in New Zealand, but poor completion rates and the relevance of some programmes to firms' skills needs are ongoing concerns. Improving the match between tertiary provision and firms' skills demands, and more effective allocation of the resources invested in the sector, are key issues.

Tax affects the incentives to acquire higher level skills

Taxes can alter the incentives for skills acquisition, particularly higher level skills; marginal and average tax rates affect decisions to both participate in the labour market and accumulate skills by altering the net return from either working more or undertaking higher and further education. The progressivity of the tax system can exacerbate this impact as increased earnings resulting from skill acquisition are reduced through taxation. Further investigation is required in order to understand the exact nature in which tax affects skill acquisition.

The relative importance of mechanisms by which education may affect productivity is the subject of debate. Given New Zealand's distance from the technology frontier, it may be that skills that support imitation of technologies in other countries are relatively more important than higher level skills that enable new innovations for some firms or industries. However, some studies find positive productivity spillovers from high skills but not from lower level skills. It is likely that skills requirements will vary by sector and increasing New Zealand's skills performance will require improvements both in advanced skills linked to research, innovation and entrepreneurship and broader workforce skills.

International connections and the quality of institutions are important for skill utilisation and development. Evidence suggests that the effect of educational quality on economic growth increases with the quality of economic institutions and a country's openness to international trade. International labour mobility provides a critical opportunity to enhance New Zealand's skills and to improve international connections, while also posing a threat if New Zealand is not an attractive enough location to retain the skills of domestically educated individuals.

Investment increases the stock of ideas and the productivity of labour

When Campbell Gower first invested in Phil and Ted's Most Excellent Buggy Company, the operation was producing two or three buggies a week out of a house in Wellington. He made an initial investment in 1997 and bought ownership of the company a year later. This injection of funds, along with Campbell Gower's vision for the company, paid for the research and product demonstrations and led to the redesign of the original buggy that has become the centrepiece of the business. New products have also been added to the range and Phil and Ted's Most Excellent Buggy Company now sells in over 40 countries with exports accounting for 95 per cent of sales.

Investment impacts on productivity through capital accumulation and by boosting labour productivity

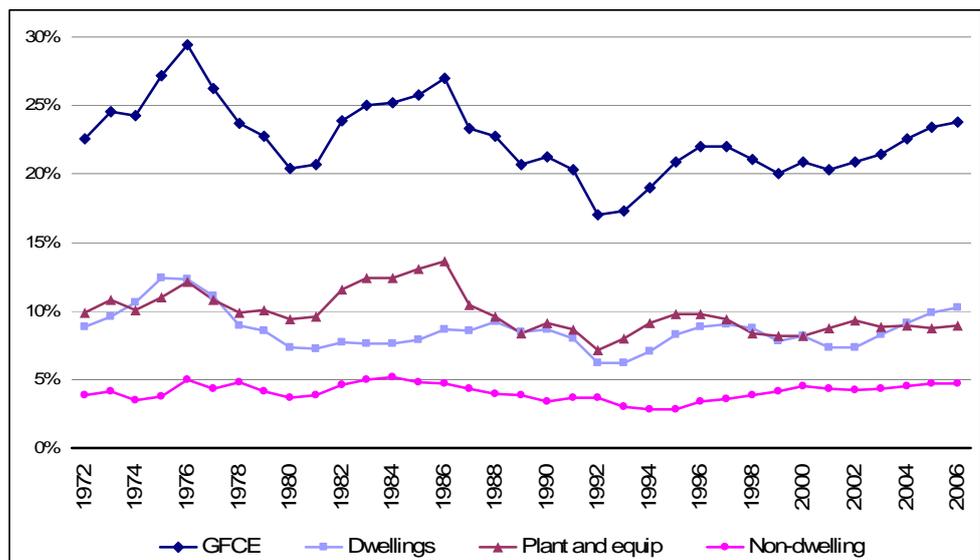
Investment does not just create returns to the individual; it impacts directly on productivity through capital accumulation. Increasing the amount of capital available to workers raises labour productivity, and investments in new knowledge and processes can spill over into other areas of the economy. Policies that help to create a business environment that provides access to finance and the incentives to invest will improve productivity.

New Zealand's investment performance

Historical low levels of investment have led to low levels of capital per worker, inhibiting productivity

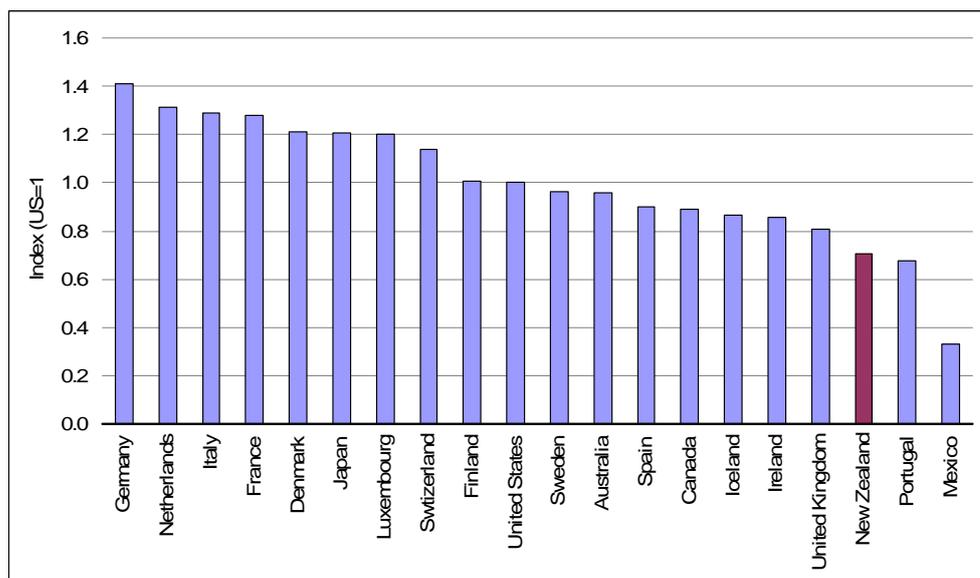
Investment as a share of GDP was low during the 1990s compared to previous decades. It is recovering, but is still below some of the higher-performing OECD economies. Since 1992, growth has been relatively stronger in residential and non-residential construction than other types of investment such as plant and machinery and transport equipment. The historically lower rate of investment has led to lower levels of capital per worker compared to international comparator countries and is a major contributor to the productivity gap with these countries.

Figure 5 - Gross Fixed Capital Formation: Share of GDP



Source: Statistics New Zealand

Figure 6 - Capital Intensity: OECD Countries in 2002



Source: OECD National Accounts

Overall, New Zealand's macroeconomic framework is sound and has delivered improvements in macroeconomic stability over the past 15 years, particularly in terms of output and inflation. This has supported New Zealand's improved economic performance over the period. However, two intermediate macroeconomic variables may be impacting on investment patterns and levels: comparatively high real interest rates and large, real and nominal, exchange rate cycles.

Policy considerations

Greater levels of entrepreneurship, innovation and international connections increase the number of investment opportunities

Investment requires ideas and opportunities. To create more investment opportunities, firms and individuals need to engage in increased entrepreneurship, increase their involvement in innovative activities, leverage off innovation taking place elsewhere, and access new ideas and new markets abroad. Policies that affect the other drivers of productivity will also impact on the range of opportunities for potential investors. Investment relies on a quality macroeconomic and institutional environment that reduces the risks inherent in economic activity by maximising stability and certainty.

Low multifactor productivity is likely to be depressing incentives for investment, reducing the returns to capital and making investment less attractive. There is potentially a virtuous cycle arising from innovation, skill development and improvements in managing enterprises that will raise productivity and increase the incentives for investors to invest in more capital equipment.

A high cost of capital inhibits investment

Explanations for the high cost of capital suggest that the accumulation of net foreign liabilities is fundamental. These liabilities have arisen from a long period in which low national savings rates have been insufficient to provide for investment needs, leading to a reliance on foreign savings. Foreign savings do not substitute perfectly for domestic savings; a heavy reliance on foreign sources of capital has had a negative influence on the depth and breadth of New Zealand's capital markets.

The depth and quality of financial intermediation can affect the cost of capital for firms. While the availability of finance for investment is generally good, underdeveloped financial markets mean that some types of firms may not be able to access finance or do so only at a premium rate. New Zealand has shallow equity and bond markets and firms have limited access to venture capital. Access to capital tends to be intermediated through banks and they may not lend to particular types of firms, for example start up firms and firms with assets focused on intellectual property rather than physical collateral. Overall, a lack of development in certain parts of New Zealand's financial system is likely to be imposing a moderate constraint on the growth and performance of New Zealand firms.

Long exchange rate cycles deter investment

Whilst New Zealand's macroeconomic institutions are sound, economic shocks appear to be amplified compared to other countries. Monetary policy in particular may need to work harder to stabilise the economy, with subsequent effects on the exchange rate. This amplification may be a function of economic

structure, New Zealand's size and geographical location, or other factors such as the tax treatment of housing, saving and migration.

Excessively long and large exchange rate cycles could potentially impact on investment. The evidence is unclear but it may be that foreign lenders require a higher currency risk premium because of the duration of this cycle. In addition, large exchange rate swings create uncertainty for entrepreneurs who might require a higher hurdle rate of return before investing.

Tax can impact on what, where and how much to invest

Tax rates can impact on the incentives to invest. International differences in tax rates can affect where firms invest, marginal tax rates can affect how much a firm invests, and differences in tax rates across assets can impact what a firm invests in. Whilst caution is required in interpreting empirical tax studies, the evidence is now broadly supportive of the view that tax systems can substantively distort or encourage investment choices and decisions, especially when major reforms take place. Tax regimes that promote the broad incentives to invest and avoid the favouring of specific types of investment are likely to improve New Zealand's investment performance. This is an area where further work is required in order to understand the exact mechanisms through which tax can incentivise greater levels of investment.

Infrastructure investment

Public infrastructure is an important source of investment

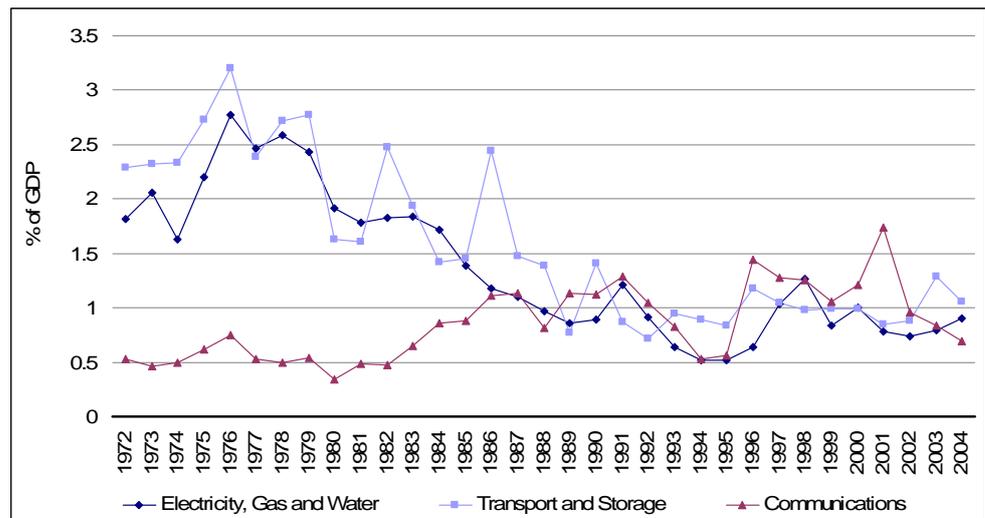
It is not solely private-sector investment that creates returns and drives productivity; public sector investment in infrastructure can create considerable returns for the overall economy. Investment in infrastructure prevents bottlenecks occurring in networks, and can result in productivity spillovers into related industries. Investment in communications infrastructure, such as broadband and mobile networks, can enhance take-up of new technology, augment the diffusion of knowledge and create scope for new business models. Transport infrastructure facilitates agglomeration and helps firms connect more readily to markets. Energy infrastructure investment can improve the security of supply, reducing disruptions to economic activity and improving confidence in the environment for investment.

Spending on infrastructure has fallen

Spending on infrastructure in New Zealand as a percentage of GDP has trended downwards over recent decades and New Zealand is perceived to have lower quality infrastructure than other high-income countries. Part of this may reflect poor capital allocation decisions in the past. However, recent increases in the level of infrastructure spending have occurred, and an increase in public sector infrastructure investment has been a component of this.

The perception of overall infrastructure performance in New Zealand is relatively low. While some caution needs to be exercised in interpreting such subjective assessments, there is a risk that such perceptions could reduce the attractiveness of New Zealand as a place in invest and do business.

Figure 7 - Spending on infrastructure as a share of GDP



Source: Statistics New Zealand

The quality of infrastructure investment matters and it is important to ensure that spending is directed to the most productive areas. Rapid increases in public infrastructure investment, particularly in land transport, could stretch industry’s capacity to successfully implement these projects. This suggests care needs to be exercised in terms of sequencing any further increases. Ensuring public infrastructure spending proposals are subject to cost-benefit analysis will be critical. This will ensure that funding is directed to the projects that offer the greatest benefits to the community.

Government policy also has a role to play in ensuring efficient use of infrastructure: implementation of appropriate charging structures will both raise revenue from those who benefit from the investment and ration the infrastructure to those who generate the highest value added from using it.

Sustainable and productive use of New Zealand’s resources

The environment influences nearly every aspect of New Zealand life. It is not only fundamental to the New Zealand way of life but to New Zealand’s economic well-being. New Zealand’s land and sea-based primary production and tourism sectors generate about 17 per cent of the economy’s GDP.

As a resource-rich country, the management of natural resources in a sustainable way, which allows resources to flow to their most productive uses, is essential in maximising productivity. New Zealand has moved through distinct modes of primary production from the original extensive grazing, to deforestation and grassing, to the topdressing revolution and more recently irrigation and intensive stocking. New Zealand now faces a challenge in achieving environmentally smart growth.

Ensuring the supply of natural resources and managing environmental risks are important for productivity

The continuing trend to more intensive land use demonstrates the two ways in which the environment links with productivity and growth. The first is that increasing scarcity of natural resources as an input into the production process can create a drag on growth as the price of inputs rises and quantity becomes increasingly limited. The second is through the environment's role as a sink for by-products of economic activity, e.g. greenhouse gases into the atmosphere and nitrogen and bacteria into waterways.

Environmental and economic goals can be complimentary

Some environmental and economic goals are complimentary; sound management of natural resources can help achieve some economic and environmental goals simultaneously. By maintaining high quality natural resources as an input into the production process over the long time horizon, New Zealand is well placed to service increased demand from emerging economies. New Zealand's tourism industry is also heavily reliant on the image of New Zealand as 'clean and green'; environmental degradation risks this perception.

Shifts in consumer tastes towards products with low environmental impact may expand opportunities for growth in existing products or development of new higher-value products. Growing international connectedness is creating stronger demand for environmentally friendly production and goods, and greater pressure on real or perceived environmentally negative impacts.

New Zealand's Resource Management Performance

There are already some emerging threats to New Zealand's environment

New Zealand performs well in absolute terms on a number of metrics of environmental pollution, but pressures on the environment are increasing. Some pressures are national in scope, such as greenhouse gas emissions, whereas others, such as water scarcity, vary considerably by region. Given the importance of the primary sector in New Zealand's export mix, it is important that balanced policies are developed and implemented to achieve both economic and environmental goals together, where possible. Further, New Zealand still relies heavily on petroleum products for part of its energy supply.

Agricultural land use is a major contributing factor to greenhouse gas emissions...

New Zealand's move to more intensive agriculture is reaching limits in key regions in terms of availability of water and impacts on environmental quality, as well as contributing significantly to our national emissions of greenhouse gases. Whilst agricultural land use is not the only cause of increased pollution, it has contributed significantly. Shifts from forestry and sheep and beef production to dairying are also significantly increasing the greenhouse gas intensity of land use. The primary sector is also facing direct competition for resources from recreation and conservation interests as well as growing concern regarding the environmental costs it creates.

...and combined with population growth, this places pressure on freshwater resources

Demand for freshwater resources is increasing due to population growth and greater intensity of land use. Several eastern regions, such as Canterbury and Otago, have surface water catchments that are highly allocated, placing pressure on water resources during times of the year with lower rainfall and creating demand for storage infrastructure to catch peak

flows. Nitrogen and phosphorous levels have increased over the past two decades, and increased most rapidly in those rivers and lakes that are already nutrient rich, particularly in the Waikato and Bay of Plenty.

Policy considerations

Use limits must take into account environmental, social and economic impacts and help to create certainty

An important focus going forward is ensuring that government, business and consumers are in a position to make informed decisions about natural resource use and that they face incentives that ensure productive use of resources, while achieving environmental objectives. This would include:

- ensuring that use limits are set taking into account environmental, social and economic impacts, as well as international commitments and consumer expectations;
- ensuring that within those limits policy creates certainty and encourages environmental resources to flow to their most productive uses;
- managing and facilitating adjustments to move sustainable use with minimal disruption consistent with the required pace of change;
- innovation systems and policies that will help New Zealand maximise the potential net benefits from the transition to a low carbon, sustainable economy; and
- identifying and capitalising on opportunities arising from a global shift towards sustainable production and consumption.

Both central and regional government have a role to play, but the relationships need to be clarified

A key policy issue in achieving these objectives mentioned above is the need to clarify the relationship between central and regional government. Central government needs to ensure that policies and priorities are clearly stated in terms that regional government can apply, especially where national and regional interests diverge, and that expectations for regional government action are clearly stated and enforced. Regional governments need to identify local priorities, set resource limits and quality targets within nationally agreed parameters, and implement the results through planning and consent processes and direct actions. Some issues, such as climate change, are sensibly led at the national level, while land-use planning benefits from local involvement, and water has primarily regional impacts which can vary widely. Maori interests also require co-operation between central and regional government.

In terms of institutional capability, there are issues at central, regional and local levels. Central government needs to continue to develop its vision of what a sustainable New Zealand would look like, what trade-offs are involved in achieving that vision, or how those trade-offs should be made. Local governments have varying capabilities for implementing sustainability policies and face varying environmental problems and options; they have most of the tools they need but currently have inadequate national guidance.

Conclusion

Improving New Zealand productivity is one of the major challenges facing the New Zealand economy; productivity growth is a significant factor in improving living standards. This paper has set out some of the factors that theory and evidence suggest matters for productivity based around five drivers. This paper is part of a series that sets out in more detail New Zealand's productivity performance and considers each of the drivers in turn.