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NEW ZEALAND

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BETTER POLICIES FOR BETTER LIVES

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This Survey *is published on the responsibility of the Economic and Development Review Committee of the OECD, which is charged with the examination of the economic situation of member countries.*

The economic situation and policies of New Zealand were reviewed by the Committee on 23 April 2013. The draft report was then revised in the light of the discussions and given final approval as the agreed report of the whole Committee on 14 May 2013.

The Secretariat's draft report was prepared for the Committee by Alexandra Bibbee and Calista Cheung under the supervision of Peter Jarrett. Research assistance was provided by Françoise Correia.

The previous Survey of New Zealand was issued in April 2011.

BASIC STATISTICS OF NEW ZEALAND, 2011

Numbers in parentheses refer to the OECD average[a]

LAND, PEOPLE AND ELECTORAL CYCLE

Population (million)	4.4		Population density per km[b]	16.5	(34.3)
Under 15 (%)	20.3	(18.4)	Life expectancy (years, 2010)	81.0	(79.7)
Over 65 (%)	13.3	(14.9)	Men	79.1	(76.9)
Foreign-born (%, 2010)	23.2		Women	82.8	(82.5)
Latest 5-year average growth (%)	1.0	(0.5)	Last general election	November 2011	

ECONOMY

Gross domestic product (GDP)			Value added shares (2006 for New Zealand) (%)		
In current prices (billion USD)	161.8		Primary	5.4	(2.6)
In current prices (billion NZD)	204.6		Industry including construction	23.9	(27.8)
Latest 5-year average real growth (%)	1.0	(0.8)	Services	70.9	(69.3)
Per capita, PPP (thousand USD)	30.3	(35.4)			

GENERAL GOVERNMENT

Per cent of GDP

Expenditure	47.5	(43.1)	Gross financial debt	41.6	(103.5)
Revenue	42.2	(36.7)	Net financial debt	4.5	(66.1)

EXTERNAL ACCOUNTS

Exchange rate (NZD per USD)	1.265		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	1.532		Machinery and transport equipment	7.9	
In per cent of GDP			Manufactured goods	8.9	
Exports of goods and services	30.7	(52.7)	Chemicals and related products, n.e.s.	4.4	
Imports of goods and services	29.3	(49.7)	Main imports (% of total merchandise imports)		
Current account balance	4.1	(-0.7)	Machinery and transport equipment	32.8	
Net international investment position (2010)	-78.8		Manufactured goods	11.4	
			Mineral fuels, lubricants and related materials	17.3	

LABOUR MARKET, SKILLS AND INNOVATION

Employment rate (%) for 15-64 year olds	72.6	(64.8)	Unemployment rate (15 and over) (%)	6.5	(7.9)
Men	78.2	(73.0)	Youth (15-24) (%)	17.3	(16.2)
Women	67.2	(56.8)	Long-term unemployed (1 year and over) (%)	0.5	(2.6)
Average worked hours per year	1 762	(1 776)	Tertiary educational attainment 25-64 year-olds (%, 2010)	40.7	(30.7)
Gross domestic expenditure on R&D (2009) (% of GDP)[b]	1.3	(2.4)			

ENVIRONMENT

Total primary energy supply per capita (toe)	4.1	(4.3)	CO_2 emissions from fuel combustion per capita (tonnes, 2010)	7.1	(10.1)
Renewables (%)	40.3	(8.2)	Water abstractions per capita (1 000 m^3, 2010)	1.2	
Fine particulate matter concentration (urban, PM10, µg/m^3, 2008)	11.9	(22.0)	Municipal waste per capita (tonnes)[b]	0.5	(0.5)

SOCIETY

Income inequality (Gini coefficient, late 2000s)	0.330	(0.314)	Education outcomes (PISA score, 2009)		
Relative poverty rate (%, late 2000s)	19.0	(17.7)	Reading	521	(493)
Public and private spending (% of GDP)			Mathematics	519	(496)
Health care (2010)	10.1	(9.7)	Science	532	(501)
Pensions (2009)	4.7	(8.2)	Share of women in parliament (%, February 2013)	32.2	(25.3)
Education (excluding tertiary, 2009)	5.2	(4.0)	Net official development assistance (% of GNI)	0.3	(0.4)

Better life index: *www.oecdbetterlifeindex.org*

a) Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exists for at least 29 member countries.

b) 2010 for the OECD.

Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, World Bank, International Monetary Fund and Inter-Parliamentary Union.

Executive summary

Main findings

The New Zealand economy is beginning to gain some momentum, with post-earthquake reconstruction, business investment and household spending gathering pace. Risks to growth remain, however, stemming from high private debt levels, weak foreign demand, large external imbalances, volatile terms of trade, a severe drought and an exchange rate that appears overvalued. The main structural challenge will be to create the conditions that encourage resources to shift towards more sustainable sources of prosperity. Incomes per head are well below the OECD average, and productivity growth has been sluggish for a long time. Lifting living standards sustainably and equitably will require structural reforms to improve productivity performance and the quality of human capital.

Macroeconomic policies strike the right balance between supporting the recovery and ensuring medium-term sustainability. Monetary policy is appropriately accommodative, given the high exchange rate, weak employment growth and subdued inflation. However, domestic demand is firming, and price pressures from earthquake rebuilding and housing markets are likely to strengthen. The largely Australian owned banking system is in good shape, and effectively supervised, but rising house prices could pose risks to financial stability. Fiscal consolidation is on track to restoring surpluses. Achieving sustained reductions in government debt will establish a favourable starting position for confronting the longer-term cost pressures resulting from demographic ageing. It will also tend to raise national saving rates, thereby reducing external vulnerabilities.

Policy makers are increasingly attuned to social equity and welfare. Though New Zealand ranks highly on many dimensions of well-being, some show a wide dispersion. The redistributive power of the tax and transfer system is around the OECD average. To soften the impact of henceforth tight budgets on social protection, reforms are underway for improved prioritisation, efficiency and coherence in service delivery by central government. Tax and spending changes to bolster fiscal policy's contributions to growth, equity and the environment remain important. Welfare reforms are attempting to reduce long-run benefit dependency by emphasising education and training of at-risk youth, with greater conditionality on beneficiaries and strengthened accountability on public and private providers. Improving education, health, employment and social outcomes for the large Maori and Pacific minorities is needed to reduce social disparities.

Boosting productivity is key to long-term growth prospects. Low trade intensity and limited engagement in global value chains suggest New Zealand is not reaping the full productivity-enhancing benefits of globalisation, perhaps in part because of the persistent overvaluation of the exchange rate. Inefficiencies in the information and communications technology infrastructure may undermine international connectedness. Regulatory uncertainties may be stunting competitive pressures and opportunities for foreign investment. Meanwhile, low levels of research and development may also be impeding the adoption of foreign technologies and ideas. New Zealand makes generally efficient use of its abundant natural capital, which bodes well for the sustainability of growth. The carbon price signal remains muted in the absence of internationally agreed emissions targets, and some tax settings appear to favour fossil fuel exploration.

There are weaknesses in school-to-work transitions, notably among ethnic minorities, hindering the development and use of the nation's human capital. Standardised tests indicate a long tail of school underachievers, despite high average scores. The high drop-out rate is a concern; as part of its growth agenda, the government aims to reduce it rapidly. Lack of school qualifications results in youth unemployment, which has increased sharply since the crisis, and high rates of youth neither in education nor in employment or training. The government has targeted improved teaching quality to reduce disparities in scholastic achievement. It has also created new vocational pathways to engage at-risk youth and to strengthen education-work linkages.

Key recommendations

Adapting the macroeconomic policy mix to changing circumstances

- Maintain the current monetary policy stance, but as excess capacity dissipates and forecast inflation picks up, gradually remove monetary stimulus.
- Deliver on the fiscal consolidation targets. If the economy picks up more strongly than expected, accelerate structural fiscal consolidation in light of external vulnerabilities.
- While recognising the current strength of the financial system, contain emerging risks to financial system stability with tighter prudential policy settings, including the deployment of new macro-prudential policy instruments. Consider implementing bank leverage ratios, permanent deposit insurance and higher capital requirements for too-big-to-fail banks.

Adjusting policies to improve equity and efficiency

- Take early steps to address long-term cost pressures associated with an ageing population.
- Raise the pension eligibility age in line with longevity. Consider increasing further the KiwiSaver minimum contribution rates and indexing NZ Superannuation benefits wholly or partly to the CPI.
- Target the Working for Families programme more tightly on the working poor by lowering upper income thresholds and increasing abatement rates. Likewise, vary early childhood education (ECE) subsidies with the level of income.
- Implement a capital gains tax and boost environmental and property or land taxes to facilitate a more efficient and equitable tax structure.

Supporting sustainable long-term growth

- Clarify the competition policy framework for the broadband market, and adjust regulations to ensure clear and consistent pricing strategies for copper and fibre networks.
- Improve the transparency of the foreign direct investment screening regime, and streamline approval processes within the Resource Management Act.
- Review the tax treatment of patent sales to ensure consistency with international best practice, and consider allowing accelerated depreciation of patent assets. Redesign the Technology Development Grants to clarify and simplify the approval criteria and ensure access for small start-ups.
- Strengthen price signals within the Emissions Trading Scheme by phasing out transition provisions. In the meantime cap and auction domestic allocations. Remove tax concessions for petroleum exploration.

Improving the school-to-work transition

- Ensure greater ECE participation by children from disadvantaged backgrounds by increasing incentives for suppliers to enter into areas of low provision and for demand from parents to increase.
- Provide incentives and opportunities to amalgamate and cluster fragmented school networks so as to achieve efficiencies and educational benefits.
- Devolve funding for a greater share of overall school costs, including teacher pay, providing schools with greater flexibility to allocate resources and manage performance.
- Strengthen the quality of apprenticeships by facilitating participation by disadvantaged youth, improving quality assurance, and ensuring funding adequacy and enhanced accountability for outcomes.

Assessment and recommendations

Overview

The outlook for the NZ economy in 2013 and beyond looks brighter than seen thus far in the recovery. Negative international spillovers may gradually diminish as global growth picks up. Construction investment should be supportive, due to Canterbury rebuilding and housing strength more generally. Meanwhile, banks have further strengthened their capital positions, boding well for future stability. Fiscal policy has embarked on a steady tightening path, which is appropriate. With inflation still very low, monetary policymakers can provide short-term support while monitoring risks from high house prices and household debt.

New Zealand enjoys good structural fundamentals, yet longer-run challenges are substantial. Fiscal consolidation needs will be ongoing, reflecting the desirability of eventually returning public debt to its low pre-recession level, the ageing population and structurally low private saving. Macroeconomic vulnerability in the form of high external indebtedness remains significant, and real exchange-rate appreciation has impeded the growth of the export sector, which is the basis upon which debt will ultimately have to be repaid. Income inequality is higher than the OECD average and low incomes are more prevalent among Maori and Pacific minorities. As ageing pressures increase, higher productivity growth is sorely needed to address these challenges. Human capital and skills development will assume even greater importance as the fundamental drivers of long-run prosperity. Immigration will remain an important part of the solution, though other countries are also competing for the highly skilled, implying greater need to develop skills at home. Reducing inequities in education outcomes and more fully utilising human potential should provide an effective means of lifting productivity and output growth, and improving broader living standards.

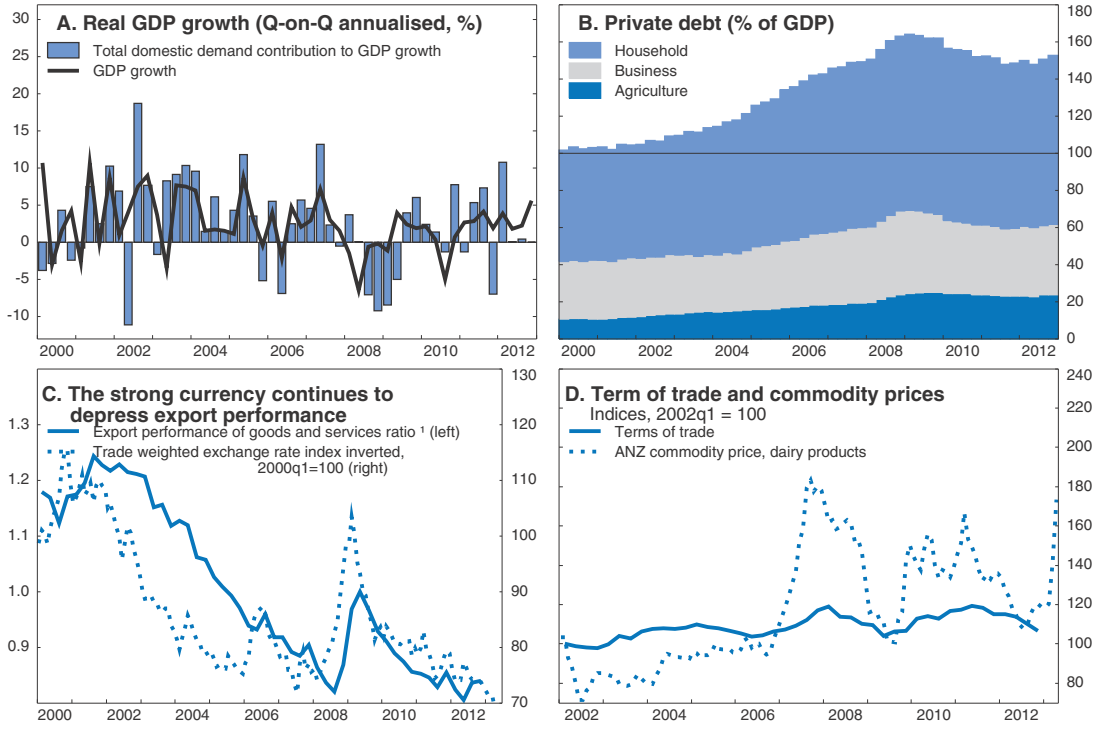
This survey takes a closer look at the New Zealand conundrum of low productivity and incomes – despite comparatively good structural and macroeconomic policy frameworks – yet surprisingly good metrics for many other dimensions of well-being. Policies are generally on the right track and ways to further strengthen them will be presented. In Chapter 1, the sources of sustainable long-run growth are analysed, and the initial disadvantages of size and distance are examined for their impacts on openness, competition and other framework conditions for growth. Proposals are made to overcome these challenges by bringing policies even closer to the best-practice frontier while capitalising on the country's comparative advantages. Chapter 2 examines the issue of youth transitions from education to work. Human capital is the basis for not only innovation and productivity growth, but also social equity and well-being. Ways are enumerated to reduce youth drop-outs and joblessness and to invest all young people with the right types of skills for good jobs in the "knowledge economy".

The economic situation

The economy is beginning to gain some momentum, supported by recovering residential and business investment and a pickup in consumer spending. Post-earthquake rebuilding in

Canterbury is beginning to ramp up, and the terms of trade are benefitting from a hike in dairy prices since late 2012 (Figure 1, Panel D). However, a drought will curb agricultural production in the near term, and the recovery is uneven: the unemployment rate has remained high, while weak overseas demand and the strong currency continue to depress the export sector (Figure 1, Panel C). Private debt looms large (Figure 1, Panel B), although household deleveraging has brought the debt-to-income ratio 10 percentage points below its 2008 peak (Figure 2, Panel A). The household saving rate has thus risen by around 8 percentage points since 2003 (Figure 2, Panel B). While the current account deficit improved sharply following the recession due to cyclical and temporary factors, it has widened anew and is now around 5% of GDP (Figure 3, Panel A). Housing activity began firming over the course of 2012 (Figure 2, Panel D).

Figure 1. **Macroeconomic indicators**



1. The export performance ratio is the ratio of export volume to export market (defined as the trade-weighted average of trading partners' imports).

Source: ANZ; Reserve Bank of New Zealand; Statistics New Zealand; Thomson Datastream; and *OECD Economic Outlook 93 Database*.

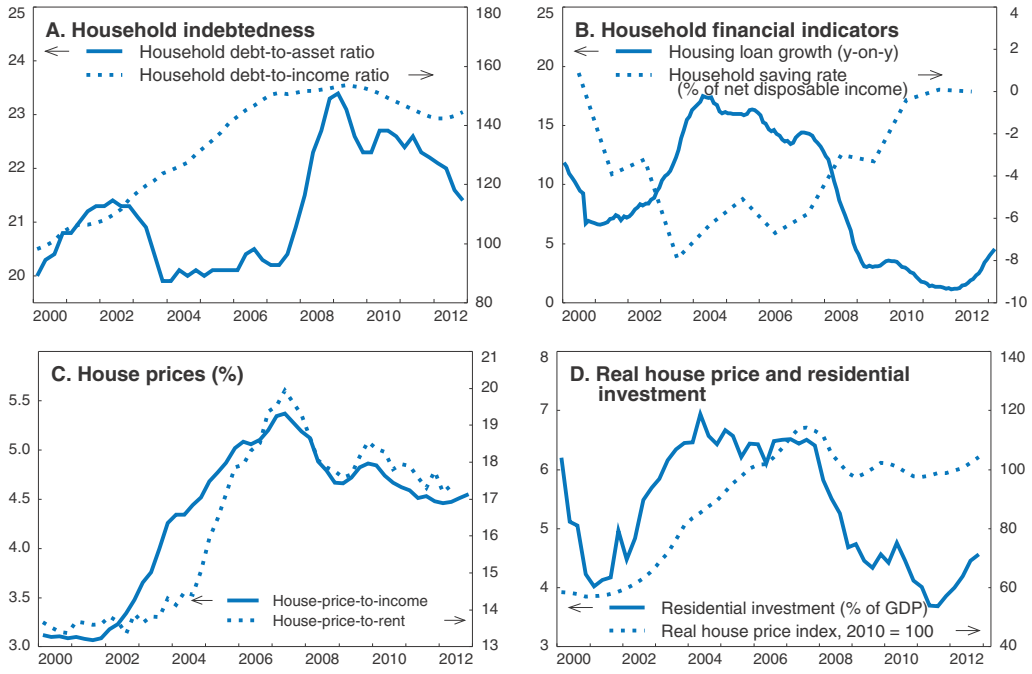
StatLink http://dx.doi.org/10.1787/888932833067

House prices remain at historically high levels in real terms and relative to incomes and rents (Figure 2, Panel C). Prices have risen most in Christchurch and Auckland, where supply shortages are prominent, but price increases have started to appear in other markets. The government is currently exploring ways to address growing housing-market pressures, focusing on relaxing regulatory restrictions on land supply and reforming the Resource Management Act to alleviate bottlenecks in residential development. A six-month time limit was introduced for regional councils to process permits for medium-sized construction projects. Macro-prudential measures are also being applied to the major banks (see below), so as to strengthen their ability to weather a potential housing downturn and to encourage them to reassess the riskiness of their current loan portfolios.

The economy is projected to expand moderately, though unevenly (Table 1), with earthquake rebuilding providing a key source of strength, offset in part by the temporary

Figure 2. **Housing and household financial indicators**

Per cent



Source: Reserve Bank of New Zealand and Statistics New Zealand.

StatLink http://dx.doi.org/10.1787/888932833086

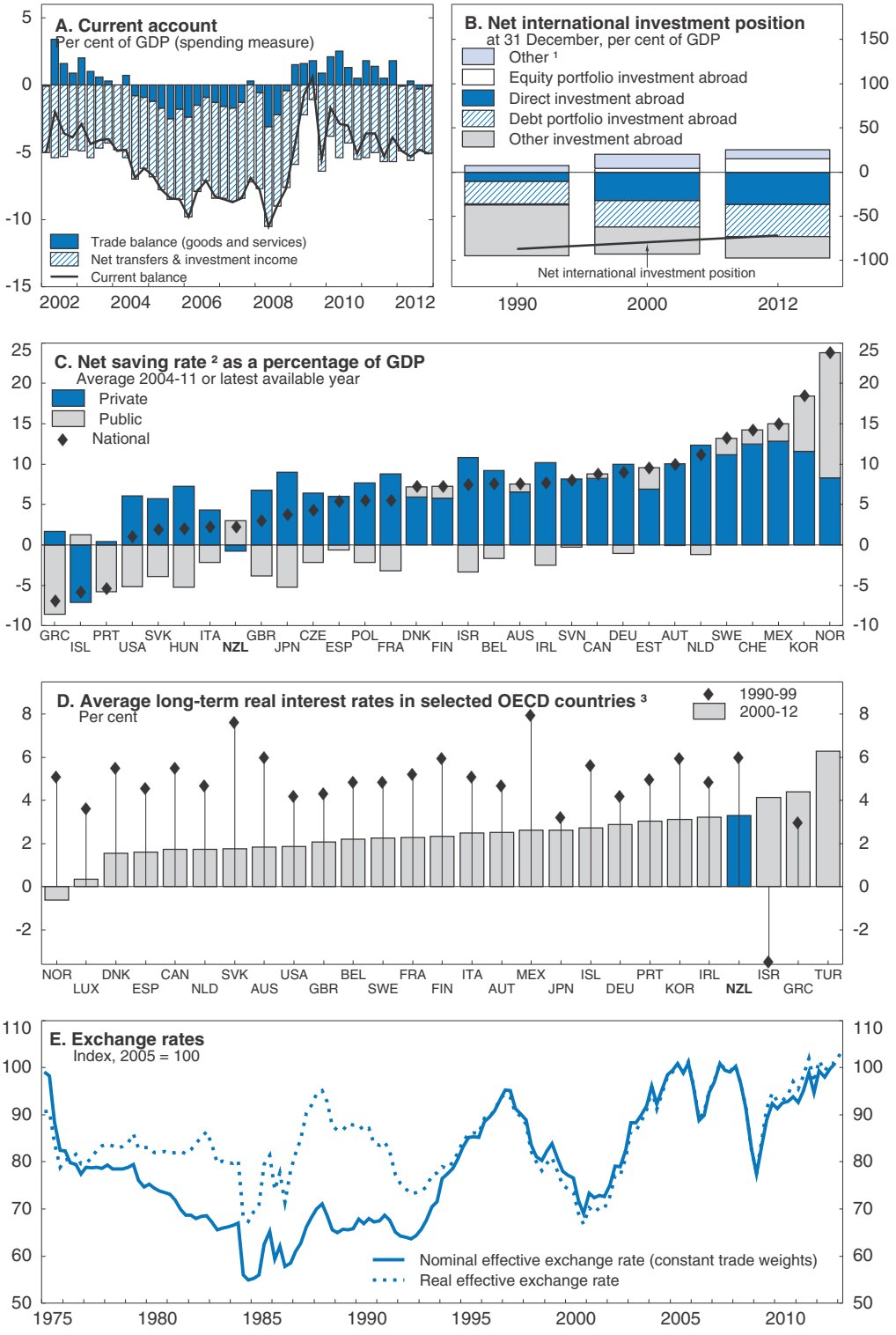
impact of drought on agricultural export volumes. Accelerating housing investment will be the main catalyst, although further household deleveraging needs will check consumption growth. Firming business sentiment will help bolster non-residential investment and improve employment conditions. On the other hand, growth will be restrained by persistent headwinds from the struggling global economy, fiscal consolidation and the high exchange rate.

Risks surrounding the projection are substantial. On the external side, they include ongoing uncertainty over the global recovery and the impact on financial flows of a potential worsening of the European sovereign debt crisis. However, New Zealand's economy would be less vulnerable than many to renewed weakness in Europe and North America, given its strong orientation towards Australia and China. Nevertheless, a sharper than expected slowdown in the latter countries would materially reduce exports and the terms of trade. Domestically, although households reduced their debt exposures during the recession, vulnerabilities to a significant house price correction are now increasing. The unemployment rate remained stubbornly high through end-2012, though improving modestly in the first months of 2013. The highly indebted agriculture sector is also exposed to a sustained drop in commodity prices or a prolonged drought. Furthermore, a 20% decline in dairy farm values since the crisis has driven up the proportion of farm debt with high loan-to-value (LTV) ratios (above 80%) by over 20 percentage points (RBNZ, 2012).

Socio-economic challenges

A central policy objective is to achieve higher sustainable living standards for all New Zealanders (English, 2012). Average per capita incomes have long trailed the upper half of OECD countries, mainly due to disappointing productivity performance (Figure 4).

Figure 3. **Financial and external indicators**



1. Other is reserve assets and financial derivatives.
2. Gross saving adjusted for depreciation.
3. 10-year government bond rates based on changes in the lagged GDP deflator.

Source: ANZ; Reserve Bank of New Zealand; Statistics New Zealand; International Monetary Fund database; *OECD National Accounts Database*; *OECD Economic Outlook 93 Database*.

StatLink http://dx.doi.org/10.1787/888932833105

Table 1. **Economic indicators and projections**
Annual percentage change, volume (chained 1995/96, NZD)

	2009	2010	2011	2012	2013	2014
Demand and output						
Private consumption	-1.4	2.6	2.0	2.1	3.0	3.1
Government consumption	1.1	1.3	2.0	0.3	0.2	0.1
Gross fixed capital formation	-13.6	-0.3	3.2	6.6	9.1	9.5
Final domestic demand	-3.6	1.8	2.3	2.5	3.6	3.8
Stockbuilding[1]	-1.2	0.7	0.3	0.1	-1.2	-0.1
Total domestic demand	**-4.8**	**2.5**	**2.6**	**2.7**	**2.3**	**3.7**
Exports of goods and services	2.3	3.7	2.7	2.1	1.7	2.7
Imports of goods and services	-14.1	10.9	6.6	1.4	1.9	4.8
Net exports[1]	5.3	-1.9	-1.0	0.2	-0.1	-0.6
GDP	**0.3**	**0.9**	**1.3**	**3.0**	**2.6**	**3.1**
GDP deflator	**0.3**	**4.2**	**2.6**	**-0.6**	**1.5**	**1.6**
Memorandum items:						
Consumer price index	2.1	2.3	4.0	1.1	1.1	1.8
Underlying inflation	2.2	1.9	2.7	1.0	1.2	1.8
Unemployment rate	6.1	6.5	6.5	6.9	6.9	6.4
General government financial balance[2]	-2.7	-7.5	-5.3	-3.9	-2.4	-1.1
Cyclically adjusted government primary balance[2]	-1.7	-6.0	-3.2	-2.0	-0.7	0.2
General government gross debt[2]	34.2	37.9	41.6	44.3	46.3	46.9
General government net debt[3]	-1.0	1.7	4.5	8.3	10.4	11.0
Current account balance[2]	-2.5	-3.2	-4.1	-5.0	-4.4	-5.1
Trade balance[2]	1.5	1.5	1.4	0.0	0.8	0.1
Household saving ratio	-0.5	0.2	-0.1	0.3	0.1	-0.2

1. Contributions to changes in real GDP (percentage of real GDP in previous year).
2. As a percentage of GDP.
3. General government net debt differs from the New Zealand government's measure of "net core Crown debt" by the inclusion of local government debt as well as financial assets held within the NZ Superannuation Fund.

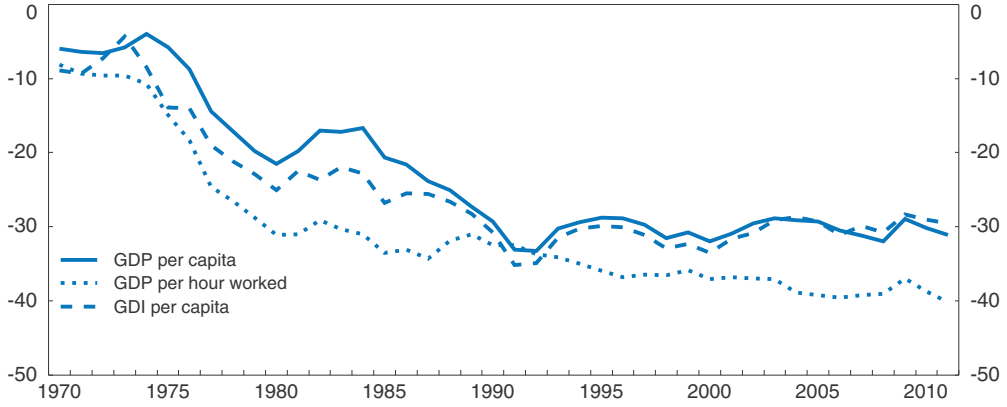
Source: OECD Economic Outlook 93 Database.

Sustainability will also depend on the equitable distribution of incomes and other aspects of well-being that are often correlated with incomes (health, education, environment, social inclusion, etc.). Disposable income inequality has widened materially since the 1980s, albeit from a lower level than in other advanced low-tax countries, and remains high (Figure 5, Panel A). This almost entirely reflects a sharp increase in market income inequality between the mid-1980s and mid-1990s, only weakly countered by the tax and benefit system; since then, income inequality has stabilised (OECD, 2011b). Within New Zealand, sizable income gaps for Maori and Pacific minorities have not improved – from 1990 to 2011 respectively standing at 75% and 72% of the Pakeha/European equivalised median household income.

While many factors drive market income inequality (e.g. labour market institutions affecting the degree of wage compression), this is an issue that needs to be addressed in the design of fiscal policies. The redistributive impact of taxes and benefits has not been sufficient to offset the increased inequality of market incomes, and is below the median of OECD countries (Figure 5, Panel B). Cash transfers have a relatively strong impact, thanks to large family and invalidity benefits and highly progressive household transfers and old age benefits; and, though taxes are less progressive than elsewhere, the personal income tax still redistributes at close to the OECD average due to its large size (Figure 6). Other fiscal measures such as indirect taxes and in-kind social spending (including education and universal health care) act further to reduce income inequality, but their redistributive impact has diminished over time (Aziz et al., 2012).

Figure 4. **Gaps in GDP per capita and productivity remain wide**

Gap to the upper half of OECD countries,[1] per cent



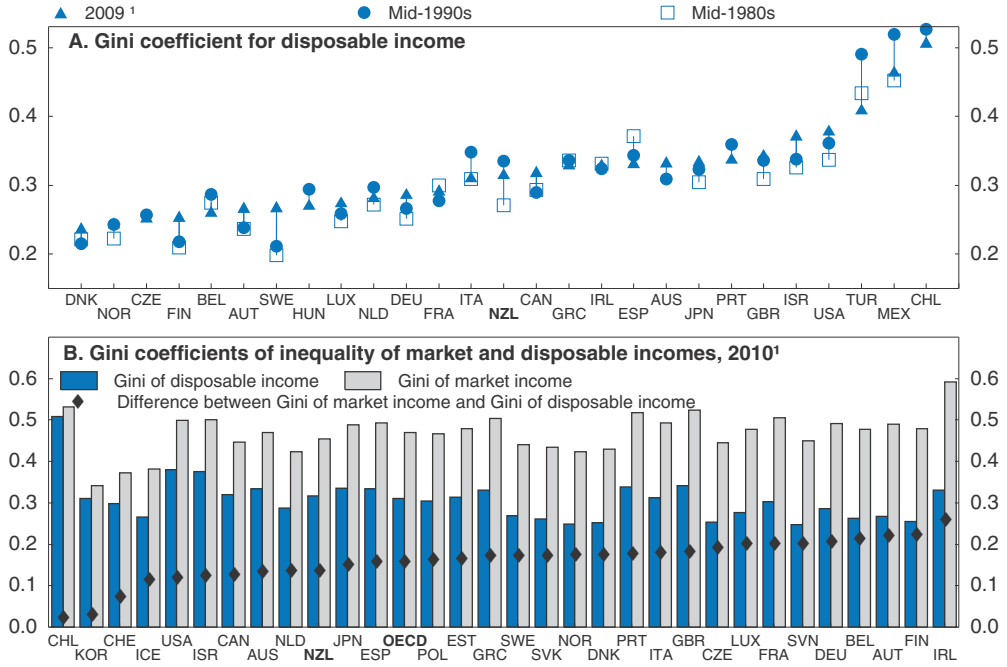
1. Percentage gap with respect to the simple average of the highest 17 OECD countries in terms of GDP per capita, GDP per hour worked and GDI per capita (in constant 2005 PPPs).

Source: OECD (2013), *Economic Policy Reforms 2013: Going for Growth*, OECD Publishing.

StatLink http://dx.doi.org/10.1787/888932833124

Figure 5. **Inequality of market and disposable incomes**

Total population



1. Or latest available year.

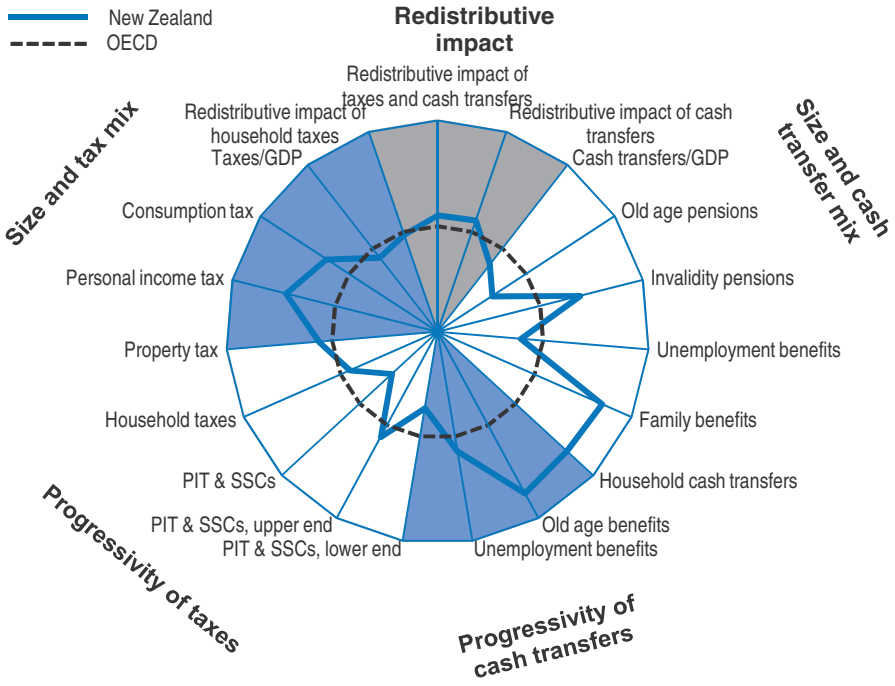
Source: *OECD Income and Poverty Distribution Databases*.

How to read this figure: The Gini index assesses inequality by measuring how far the distribution of income among households deviates from a perfectly equal distribution. A Gini index of zero represents perfect equality and 1, maximum inequality. In New Zealand, the system of taxes and transfers reduces inequality less than in most OECD countries.

StatLink http://dx.doi.org/10.1787/888932833143

The OECD has recently developed a multi-dimensional measure of well-being and social progress (Figure 7). New Zealand ranks more highly in most of its components than it does in per capita GDP, as it does in other comprehensive measures such as the

Figure 6. **Redistributive cash transfers and direct taxes: New Zealand versus OECD average**



Notes:

Size and mix of taxes

Taxes/GDP = Total tax revenue, % of GDP.
Consumption tax = Taxes on goods and services, % total tax revenue.
Personal income tax = Income taxes on individuals, % total tax revenue.
Property tax = Taxes on property, % total tax revenue.

Progressivity of taxes

Household taxes = Progressivity of total household taxes.
PIT & SSCs = Net personal tax progressivity, synthetic indicator, based on income tax plus employee contributions less cash benefits as a % of gross wage earning, single person without children.
PIT & SSCs, upper end = As above, gap in tax rate between those earning 167% and 100% of the average wage.
PIT & SSCs, lower end = As above, gap in tax rate between those earning the average wage and those at 67% of the average wage.

Size and mix of cash transfers

Cash transfers/GDP = Total cash transfers, public and mandatory private sources, % of GDP.
Old age pensions = Old age + survivors pensions, % total cash transfers.
Invalidity pensions = Incapacity related cash transfers, % total cash transfers.
Unemployment benefits = Unemployment cash benefits, % total cash transfers.
Family benefits = Family cash benefits, % total cash transfers.

Progressivity of cash transfers

Household cash transfers = Progressivity of total household cash transfers, total population.
Old age benefits = Progressivity of pensions and entitlement earnings.
Unemployment benefits = Progressivity of unemployment benefits, net of taxes for a single person.

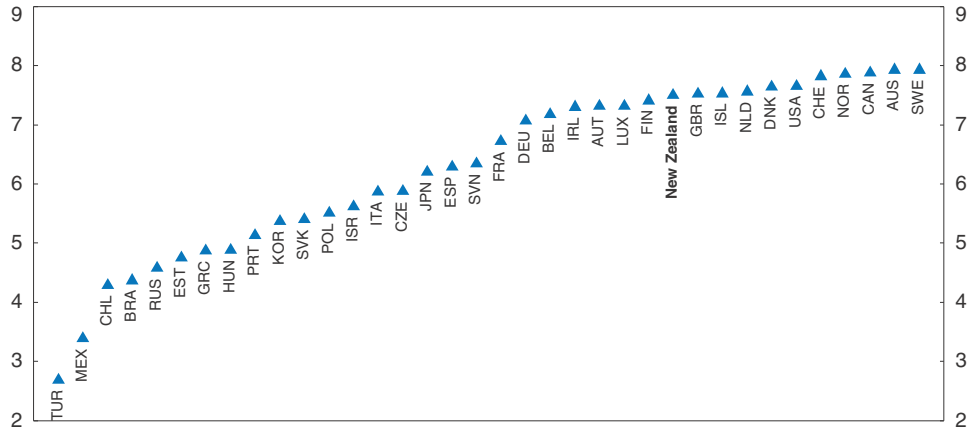
Source: Joumard, I., M. Pisu and D. Bloch (2012), "Less Income Inequality and More Growth – Are They Compatible? Part 3. Income Redistribution via Taxes and Transfers Across OECD Countries", *OECD Economics Department Working Papers*, No. 926, OECD Publishing.

How to read this figure: The redistributive impact of the tax-and-transfer system is broken down in this chart into: a) the progressivity (per dollar redistributive impact); and b) the relative size of the various fiscal instruments (defined above) within each broad category.

StatLink http://dx.doi.org/10.1787/888932833162

UN human development index, indicating a striking ability to deliver good life-quality outcomes despite lower incomes (Table 2). On the other hand aspects of broader well-being, not just income, are distributed unequally (Tables 2 and 3).

Figure 7. **Better life index**



Source: OECD, *Better Life Index Database*.

How to read this figure: For illustrative purpose, the Better Life Index (BLI) is calculated here with equal weights on the 11 dimensions (income, jobs, housing, health, work and life balance, education, community, civic engagement, safety, environment and life satisfaction). Please note that the OECD does not officially rank countries in terms of their BLI performance.

StatLink http://dx.doi.org/10.1787/888932833181

Table 2. **New Zealand's well-being, various indicators**

Absolute rankings within OECD24

	1960	1980	2005
Gross Domestic Product per head[1] – Maddison (2006)	3/22	17/22	18/22
Gross National Income per head[2] – World Bank	-	18/24	22/24
Life Expectancy at birth – World Bank	9/24	18/24	11/24
Ratio of Female to Male life expectancy at birth – World Bank	14/24	19/24	23/24
Ecological Footprint – Happy Planet Index	23/23	16/23	20/23
Life Satisfaction – Happy Planet Index	15/23	15/23	9/23
Life Satisfaction – Mean score, World Values Survey	-	21/24	20/24
Life Satisfaction – Standard deviation, World Values Survey	-	24/24	22/24
Better Life Index[3] – unweighted, OECD	-	-	11/36
Gini coefficient of income inequality – CIA Factbook and OECD	-	10/23	20/23
Human Development Index – UNDP	-	5/23	4/24

Note: A low absolute ranking implies a comparatively a high level of well-being.

1. In PPP terms, 1990 US dollars.
2. In PPP terms, current US dollars.
3. For illustrative purpose, the BLI is calculated here with equal weights on the 11 dimensions (income, jobs, housing, health, work and life balance, education, community, civic engagement, safety, environment and life satisfaction). Please note that the OECD does not officially rank countries in terms of their BLI performance. The index is calculated for 34 OECD countries plus the Russian Federation and Brazil. The reference year is generally around 2009/10.

Source: Grimes, A., L. Oxley and N. Tarrant (2012), "Does Money Buy Me Love? Testing Alternative Measures of National Wellbeing", *Motu Working Paper*, 12-09, Motu Economic and Public Policy Research, August; OECD Better Life Index, *www.oecdbetterlifeindex.org/countries/new-zealand*.

Furthermore, despite strong institutions, the country faces some poor social outcomes: high rates of incarceration, childhood illnesses and abuse, youth joblessness and suicide, various behaviours detrimental to health, all heavily concentrated among the poor and minorities (Rashbrooke, 2013; Table 3). The government's programme of Better Public Services has set targets in many of these areas, namely: reducing long-term welfare dependence, boosting skills and employment, reducing crime, improving interaction with government, and supporting vulnerable children. The new welfare reform seeks to move

Table 3. **Health statistics by ethnicity**
Percentage in each group, latest available data

	Maori	Pacific	Asian	European/other	Total
Visited a GP in the past 12 months	75	75	71	80	78
Chronic pain	18	14	10	17	16
Medicated high blood pressure	13	11	10	17	16
Diagnosed ischaemic heart disease	5.1	1.7	1.9	6.0	5.5
Diagnosed diabetes	7.3	10.2	6.2	4.7	5.5
Obesity – adults	44	62	16	26	28
Obesity – children (2-14 years)	16.6	23.5	7.5	6.2	10.2
Medicated asthma	17	9	4	11	11
Current smoking	41	26	10	17	18
Drank alcohol daily in the past 12 months[1]	3.6	1.2	1.3	6.8	5.8
Life expectancy at birth (2006):					
Male	70.4	79	78		
Female	75.1	83	82.2		
Fetal deaths (rate per 1 000 births, 2009)	8.1	9.3	7.0	7.6	
Memorandum items:					
Share in population[2]	14.9	7.2	9.7	77.7	

1. Among total population, unadjusted prevalence.
2. Total does not equal to 100 because ethnicity is self reported and an individual can belong to more than one ethnic group.

Source: Ministry of Health (2011/12), *The Health of New Zealand Adults*; *The Health of New Zealand Children*; and Statistics New Zealand.

people off benefits and into sustained work through targeted human-capital investments (see Boxes 1 and 2 below).

External imbalances persist

New Zealand continues to grapple with the combination of a large net foreign liability position (Figure 3, Panel B), an overvalued exchange rate and low national saving (Panel C). The private sector holds the bulk of external debt, although the public-sector share almost tripled since the financial crisis to reach 20% at end-2012. As discussed in the 2011 *Economic Survey* (OECD, 2011a), low private saving rates are associated with shallow capital markets, poor growth prospects and wealth effects of strong house price appreciation. As a result, a large part of domestic investment has been funded by borrowing from abroad through the banking system.

Furthermore, domestic interest rates have remained higher than in most other advanced economies for much of the past two decades (Figure 3, Panel D), driving up the cost of capital and, through the carry trade, the exchange rate (Panel E). Recent estimates suggest that by mid-2012 the exchange rate was about 10-20% higher than levels that would be associated with a sustainable external balance (IMF, 2012), and it has since appreciated further. This combination of high interest rates and high exchange rates probably reflects low domestic saving relative to the investment demands of the economy and high external indebtedness rather than overly tight monetary policy: with inflation averaging slightly above 2% during this period, the monetary policy framework and settings appear to have been generally appropriate. Moreover, the strong currency appears to be part of a longer-term puzzle in which the real exchange rate has failed to adjust down to levels consistent with New Zealand's productivity underperformance relative to other advanced countries (Reddell, 2013).

The mid-2007 implementation of KiwiSaver, the voluntary subsidised retirement savings scheme, appears to have promoted a moderate increase in private saving, but at a heavy public cost. By 2012, the scheme covered 55% of the eligible working age population spread evenly across income groups, an exemplary achievement by OECD standards (OECD, 2012a). An early survey of members reveals that about one third of individuals' contributions represented new saving (Law et al., 2011); using the value of total managed funds as of mid-2012, rough calculations based on these estimates would suggest that KiwiSaver generated under NZD 2 billion in new private saving in its first five years. Given that government subsidies amounted to almost NZD 5 billion over this period (mostly because of the one-off lump sum payment to new members), overall national saving may have even declined, at least in the short term.

Accordingly, the government began curtailing subsidies in mid-2011, halving the tax credit on member contributions and removing the tax exemptions on employer contributions. The minimum contribution rate was also increased from 2% to 3% of weekly earnings (6% including matching employer contributions) in April 2013. Further changes may help raise national saving and promote growth. For example, tax credits could be limited to low-income members, as recommended in the 2011 *Survey*, allowing greater fiscal space to extend automatic enrolment to all employees (not just new ones). Moreover, the six default funds hold some 15-25% in shares, following a conservative investment strategy, with the majority in cash and bonds. Changing the investment approach of default providers to suit members' age and risk profiles (i.e. a "life cycle" approach) could help promote equity-market deepening.

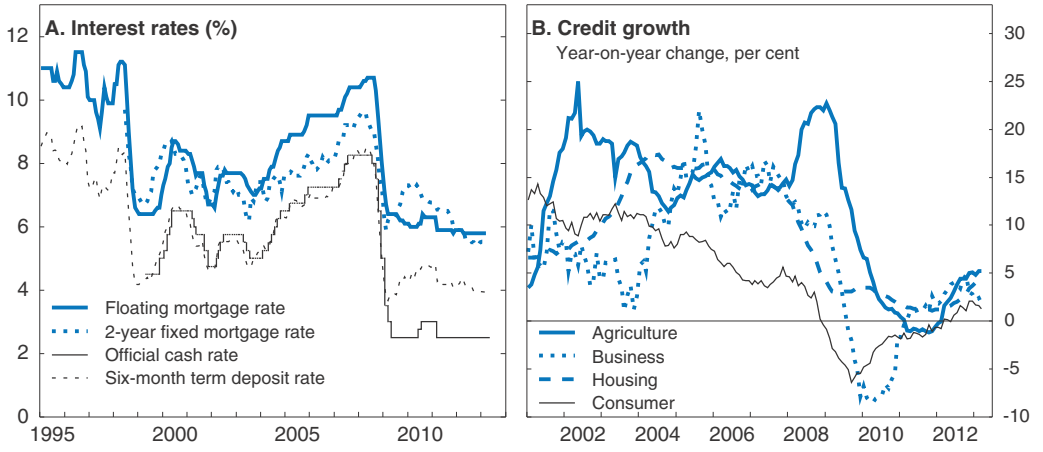
Monetary and macro-prudential policies to ensure low and stable inflation and preserve financial system stability

Monetary policy has remained accommodative

Monetary policy has been accommodative, with the Reserve Bank (RBNZ) keeping the Official Cash Rate (OCR) at a record low of 2.5% since March 2011. This stimulus has been appropriate as headline and core (excluding food and energy) inflation have fallen below 1%, and the unemployment rate has remained high. However, the apparently brisk pace of economic expansion at the end of 2012 and accelerating Canterbury reconstruction suggest economic slack will dissipate over 2013-14 and, as inflation pressures emerge, monetary stimulus should then be gradually removed.

The framework of inflation targeting and a flexible exchange rate has served the country well. The Reserve Bank has, however, acknowledged that monetary policy was probably too loose in the years leading up to the crisis and that greater weight should have been given to credit developments (Figure 8, Panel B) (RBNZ, 2012). In September 2012, the Governor and the Minister of Finance signed a new Policy Targets Agreement (PTA), which retained the 1-3% target range for inflation but increased the emphasis on keeping annual inflation close to the 2% midpoint. The PTA gave greater prominence to the long-standing statutory obligation that monetary policy should "give regard to the efficiency and soundness of the financial system" and introduced a requirement that the Bank monitor asset prices. Together, these changes suggest that the Bank could lean more heavily against future cyclical swings. Because interest rates may not sufficiently address both inflation and financial-stability objectives, there is likely to be more reliance on macro-prudential instruments (see below).

Figure 8. **Monetary indicators**



Source: ANZ; Reserve Bank of New Zealand; Statistics New Zealand; Thomson Datastream; and *OECD Economic Outlook 93 Database*.

StatLink http://dx.doi.org/10.1787/888932833200

Banking and macro-prudential reforms

Conservative management and sound supervision helped to preserve banking stability in the global crisis and recession, and steady progress is being made to build a strong defence against any future recurrence. Banks are in a comfortable position to meet their core funding and Basel III capital ratios (minima of 75% and 8.5%, respectively), which became effective 1 January 2013. Non-performing loan ratios are low at less than 2%. The banks are eager to lend, but credit growth has heretofore been largely demand constrained. This has led banks to relax lending standards from recessionary levels, resulting in a rising share of high-LTV mortgage loans. Low interest rates, together with declining global funding costs for banks more recently, are being passed through into lower mortgage interest rates. Consequently, household and farm debt are again rising from already high levels.

In response to the emerging risks to financial stability emanating from the housing sector, the RBNZ is raising the minimum level of capital that the four major banks are required to hold against mortgages with LTVs above 80% (RBNZ, 2013b). The RBNZ has also recently proposed four macro-prudential tools that it could use from time to time to help manage risks arising from the credit cycle (RBNZ, 2013a). There has been a period of public consultation, and the Finance Minister is expected to sign a memorandum of understanding on macro-prudential tools with the Governor alongside the 2013 budget. The new toolkit would apply to registered banks only, and is as follows:

- a counter-cyclical capital buffer provision, which could be applied as from 2014 as part of the Basel III capital adequacy regime, effectively requiring banks to hold more capital during credit booms, and is expected to range up to around 2.5% of risk-weighted assets;
- adjustments to the minimum core funding ratio, i.e. altering the amount of retail funds and longer-term wholesale funding banks have to hold;
- sectoral capital requirements, i.e. increased holding of bank capital in response to sector-specific risks; and
- restrictions on high-LTV residential mortgage lending.

LTV caps are the most controversial of these tools, as they affect the supply of mortgage credit directly, rather than indirectly as do capital and leverage rules or interest rate changes. The RBNZ itself has expressed concerns that LTVs could distort the mortgage market by locking out first-time home buyers and opening the door to unregulated lenders (RBNZ, 2012). It has also indicated that macro-prudential and monetary policies should normally be mutually supportive (RBNZ, 2013a). This suggests that LTV caps could supplement eventual monetary policy tightening, if need be, in controlling excessive mortgage credit growth, rather than being used to substitute for monetary policy action.

NZ banks face significant risk due to their sizeable offshore borrowing and to highly indebted domestic households and farms. The banking system is among the most concentrated in the OECD, so that many of these banks are "too big to fail" and pose fiscal risks as well (Jang and Kataoka, 2013). The Reserve Bank should therefore require even higher capital buffers than currently envisaged for the four systemically important banks, as Canada has recently done for its big banks. Despite relatively simple bank balance sheets and extensive regulatory add-ons applied to minimum risk weights in New Zealand, the Bank should also consider applying a maximum leverage ratio, as recommended in the *2011 Survey*, to backstop the use of banks' internal model-based assessments of asset risks upon which the Basel ratios are based. Such a policy has been followed, with success, in Canada (OECD, 2010a). OECD research has found that the leverage ratio is a far better predictor of "distance-to-default" than was the Basel Tier 1 ratio (Blundell-Wignall and Roulet, 2013).

An Open Bank Resolution (OBR) policy has been developed as one potential tool to manage bank failures in a way that avoids systemic disruptions and taxpayer support. Under OBR, in the event of a bank failure retail depositors would face losses along with all other unsecured creditors, while a government guarantee would kick in for the unfrozen portion of their assets and new deposits so as to allow the bank to keep operating until longer-term choices can be made about the future of the institution. However, this may not be enough to prevent bank runs in all circumstances, as once OBR is applied to one bank, depositors may fear contagion to the others. Implementing a permanent deposit insurance scheme may help reduce risks of retail runs. To be sure, deposit insurance raises moral hazard, but that should be handled by tighter bank supervision. Furthermore, some moral hazard exists already: the fact that deposit insurance was adopted under urgency in 2008 (and progressively removed over the following few years) may lead to the expectation that a similar policy would be implemented in a future crisis.

Fiscal policy on the path of spending and debt reduction

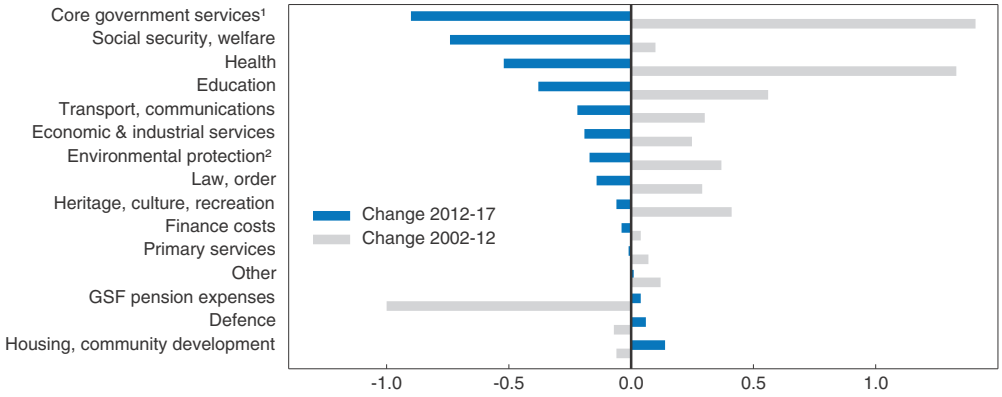
The current policy mix, which combines tightening fiscal policy and continuing low interest rates, is limiting pressure on the exchange rate. If the economy were to grow more strongly than foreseen, then the government should accelerate structural fiscal consolidation. The central government's measure of net "core Crown" debt (which excludes assets held in the NZ Superannuation Fund) has risen to about 25% of GDP, an increase of almost 20 percentage points since the crisis, and is projected to approach 30% in 2015-16. Although these levels are low by OECD standards, they should be seen in the light of high private-sector external indebtedness.

The central government has committed to balance its operating budget (before gains and losses) by 2014-15 from a deficit of 4.4% of GDP in 2011-12. Much of the consolidation will be

accomplished via spending restraint, with core Crown expenses falling from a peak of 35% of GDP in 2011 to 30% by 2016, thereby returning to early 2000s levels. Restraint will be most pronounced in so-called core government services and working-age welfare benefits (Figure 9).

Figure 9. **Changes in government spending**

As a percentage of GDP



1. Official development assistance, indemnity and guarantee expenses, departmental and non-departmental expenses, tax receivable write-down and impairments, science expenses and other expenses including those associated with the Canterbury earthquake.
2. In previous Economic and Fiscal Updates, expenses relating to environmental protection were included within the heritage, culture and recreation classification. From HYEFU 2012, environmental protection expenses are separated out into their own functional classification.

Source: Treasury, *2012 Half Year Economic and Fiscal Update* (HYEFU).

StatLink http://dx.doi.org/10.1787/888932833219

The government should consider being more explicit about how it intends to achieve its 20% net debt objective by 2020, as stated in its 2012 Fiscal Strategy Report. While the 20% objective seems a reasonable starting point, lower levels should also be considered, given sizeable external vulnerabilities. While the government's transparency-based principles approach (defined in the Public Finance Act) appears to work well, some form of intermediate target could help maintain discipline and transparency in the budget process following the return to surplus, for future governments, especially during cyclical upturns. Furthermore, establishing a fiscal council as recommended in the 2011 *Survey* could contribute to deeper budget analysis, monitoring and debate.

The government's 2009 Long-Term Fiscal Statement projected that under current policy settings ageing-related cost pressures in pension and health care would put significant pressure on spending in the coming decades. These pressures, if not addressed, would combine with associated financing costs to push net debt levels above 200% of GDP within 50 years. Given the scale of these pressures, early steps to confront them would be desirable. Projections using the Treasury's long-term fiscal model indicate that stabilising net core Crown debt at 20% of GDP by 2024 would require general government deficits averaging about 0.4% over the 2015-60 period. This translates into core Crown operating surpluses averaging 1.9% of GDP over the coming decade, and 1.3% on average from 2025-60 (Bell, 2012), assuming net capital expenditures evolve in line with their historical average and local governments maintain balanced budgets.

Spending and tax reforms for sustainable fiscal consolidation

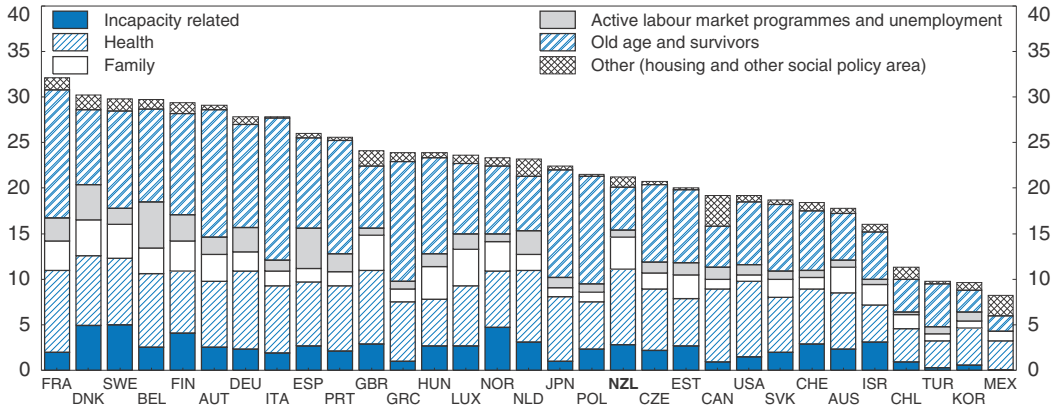
Fiscal consolidation should be designed to mitigate possibly conflicting effects on poverty reduction and economic growth. Structural reforms in baseline public spending, public governance and asset management can also increase possibilities for beneficial policy manoeuvre.

Reforms for equitable spending control

As social programmes are a large share of public spending, restraint in this area is a prominent part of fiscal consolidation. Non-old age benefit spending is the ninth highest in the OECD relative to GDP (Figure 10), and long-term unemployment benefit earned-income replacement rates are around fourth highest in the OECD (see *www.oecd.org/els/social/workincentives*). Transfers to households have risen sharply since 2008 due to new provisions ("20 Hours ECE", Working for Families (WFF), KiwiSaver), the recession and the Canterbury earthquakes, but are projected to decline again, thanks to both falling unemployment and welfare reforms (Box 1). WFF is a costly in-work tax expenditure that could be much more effectively targeted on the working poor by adjusting abatement rates and upper income thresholds. Similarly, the universal 20 Hours early childhood education (ECE) programme has disproportionately benefited wealthier families, who have better access to childcare facilities. Cash transfers to needy families are already among the most redistributive in the OECD (Figure 6), while work-incentive issues are being addressed by recent welfare reforms. Old-age pension spending, as a flat universal benefit funded through general taxation, is modest in comparison with other countries but strongly redistributive (Figure 6).

Figure 10. **Non-old-age welfare benefits are comparatively high, though pension spending is modest**

As a percentage of GDP, 2009[1]



1. Or latest available year.

Source: OECD Social Expenditure Database.

StatLink http://dx.doi.org/10.1787/888932833238

Health and education spending are set to at least partly reverse their earlier strong run-ups (Figure 9). Most of the previous increases went into high pay growth for doctors and teachers, without obvious corresponding performance improvements (OECD, 2009). Accordingly, part of the forecast decline reflects wage moderation. Savings in education are also a function of projected decreases in the number of secondary and tertiary students.

Box 1. **New Zealand's "investment approach" to welfare reforms**

The NZ government is significantly reforming the welfare system, based on an active "investment approach" that focuses on reducing long-term benefit dependency through targeted support and services that move recipients into employment. The principle of liability is integral to the reforms. That is, welfare interventions should be considered an investment in people at risk that avoids paying much larger sums in lifetime welfare costs. This type of approach favours training in youth. A new performance measure incentivises the Ministry of Social Development to concentrate resources where they make the most difference.

Alongside the investment approach, welfare reform is being implemented in three phases: the youth service component from August 2012 (see Chapter 2); new work obligations for certain types of benefit recipients from October 2012; and the replacement of the nine main benefit payments with three benefit types from July 2013 (Table 4). The budgetary impact of the welfare reforms is highly uncertain. The government estimates that the overall package will cost NZD 520 million but could result in NZD 1.0-1.6 billion in fiscal savings in 2012-16, with 28-44 thousand fewer benefit recipients by FY 2016. Although the unemployment rate may temporarily increase as more people enter the labour force, the reforms are likely to boost growth in the long term as the structural unemployment rate declines.

Table 4. **A shift to work-oriented welfare benefits**

New benefit type	Replaces	Work expectations
Jobseeker support	Unemployment Benefit Sickness Benefit Domestic Purposes Benefit: sole parent, youngest child over age 13 Widow's Benefit: youngest child over age 13 Domestic Purposes Benefit: women alone.	Recipients will be expected to look for work according to their capability. People with injury, illness or disability will be assessed for their capacity to work either full time or part time, or can have their work obligations temporarily deferred. All others will be expected to search for full-time work.
Sole parent support	Domestic Purposes Benefit: sole parent, child up to age 13 Widow's Benefit: child up to age 13.	Individuals will be required to look for part-time work when their youngest child reaches age 6, and full-time work once that child reaches age 14 (when they will transfer to Jobseeker Support).
Supported living payment	Invalid's Benefit Domestic Purposes Benefit: care of sick and infirm.	No work obligations for those assessed to have permanently restricted ability to work.

Source: Ministry of Social Development.

Restraining health spending as a share of GDP as ageing intensifies will be a major challenge. Yet, structural reforms to boost efficiency rather than reducing access or quality can be welfare-enhancing as well as cost-reducing.

The government has committed to getting better results and value for money from its public services and is implementing a set of public-sector reforms to lock in long-term expenditure control (Box 2). Such efficiency gains should help attain the sharp decline in core government services projected in the budget (Figure 9). It is important that reforms continue to improve both top-down controls and agents' incentives for efficient service delivery, especially where cost pressures are tenacious, as in health care.

Public spending is also being reprioritised to support growth. Capital spending on infrastructure – roads, rail, ultrafast broadband, schools and hospitals – has already risen strongly (Figure 11). It will be important to subject these public investments, which may

Box 2. **Public sector management reforms**

Better public services

Achieving sustainable results will very likely require structural public-sector reforms. New Zealand's New Public Management reforms following the budget crises of the 1980s stressed competitive delivery of commercial services replacing former government monopolies, accountability to the taxpayer through performance-based contracts for use of public money, and prefunding of implicit liabilities. Social spending was decentralised to better serve the local customer base. During the 2000s, however, public spending surged again, and employment in core government services rose by nearly 30%. Recent reforms have sought to re-establish spending discipline and efficacy, while remaining grounded in the principles of transparency, accountability, responsiveness and fiscal probity.

The government is currently overhauling core government structures and procedures to better enable agencies to reconcile zero budget growth (until 2017) with their public service obligations. The *Better Public Services* initiative has notably given ministers and chief executives high-stakes responsibility for achieving targets and facilitated co-operation across the disparate agencies often operating in common policy areas.

An evaluation of the initiative carried out by Ernst & Young stated that much work remains to increase ambitions for cultural change in government (Coleman, 2013). Nonetheless, some changes are already palpable. In the prison service, the drive to deliver the high-level target of reducing recidivism by 25% by 2018 has seen the introduction of a two-year programme for 2000 prisoners leading to NCEA qualifications, as a result of a partnership between Corrections and Open Polytechnic (Tolley, 2013). Lack of education is a major driver of crime (90% of inmates cannot read or write), and there are plans to expand such pilots. In education, the high level target of 85% NCEA level 2s among 18 year-olds has already led to major innovations at upper secondary and tertiary levels (see below).

Health-care reform

Longer-term challenges concern mainly the effectiveness and containment of health spending pressures. As discussed in the special chapter of the 2009 *Survey*, a key problem is that the 20 District Health Boards (DHBs), as both budget holders/purchasers of health services and owners/operators of public hospitals, may face conflicting interests. Indeed, acute-care services and administration are comparatively inefficient in New Zealand (Joumard et al., 2010). The government has taken steps to drive up productivity in this sector as follows:

- public benchmarking of some performance measures including: waiting times, public targets for electives volumes, performance-based funding and ongoing tight budget constraints;
- bulk procurement and sharing of back-office services; regional approaches to service planning; pressure for DHBs to sharpen their contracting with third parties and purchasing from their own provider arms;
- requiring DHBs to devolve control of more services to primary-care providers. The Ministry of Health is also working on a new national framework for performance-based funding in primary care.

Balance sheet management

The government is also looking to improve the structure of its balance sheet. Reducing public ownership in five state-owned enterprises – consistent with recommendations in the 2011 *Survey* – is expected to improve their management efficiency and generate about NZD 6 billion in sale proceeds (2.9% of GDP).

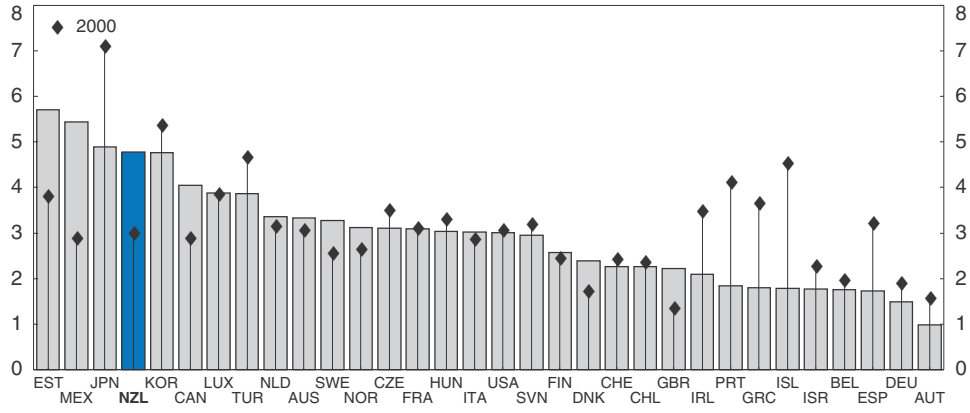
Box 2. **Public sector management reforms** *(cont.)*

Possible future directions

While the core economic principles of New Public Management remain valid, more fundamental reform of the public service model might be considered. Evans et al. (2012), for example, propose applying insights from the modern theory of incomplete contracts – i.e. not all contingencies can be anticipated and specified in advance – so that optimising flexibility in setting the government's boundaries is required. This suggests that contracting between private and public sectors, or the allocation of functions within the public sector itself, should ascribe residual decision rights to the party best placed (in terms of capacity and incentives) to make value-enhancing investments in the asset or activity in question, while being subject to hard budget constraints on total cost. This may have implications for efforts to engage private partners in public service delivery and asset management, and to further raise accountability incentives within government.

Figure 11. **Capital spending is high**

General government gross fixed capital formation as a percentage of GDP, 2012[1]



1. Or latest available year.

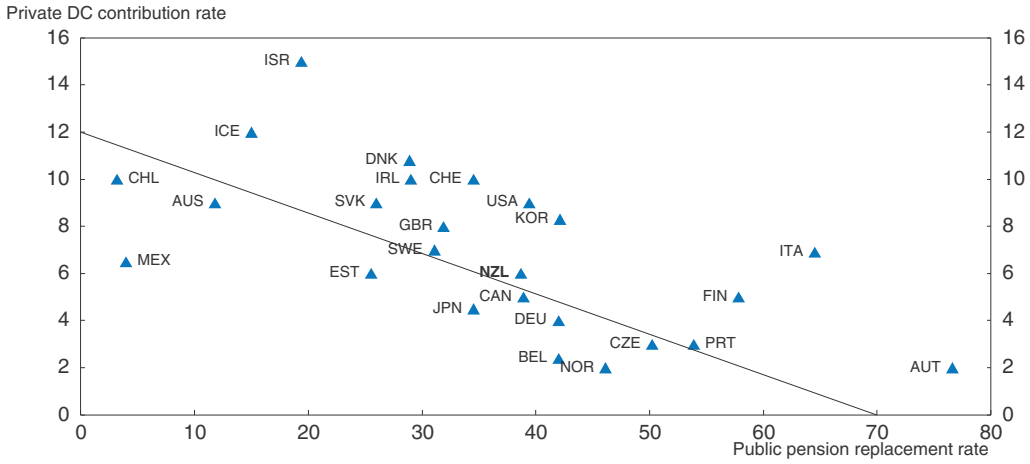
Source: OECD Economic Outlook 93 Database.

StatLink http://dx.doi.org/10.1787/888932833257

involve private partners, to cost-benefit analysis to ensure that they are indeed pro-growth. Local-authority investment spending has slowed but should likewise be assessed, particularly concerning its environmental impacts (OECD, 2011a).

Reforms will be needed to make NZ Superannuation (the universal public pension system) both more affordable and supportive of growth. Life expectancies are projected to rise by about six years in the next half century. Increasing the age of eligibility (from 65) in line with longevity is a sensible option that would improve fiscal sustainability while bolstering long-term growth, as discussed below. Good transitional provisions might be required for those physically unable to work longer. There may be merits (albeit risks as well) in shifting KiwiSaver fund default allocations towards greater equity investments: OECD analysis suggests that making KiwiSaver settings consistent with an overall 70% replacement rate (the black line in Figure 12) would require funds to hold 60% in equities, compared to the current 15-25% (OECD, 2012a). Increasing KiwiSaver minimum

Figure 12. **Coherence and adequacy of retirement income systems**



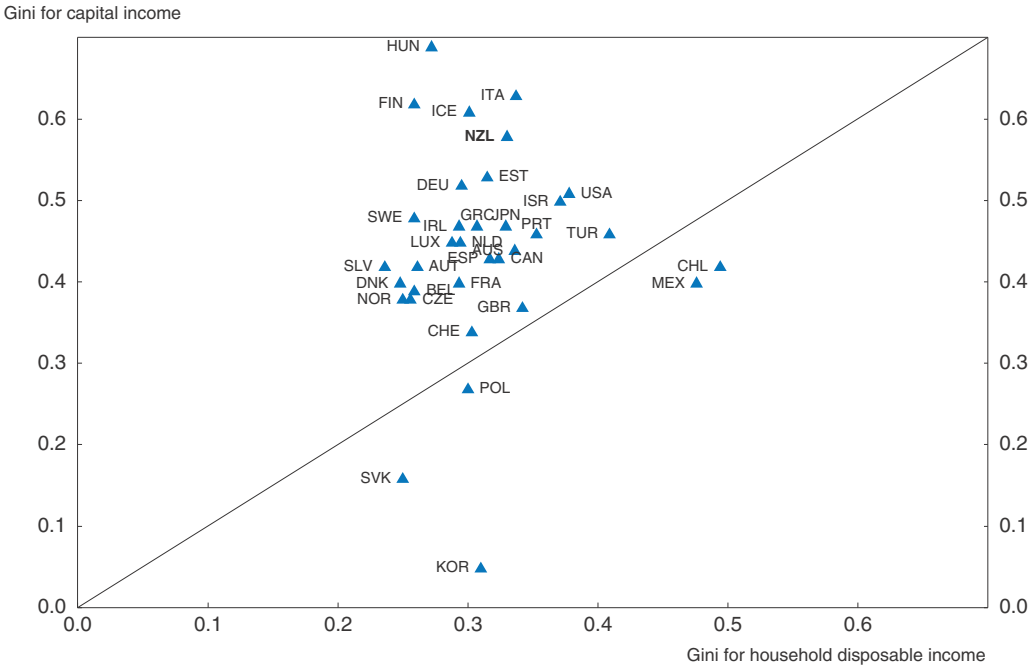
Source: OECD (2012a), *OECD Pension Outlook*.

How to read this figure: This chart compares projected public pension benefits with mandatory contribution rates of private defined-contribution (DC) pension plans. The black line shows the combination that would deliver an overall replacement rate of 70% on average, assuming a 40-year contribution period, nominal returns of 7%, a 60%/40% split of equity and fixed income portfolio allocations, and 20-year life expectancies at age 65.

StatLink http://dx.doi.org/10.1787/888932833276

Figure 13. **Inequality of income and wealth**

Late 2000s



Source: *OECD Income and Poverty Distribution Databases* and P. Hoeller et al. (2012), "Less Income Inequality and More Growth – Are they Compatible? Part 1. Mapping Income Inequality Across the OECD", *OECD Economics Working Papers*, No. 924.

StatLink http://dx.doi.org/10.1787/888932833295

contribution rates further could also help reduce pressure on the public pension system and facilitate a switch to indexing pension benefits on prices rather than wages, as recommended in the 2011 *Survey*.

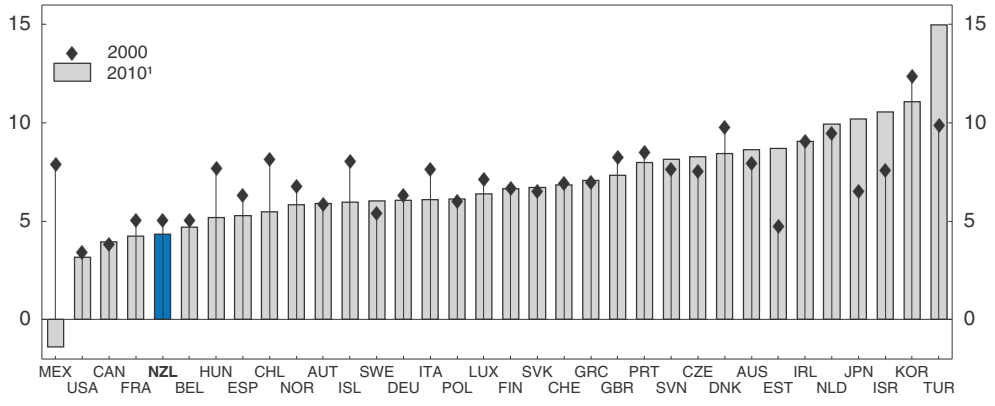
Efficiency-boosting tax reforms

The government remains committed to avoiding general tax increases as part of the consolidation effort. Such an approach is understandable as it generates pressure to seek efficiencies in public spending, while a low tax burden is conducive to long-term growth. However, some tax changes merit consideration to make the tax system more conducive to both growth and equity:

- New Zealand belongs to a group of five OECD countries with particularly high pre-tax capital-income inequality (Figure 13). As much of this income, especially at the top levels, takes the form of capital gains, the lack of a capital gains tax in New Zealand exacerbates inequality (by reducing the redistributive power of taxation). It also reinforces a bias toward speculative housing investments and undermines housing affordability, as argued in the 2011 *Survey*.
- Estimations by the OECD suggest that recurrent taxes on immovable property are the tax category least harmful to long-term growth, followed by other property taxes (Johansson et al., 2008). There is a risk, however, that property taxes are regressive. As recommended in the 2011 *Survey*, to reduce this risk the property tax could be scaled by the owner's marginal income tax rate.
- Expanding the use of environmental taxes, which appear low by OECD standards (Figure 14), could help enhance the quality of growth. For example, such taxes could include congestion charges or a tax on polluting activities like dumping or burning waste. Such measures could complement the removal of free permit allocations under the emissions trading scheme, as discussed below.

Figure 14. **Revenues from environmentally related taxes**

As a share of total tax revenue



1. Or latest available year.

Source: OECD, *EEA Database*.

StatLink http://dx.doi.org/10.1787/888932833314

Box 3. **Recommendations for macroeconomic and macro-prudential policies**

Monetary-fiscal policy mix

- Maintain the current monetary policy stance, but as excess capacity dissipates and forecast inflation picks up, gradually remove monetary stimulus.
- Deliver on the fiscal consolidation targets. If the economy picks up more strongly than expected, accelerate structural fiscal consolidation in light of external vulnerabilities.

Prudential policy

- While recognising the current strength of the financial system, contain emerging risks to financial system stability with tighter prudential policy settings, including the deployment of new macro-prudential policy instruments. Consider implementing bank leverage ratios, permanent deposit insurance and higher capital requirements for too-big-to-fail banks.

Spending reform

- Take early steps to address long-term cost pressures associated with an ageing population.
- Raise the pension eligibility age in line with longevity. Consider increasing further the KiwiSaver minimum contribution rates and indexing NZ Superannuation benefits wholly or partly to the CPI.
- Focus on engaging private partners in productivity-enhancing investments and practices, especially in health care and education, with careful cost-benefit analysis to ensure that this leads to greater efficiencies.
- Target the Working for Families programme more tightly on the working poor by lowering upper income thresholds and increasing abatement rates. Likewise, vary early childhood education (ECE) subsidies with the level of income.

Tax reform

- Consider limiting the KiwiSaver tax credits to only low-income members, and extend automatic enrolments to all existing employees. Change the investment strategy for default funds to a life-cycle approach that is adapted to the member's age.
- Implement a capital gains tax and boost environmental and property or land taxes to facilitate a more efficient and equitable tax structure.

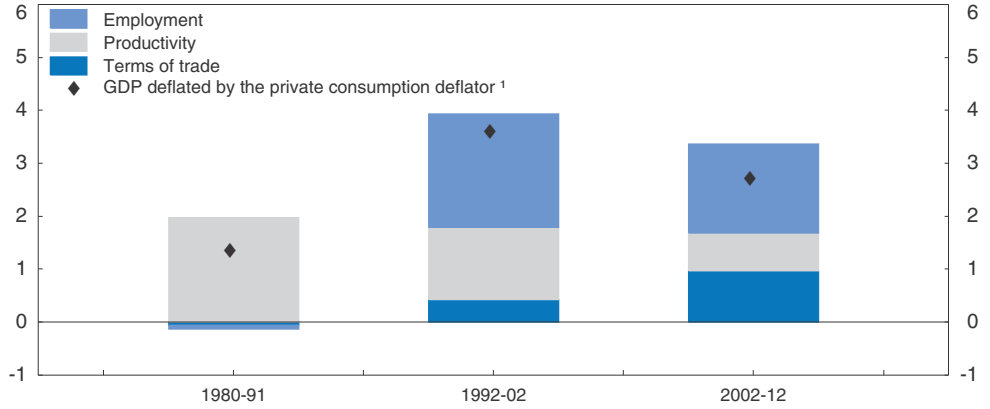
Policies to support sustained growth

Growth over the past decade has been substantially debt-financed and driven by strong investment associated with rapid population growth and the real income effects of terms-of-trade gains (Figure 15). On the supply side, rising labour input has contributed, thanks mainly to greater participation by women and immigrants, but demographic trends (Figure 16) will make it necessary to find more sustainable sources of prosperity. Projections using the OECD long-term growth model (Johansson et al., 2013) suggest that the labour force will begin to shrink from about 2025, and potential output growth will then depend mainly on multi-factor productivity gains, which have been extremely low for some time. Reforms will therefore be needed to improve the country's productivity performance.

Far-reaching structural reform programmes in the late-1980s and early-1990s put New Zealand among the forefront of policy regimes, positioning the country well to reverse the long-term decline in per capita incomes relative to the OECD average. Despite these reforms, income and productivity gaps have shown no signs of narrowing (Figure 4). The reasons for the continued underperformance remain unclear. Size and remoteness have clearly limited New Zealand's potential – distance from markets may contribute to lowering

Figure 15. **Terms of trade and labour utilisation have driven rising real incomes**

Sources of real national income growth, per cent



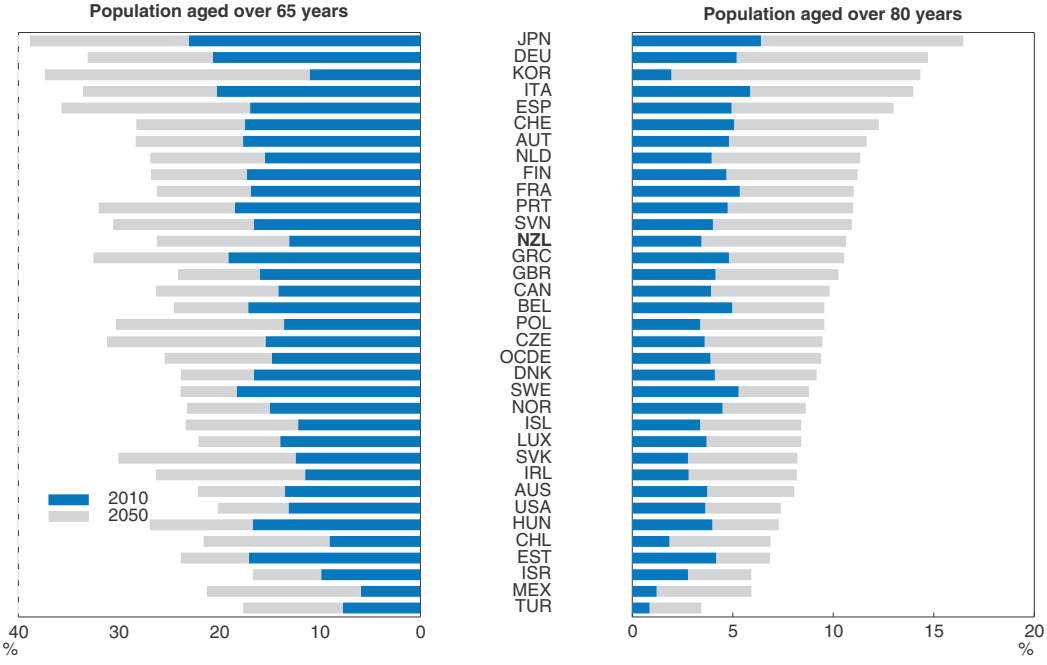
1. Real national income defined as gross domestic product deflated by the private consumption deflator.

Source: *OECD National Accounts Database* and *Economic Outlook 93 Database*.

StatLink http://dx.doi.org/10.1787/888932833333

Figure 16. **The elderly population share will rise markedly by 2050**

2010 and 2050



Source: OECD, *Demographic Database*.

StatLink http://dx.doi.org/10.1787/888932833352

its GDP per capita by as much as 10% relative to the average OECD country (Boulhol and de Serres, 2008). In addition, the persistently high level of the exchange rate has probably hindered growth in the tradables sector and helped constrain productivity growth.

Fostering international trade linkages is crucial for a small and distant country to promote scale economies, knowledge diffusion and competitive pressures in domestic markets. New Zealand has both low trade intensity and limited overall participation in global value chains (GVCs), according to data from the new OECD-WTO *Trade in Value Added* database, although it is relatively well connected to GVCs in the agriculture and food

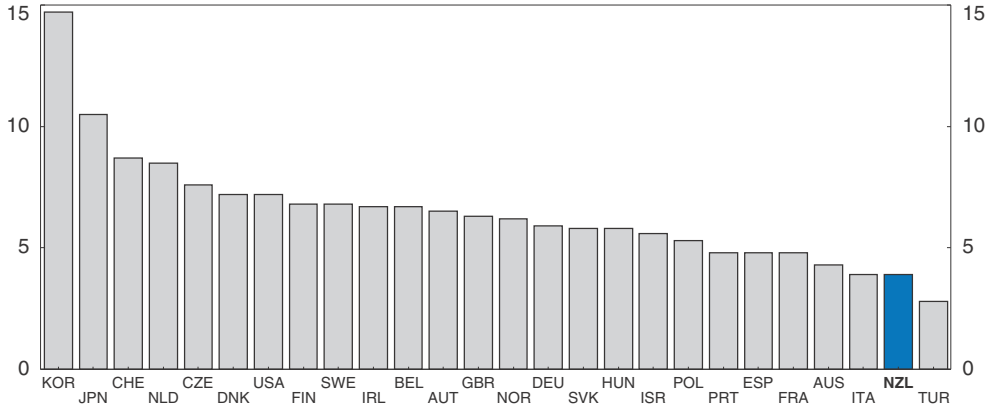
sectors. Transferring resources towards the production of high-value, knowledge-intensive goods and services would help broaden trade linkages and capitalise on expanding opportunities from income growth in emerging Asia. Indeed, China is rapidly becoming the country's top export market. Efforts should continue to further develop the single economic market with Australia, building on those proposed by the joint Productivity Commission study (Australian Productivity Commission and New Zealand Productivity Commission, 2012).

Reducing effective distance

The declining cost of information and communications technology (ICT) and rising Internet use present significant opportunities for New Zealand to expand its services trade. However, despite growing broadband penetration, Internet connection remains relatively expensive and slow (Figure 17). Improving the ICT infrastructure will be critical to reducing the country's effective distance from major markets. While the government's ultra-fast broadband (UFB) initiative to broaden access to fibre-based Internet aims to enhance productivity and competitiveness, some significant regulatory uncertainties may impede private industry investment and fibre uptake (Chapter 1). These were accentuated by the government's decision to delay implementing the Commerce Commission's draft proposal to reduce prices that Chorus, the company owning the existing copper infrastructure, can charge for wholesale network access. Because Chorus also owns much of the fibre network, the government was concerned that such price cuts would depress Chorus's income and ability to invest in UFB. The government has launched a comprehensive review of the telecommunications regulatory framework, which would benefit from clearer regulation of fibre network pricing that is consistent with the cost-based approach used for copper.

Figure 17. **Average measured connection speeds by country**

Average Mbit/s, 2012Q3



Source: Akamai State of the Internet Report, 2012Q3.

StatLink http://dx.doi.org/10.1787/888932833371

Although formal trade barriers are low, New Zealand should aim to lower its trade costs by more than other countries in order to shorten its effective distance from major markets, as has been done with Australia through Closer Economic Relations. This will involve reducing transactions costs and remaining tariffs and unnecessary restrictions in foreign trade, investment and transport services, and more generally ensuring product market regulations (PMR) encourage competition and investment. The government has

taken welcome steps to consolidate import and export procedures by developing a Trade Single Window. In addition, anti-competitive regulatory provisions in the international transport industry should be removed, such as those that allow price fixing in international shipping agreements (New Zealand Productivity Commission, 2012). Passing the Commerce (Cartels and Other Matters) Amendment Bill will help in this regard.

OECD model simulations suggest that moving the country`s PMR to best practice could boost potential GDP growth by 0.2-0.3 percentage point (Chapter 1), although New Zealand's growth has historically undershot predictions based on its policy settings (Barnes et al., 2011). Examples of reforms that could help boost growth include increasing transparency in the foreign direct investment (FDI) screening regime, as recommended in the 2011 *Survey*. FDI can catalyse productive technology transfers and knowledge spillovers. Although New Zealand is relatively open to inward FDI, much of it flows to the banking sector, and the screening regime may create uncertainties that deter potential foreign investors. Streamlining processes in the Resource Management Act (currently under review) to accelerate development and improve the environment for attracting investment will also be needed.

Boosting innovation

Stimulating innovation is key to achieving sustainable productivity gains. New Zealand`s innovation system boasts many strengths, particularly in scientific skills and research. However, business and government R&D expenditures are low by OECD standards, and there may be a shortage of skills in management and engineering (see below). The government has implemented several initiatives to improve its innovation performance consistent with recommendations from the 2007 OECD *Review of Innovation Policy*, including establishing core funding streams for Crown Research Institutes. Its Business Growth Agenda includes an objective to double business R&D spending to 1% of GDP.

This may be hindered by New Zealand's tax treatment of intangible assets, which appears less favourable than elsewhere. Unlike most OECD countries, it provides no tax benefits through accelerated depreciation of patent assets or credits for R&D costs. Furthermore, the entire proceeds from patent sales are taxed as income, rather than netting out the undepreciated capital cost. An R&D tax credit was introduced in 2009 but was quickly repealed and replaced with a modest programme of Technology Development Grants, which reimburse 20% of eligible expenditures for established technology-intensive firms with a strong R&D history. This may unfairly disadvantage smaller start-up companies with innovative potential. Furthermore, firms are selected via a subjective judgment process, creating obscure administrative complexities. The government's current review should aim to redesign the grant to address these weaknesses. While it could be worthwhile in the future to reinstate a more transparent, administratively efficient refundable tax credit once fiscal space becomes available, care should be taken to maintain some policy stability in this area.

Boosting human capital and labour input

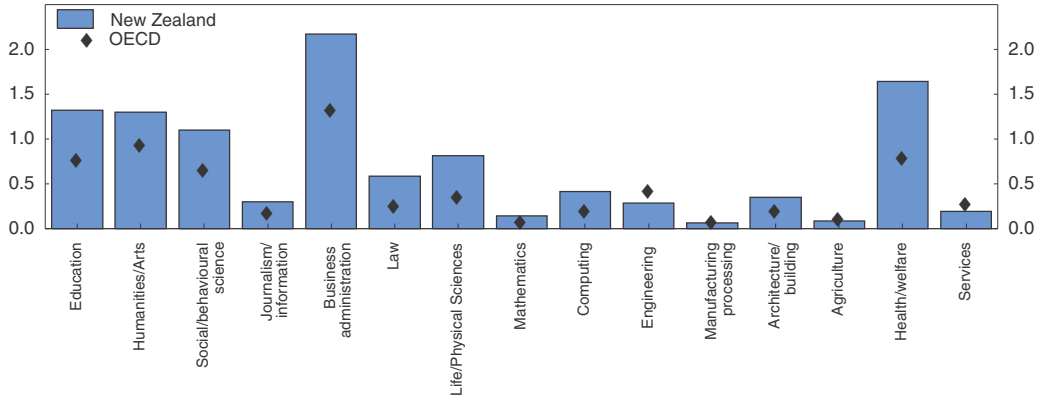
Maintaining a highly skilled workforce is critical to staying competitive in an increasingly knowledge-based global economy. OECD model simulations suggest that policies to continuously raise human capital levels towards best practice could boost potential output growth as much as 0.2 percentage point annually (Chapter 1). Migration flows affect New Zealand's stock of human capital substantially. A relatively large share of the tertiary-educated move abroad, both reflecting and aggravating the poor domestic productivity record,

and much of this skills loss is replaced by high-skilled immigrants, in particular from Asia. The immigration system tends to favour high-skilled workers between ages 20 and 55 with pre-existing attachment to the labour force. Nevertheless, it will become ever more difficult to attract such individuals as wages rise in increasingly knowledge-intensive Asian economies. Hence, it will be increasingly important to produce those skills domestically.

Skills in science, technology, engineering and mathematics (STEM) are essential to innovation. New Zealand graduates a relatively low share of engineers per capita, but a comparatively high share in computing and sciences (Figure 18). To address expected future shortages the government has funded more engineering places within tertiary institutions while lowering their tuition fees. However, this investment may prove futile if graduates move abroad, where engineers' wages tend to be higher (Department of Labour, 2008). Given industry reports that NZ engineering graduates often lack practical experience (Department of Labour, 2008), consideration could also be given to supporting greater internship opportunities for students at local firms, especially where engineering clusters already exist.

Figure 18. **University graduates by field of study**

Per thousand population, 2010



Source: OECD, *Education Database*.

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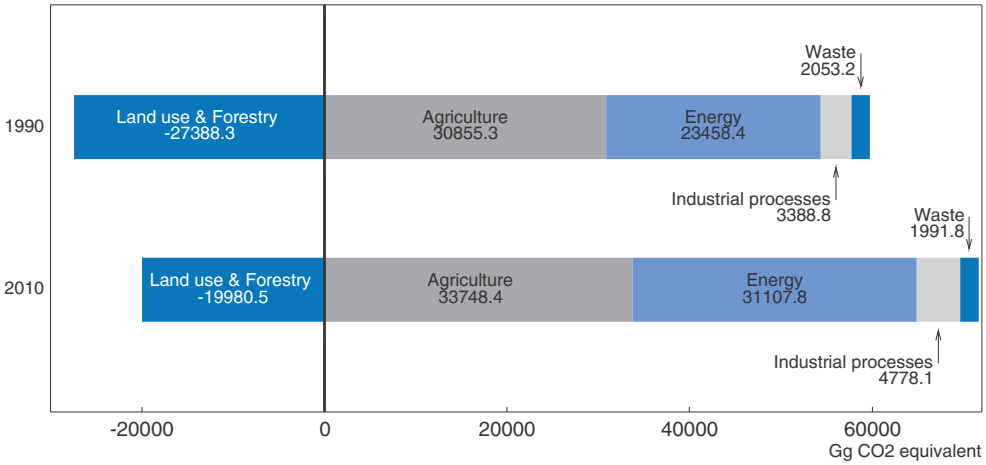
Low private saving rates and features of NZ Superannuation tend to encourage older New Zealanders to continue working until the age of 65, when they become eligible for a public pension (Hurnard, 2005). A small number of those who wish to retire early may be eligible for unemployment or disability benefits, but these are not as generous. Raising the age of pension eligibility would therefore boost potential growth. OECD model simulations indicate that linking the pensionable age to life expectancy could boost long-term output growth by 0.4 percentage point (Chapter 1). However, these estimates assume "healthy ageing", and the actual impact is likely to be smaller.

Managing natural capital and countering climate change

Natural assets play an important role in New Zealand's economic prosperity, and achieving sustainable increases in living standards will depend on how efficiently it uses its environmental resources. The country boasts a strong overall environmental performance, with high national air- and water-quality standards and energy efficiency that is close to the OECD average and improving over time. Greenhouse gas (GHG) emissions per capita are very high, however, almost half of which emanate from the

agriculture sector (Figure 19), reflecting the country's large pastoral farming sector. The related challenges were assessed in the chapter on green growth in the 2011 Survey. Furthermore, the energy sector has been the principal driver of rising overall emissions (Figure 19), mostly reflecting high vehicle use and an old fleet. New Zealand has the OECD's second highest car-ownership rate and the fourth highest road-transport emissions per capita (Figure 20), probably related to its low population density. Prices and taxes on motor vehicle fuels are low by international standards (Chapter 1).

Figure 19. **New Zealand's emissions by sector in 1990 and 2010**

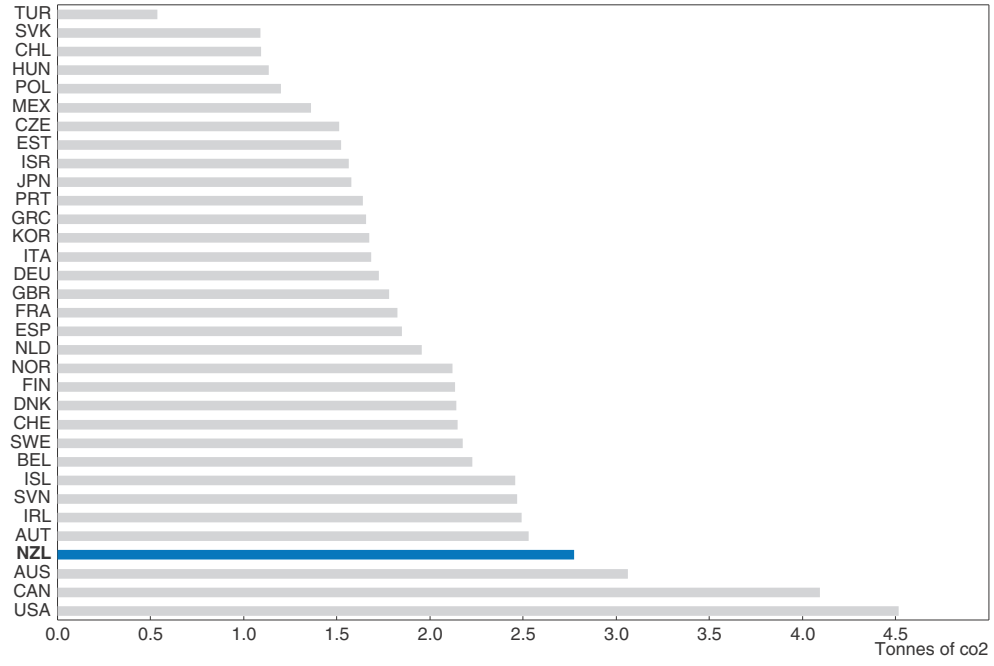


Source: Ministry for Environment, New Zealand's Greenhouse Gas Inventory 1990-2010.

StatLink http://dx.doi.org/10.1787/888932833409

Figure 20. **Road transport emissions per capita, 2010**

Tonnes of CO_2



Source: OECD, *Energy Database*.

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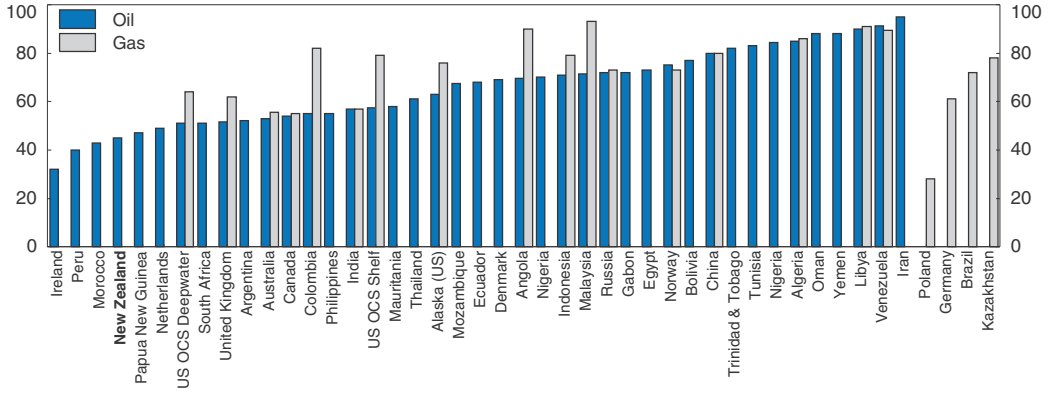
The NZ Emissions Trading System (ETS), introduced in 2008, remains the most developed, comprehensive carbon-trading scheme of its type outside the European Union, representing a bold step forward. Following its first official review in 2011, however, the soft economic outlook and uncertainty over international action on climate change led the government to extend transitional provisions until the next review in 2015. These include a temporary price cap of NZD 25 per tonne on emissions units, along with a 50% discount on surrender obligations and free permit allocations to energy-intensive, trade-exposed sectors based on current production levels. While legislation has been passed to allow the capping and auctioning of domestic allocations, consistent with recommendations in the 2011 *Survey*, the government has yet to announce any plans to do so. The review also delayed the agriculture sector's entry date (originally planned for 2015) indefinitely. This decision appears reasonable, as no other country taxes agricultural emissions and cost-effective abatement technologies have yet to be developed. The government is investing substantially in R&D in this area, however. At over 13%, the share of the public R&D budget devoted to environmental objectives is easily the highest in the OECD (OECD, 2012c). Meanwhile, the government has withdrawn from the second Kyoto Protocol commitment period, while remaining within the UN Framework Convention.

Encouraging investment in GHG mitigation technologies and transport infrastructure will require stronger price signals from the ETS. This should involve capping and auctioning domestic permit allocations. Transition provisions should be gradually withdrawn, although the pace of removal may depend on progress made in other major countries to price emissions.

Achieving sustainable and equitable growth will require ensuring that natural capital is used efficiently and that royalty revenues from the exploitation of non-renewable assets provide long-term benefits for future generations. The government's tax take from the petroleum sector appears low by international standards (Figure 21). It currently encourages petroleum exploration by allowing related expenditures to be deducted for tax purposes in the year they are incurred, rather than over the lifetime of the well; these items are clawed back upon reaching the development stage. Furthermore, since 2005 income tax

Figure 21. **Average government take in oil and gas fiscal regimes**

Share of profits captured by the state



Source: I. Agalliu (2011), "Comparative Assessment of the Federal Oil and Gas Fiscal Systems", U.S. Department of the Interior, Bureau of Ocean Energy Management, Herndon, VA for oil, and D. Johnston (2008), "Changing Fiscal Landscape", *Journal of World Energy Law & Business*, Vol. 1, pp. 31-54 for gas.

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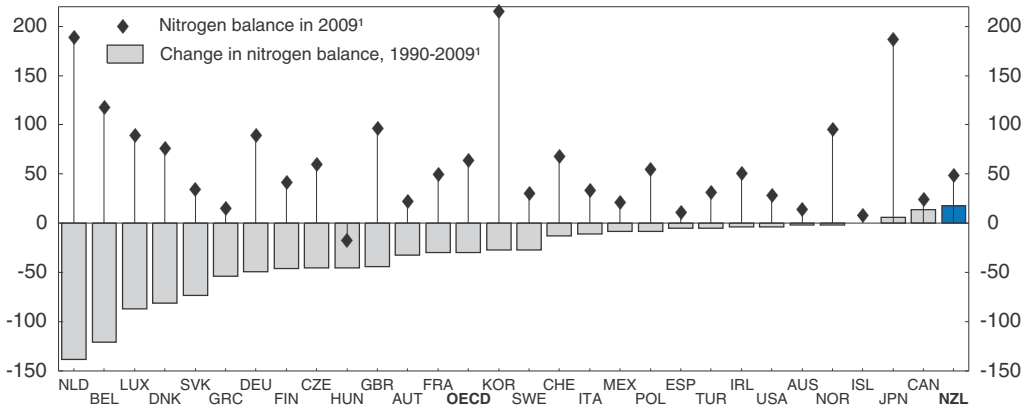
exemptions have been granted to non-resident companies exploring and developing offshore. Since the majority of oil production is for export, these tax provisions form part of the government's growth strategy to increase export earnings and promote New Zealand as a global destination for petroleum exploration and investment. However, these tax concessions distort investment decisions in favour of fossil fuel production over more sustainable sources of growth and counteract New Zealand's efforts to address global climate change and should thus be discontinued.

The petroleum royalty regime could also benefit from changes to improve efficiency. Currently companies pay the higher of: *i*) 5% of petroleum production revenues (net of transport or storage costs), or *ii*) 20% of accounting profits, in addition to the 28% standard corporate income tax. Revenue-based royalties are less efficient than those applied on pure rents or profits, since they ignore the costs of exploration and may thus discourage investment in new or marginal fields. A government review of the regime concluded that a rent tax would be administratively too costly, given the low revenues currently involved. Nonetheless, removing the revenue-based portion of the royalty could still generate efficiencies. To ensure benefits are shared with future generations, proceeds should be reserved for public debt repayment or saved in a sovereign wealth fund.

Intensifying land use for pastoral farming over the last decade has placed increasing pressure on water supply and quality. Although water consumption per capita is among the highest in the OECD, signs of scarcity are minimal at the national level due to abundant water resources. Intensity of water use varies widely by region, however, with higher usage observed in Canterbury and Otago, related to irrigation demand for a range of primary industries. Nitrogen leaching has damaged water quality, reflecting livestock waste and increasing rates of fertiliser use (Figure 22). A more efficient approach to water allocation needs to be developed to replace the current first-come, first-served system of water consents. The government released a National Policy Statement on water management in July 2011, requiring local governments to devise plans to define and enforce water-quality

Figure 22. **Level and change in nitrogen balance, 1990-2009**

Kg per hectare of agricultural land



1. Or latest available year.

Source: Joint Eurostat/OECD Questionnaire, OECD calculations.

How to read this figure: The gross nitrogen balance is the quantity of nitrogen nutrients entering an agricultural system (mainly from fertilisers and livestock urine) less the quantity taken up by crops and grasslands. A build-up of surplus nutrients in excess of plant needs can lead to nutrient runoff and groundwater pollution, as well as air pollution and greenhouse gas emissions. The change in balance gives an indication of potential environmental pressures from agricultural activities.

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standards and to maximise the efficiency of fresh-water allocation. Applying market-based approaches where possible would promote efficiency gains, such as through tradable water consents and nutrient-trading systems to address water quality, as recommended in the 2011 *Survey*.

Box 4. **Policies to support long term growth**

Improving capacity for international trade and investment

- Clarify the competition policy framework for the broadband market, and adjust regulations to ensure consistent pricing strategies for copper and fibre networks.
- Improve the transparency of the FDI screening regime, and streamline approval processes within the Resource Management Act.
- Pass the Commerce (Cartels and Other Matters) Amendment Bill to reduce regulatory impediments to competition in international transport links.

Strengthening innovation and the contribution of human capital

- Review the tax treatment of patent sales to ensure consistency with international best practice, and consider allowing accelerated depreciation of patent assets. Redesign the Technology Development Grants to clarify and simplify the approval criteria and ensure access by small start-ups.
- Consider boosting practical training components of engineering degrees through support for student internship opportunities, especially with tertiary providers located near engineering clusters.

Policies to manage natural capital and climate change

- Strengthen price signals within the ETS by phasing out transition provisions. In the meantime cap and auction domestic allocations.
- Remove tax concessions for petroleum exploration. Move to a profit-based royalty system and designate proceeds for debt repayment or, if significant discoveries are made, sovereign wealth fund contributions.
- Encourage the development of market-based mechanisms where possible to manage water resources.

Policies to improve the school-to-work transition

Youth labour-market performance

New skills are required to achieve technology-intensive production and adaptability to rapid structural change. This poses important challenges for the education system and the quality of its linkages to the labour market. New Zealand enjoys good labour-market performance, with high youth participation and employment rates and traditionally low youth unemployment. Long-term unemployment among all age groups is low. But since 2001 youth unemployment has grown sharply relative to adult unemployment (Table 5). Since the global economic crisis, the increases in youth unemployment and NEET rates have been among the largest in the OECD.

Education has shown itself to be the best lifelong protection against unemployment, low wages and poverty (OECD, 2011b), even if in New Zealand the advantage has shrunk over time, before rising again since the global financial crisis (Figure 23, Panel A). Rapid and profound structural changes have given rise to strong skill biases in OECD labour demand,

Table 5. **Scoreboard for youth aged 15-24,[1] 2001 and 2011**

	2001			2011		
	New Zealand	EU[2]	OECD[2]	**New Zealand**	EU[2]	OECD[2]
Employment rate (% of the age group)	**55.4**	40.2	43.3	**49.9**	33.4	37.8
Unemployment rate (UR) (% of the labour force)	**12.1**	16.5	14.5	**17.3**	22.8	19.0
Relative UR youth/adult (15-24)/(25-54)	**2.9**	2.5	2.6	**3.5**	2.7	2.7
Unemployment to population ratio (% of the age group)	**7.6**	7.3	6.7	**10.4**	9.0	8.1
Incidence of long-term unemployment (% of unemployment)	**8.7**	25.4	18.7	**3.9**	28.0	22.1
Incidence of part-time work (% of employment)	**37.3**	16.8	20.6	**39.6**	25.4	27.9
NEET rate[3] (% of the age group)	**11.7**	12.0	12.3	**12.7**	11.7	12.3
School drop-outs[4] (% of the age group)	**36.6**	19.9	22.7	**33.7**	15.1	19.6
Relative UR low skills/high skills[5] (ISCED < 3/ISCED > 3)	**2.0**	2.6	2.5	**1.8**	2.3	2.2

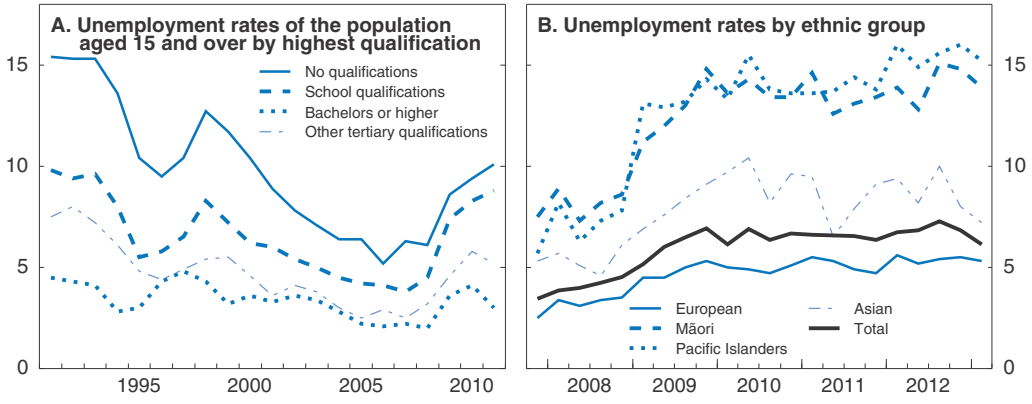
Note: UR: unemployment rate; NEET: neither in education nor in employment or training; ISCED 3: international standard of education referring to upper secondary education.

1. Except 16-24 for Iceland, Spain, Sweden, the United Kingdom and the United States.
2. Unweighted average of the 21 EU and 34 OECD countries.
3. Start year: 2002 for Austria and Ireland, 2003 for Estonia, Finland and Slovenia, 2004 for New Zealand. Yearly data are represented by Q1 for all OECD countries except Australia and New Zealand, for which May and Q2, respectively, are used.
4. Share of youth aged 20-24 not in education and without an ISCED 3 educational attainment; 2004 and 2009.
5. 1999 and 2009.

Source: OECD project on Jobs for Youth (*www.oecd.org/employment/youth*).

Figure 23. **The less educated and ethnic minorities have borne the brunt of rising unemployment**

Per cent



Source: Education COUNTS Database and Statistics New Zealand.

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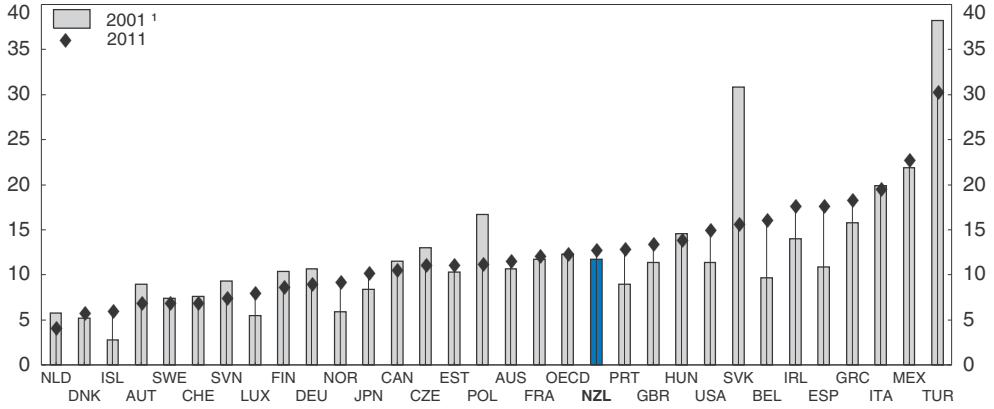
putting young people at a disadvantage while requiring longer studies. Weakened demand conditions since the crisis have only reinforced this bias, as employers seek to retain skilled and experienced workers, preferring to let young and inexperienced workers go. This may also imply a longer and more difficult trajectory into initial employment. High and rising rates of youth unemployment and NEET (those not in employment, education or training) (Figure 24) undermine youths' self-confidence and depreciate their human capital. Because of high rates of part time work by young people in New Zealand, often in combination with studies, NEET is a better measure of transition difficulties than the unemployment rate.

Figure 24. **NEET rate for youth aged 15-24**

Per cent



1. 2002 for Austria and Ireland; 2003 for Estonia, Finland and Slovenia; 2004 for New Zealand.
Source: OECD (2012), *Education at a Glance* and OECD estimates from *National Labour Force Surveys*.

How to read this figure: NEET denotes persons neither in education nor in employment or training. Because of distortions implied by school holidays, yearly data are represented by Q1 for all OECD countries except Australia and New Zealand, for which May and Q2, respectively, are used.

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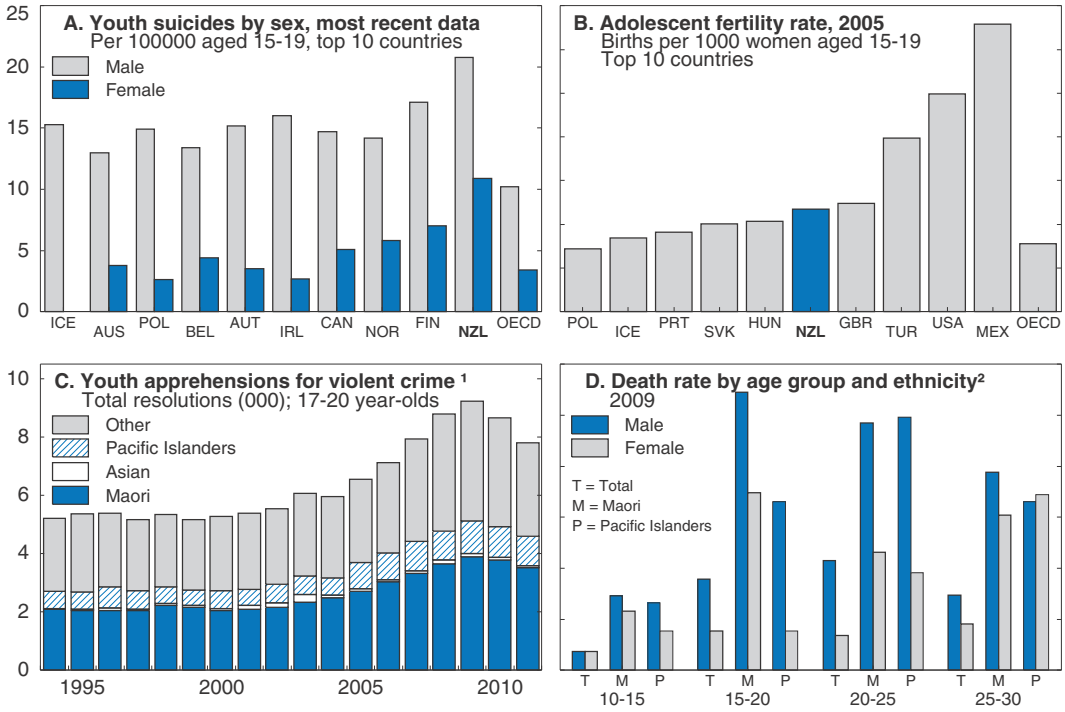
Youth (and overall) employment problems have a strong ethnic dimension (Figure 23, Panel B). Maori and Pacific Islanders have suffered disproportionately since the start of the recession, reflecting their generally lower educational attainment. Their incidence of NEET is likewise much higher, and nearly one-third of working-age Maori live on benefits (Nusche et al., 2012). The lack of attachment to work is associated with poor mental and physical health and risky youth behaviours (Figure 25). As these minorities account for one-third of the school population and their population shares are set to grow, it is essential to more fully develop their human capital, both for the sake of New Zealand's future growth potential and for basic social cohesion.

Skill shortages

New Zealand's unemployment rate rose sharply in 2009 and has remained high since, albeit moderating in early 2013. Historically, labour-market slack has acted to ease skills shortages as employers find it much easier to recruit needed skills from the pool of unemployed, or from people changing jobs. However, since 2009, businesses have had increasing difficulties in finding skilled workers even though higher unemployment has largely persisted (Figure 26). Such a shift in the relationship between unemployment and the number of vacancies has occurred in a number of other OECD countries (Hobijn and Sahin, 2012). In New Zealand's case, it could reflect that the Canterbury earthquakes and subsequent start of rebuilding have caused a major change in the patterns of labour demand and supply (Craigie et al., 2012). Also, there has been a sharp fall in job turnover since the recession.

Market returns to education, as estimated by the OECD, are low in New Zealand (Figure 27). This could reflect quality problems in education and consequent insufficiency of useful skills. However, part of the gap is attributable to other factors, for example the mix of tertiary qualifications, with a large number of sub-degree and fewer post-graduate qualifications, and the unusually large number of post-secondary, non-tertiary

Figure 25. **Youth social indicators**



1. Apprehension statistics give the number of apprehensions of offenders and how such apprehensions were resolved. An apprehension means that a person has been identified by police as the offender and, where appropriate, dealt with in some manner, such as warned, prosecuted, referred to youth justice family group conference, or diverted. Violent crime includes homicide and related offences, acts intended to cause injury, sexual assault and related offences, dangerous or negligent acts endangering persons, abduction, harassment and other related offences against a person, robbery, extortion and related offences.
2. Percentage of deaths in the corresponding population.

Source: Ministry of Health, Statistics New Zealand and OECD (2009), *Doing Better for Children*.

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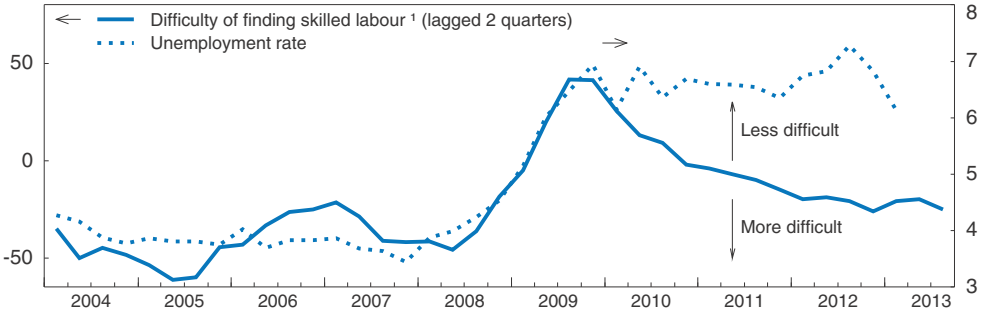
Figure 26. **Recent divergence between unemployment and ease of finding skilled labour**



1. Negative figures mean employers finding it difficult exceed those who say it is easy.

Source: Department of Labour; NZIER, Quarterly Survey of Business Opinion and *OECD Economic Outlook 93 Database*.

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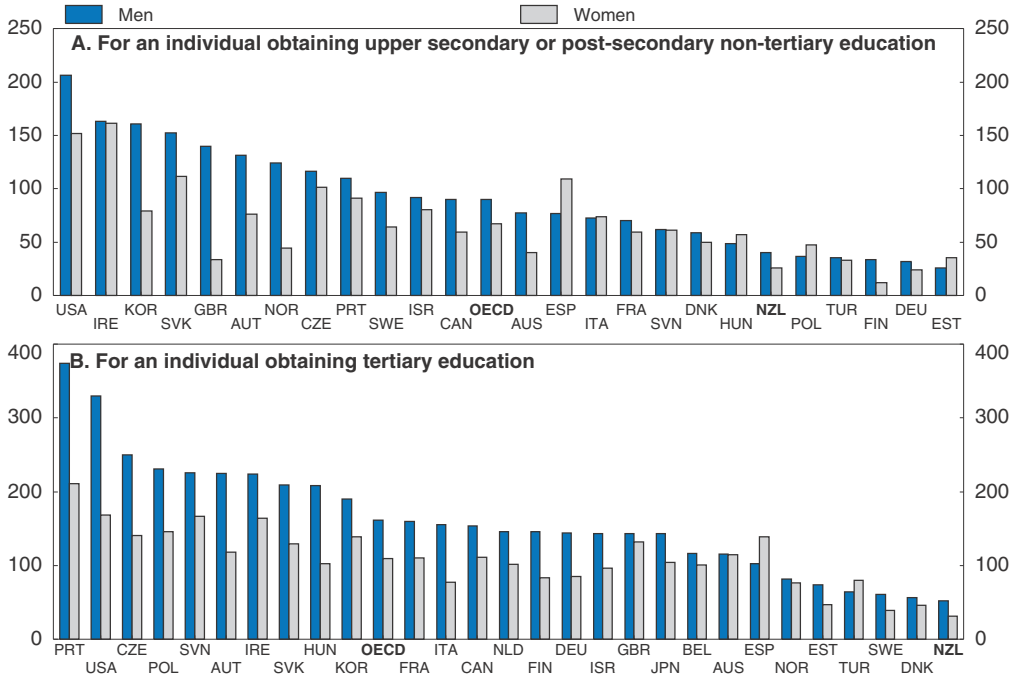
qualifications (ISCED level 4) resulting in overqualification of many employees in jobs normally requiring only an upper secondary education (Quintini, 2011). Furthermore, foreign entrants (typically from Asia) may have high qualifications on paper, but often exhibit job mismatch and lower earnings in the first 5 to 10 years, reducing apparent

Figure 27. **Market returns to education are comparatively low**

Private net present value of education, 2008,[1] thousand USD converted using PPPs for GDP



1. Or latest available year.

Source: OECD (2012), *Education at a Glance*, Tables A9.1 and A9.3.

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returns to education through a mis-measurement effect (Zuccollo et al., 2013). Finally, employers' demand for skills is complementary to their productivity-enhancing investments to exploit profitable market opportunities, and a lack of these may lower the returns to skills.

Businesses unable to find the skills they need on the market can choose to train existing or new employees. However, in theory, employers may underinvest in training because they cannot fully capture the returns to skills that may prove useful to others. Wage subsidies to industry training may be justified if such externalities exist. International evidence suggests that this externality may be especially problematic in the case of youth apprenticeships, where rival firms may "poach" recently trained apprentices to reap the benefit of competitors' heavy investments, although in New Zealand this is unclear.

Education challenges

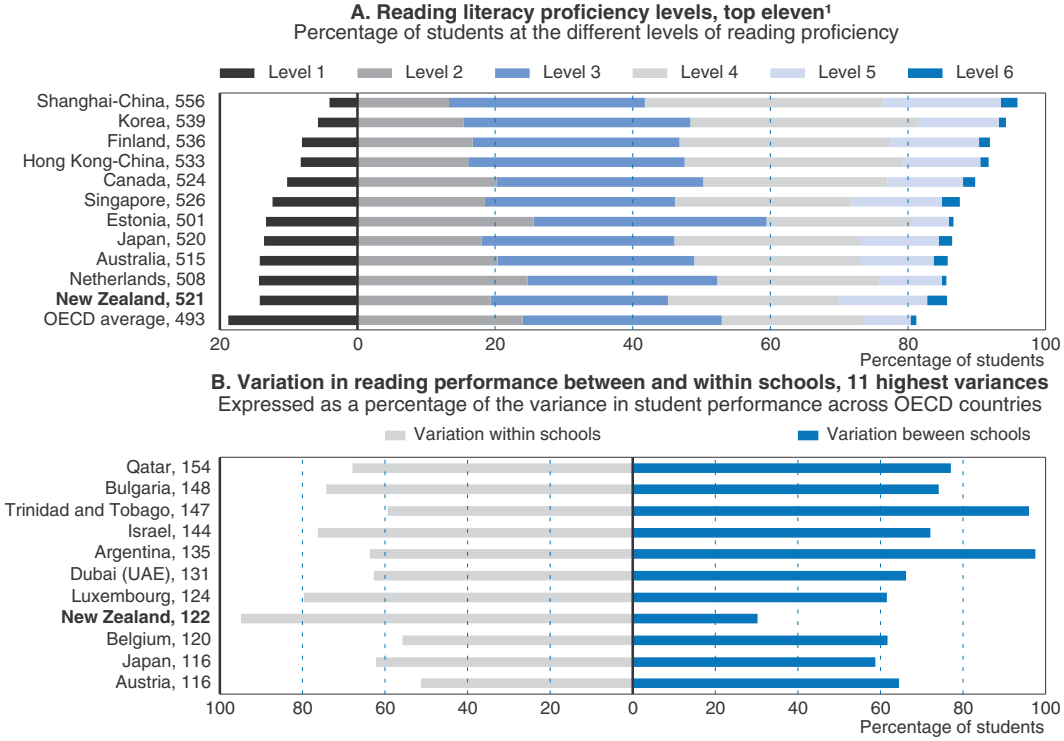
The government is responding to the dual problem of rising youth joblessness and growing skills shortages. "Downstream" solutions, notably the Youth Services for NEETs, emphasise a shift toward education and training-based activation policies for vulnerable youth. But "upstream" solutions, involving reforms to formal education to keep youth engaged in schooling and invest them with market-relevant skills, are better.

System performance

The NZ education system's performance appears to be one of the OECD's best. Tertiary attainment rates, for example, are the fifth highest. Although university attainment is

more modest, younger cohorts are increasingly choosing university over vocational-track programmes, which were more popular 20 years ago. As to scholastic achievement, New Zealand ranks 11th among 65 jurisdictions according to PISA reading scores, the focus of the 2009 study (Figure 28, Panel A). It does similarly well in PISA scores for maths and science literacy, albeit somewhat worse for these subjects in the TIMSS study (IEA, 2012a and 2012b). Such results suggest that the school system is doing much that is right.

Figure 28. **PISA results for New Zealand are characterised by high means but high dispersion as well**



Note: The data near the country name are the reading score for Panel A and the total variance as a proportion of the OECD variance for Panel B.

1. Countries are ranked in descending order of the percentage of students at levels 2, 3, 4, 5 and 6.

Source: OECD (2010), *PISA 2009 results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science* (Volume 1) and *Overcoming Social Background* (Volume II).

StatLink http://dx.doi.org/10.1787/888932833580

However, inequality in education outcomes is substantial. The within school variance of PISA scores is the highest in the PISA sample (Figure 28, Panel B), and there is a long "tail" of underachievers. School drop-out rates are among the OECD's highest (Table 5). Furthermore, there is strong intergenerational persistence: tertiary students are more likely to have highly educated parents than in any other OECD country (OECD, 2012b), and PISA scores are very sensitive to socio economic background. While ethnicity does not explain the entire problem of excessive socio-economic gaps, ethnic disparities in education mirror those in the labour market. Among the population lacking school qualifications, Maori have nearly double the incidence of people lacking school qualifications as Pakeha/Europeans and quadruple those of Asians, and conversely they show much lower rates of tertiary attainment. Whereas Maori and Pacific Islander tertiary attainment rates have been rising, they are not catching up to those of other ethnicities (Chapter 2).

School reform

NZ schooling is one of the most innovative in the OECD. Reforms in the late 1980s heavily devolved governance, management and pedagogy all the way to the individual school level. Schools thus enjoy autonomy in many respects, but are accountable to parents via elected boards of trustees. Assessments of schools, teachers and students stress teacher-student interaction and personal responsibility in the learning process, while downplaying standardised testing. These settings produce flexibility and experimentation in learning environments, where students can be better motivated and thrive. The practice of separating students by ability (streaming) at secondary level may have reinforced marginalisation of those who are less academically inclined (Smyth and McCoy, 2011), however, though it is partly related to very low grade repetition rates, considered by the OECD to be appropriate.

A key objective must be to make the system work better for students at risk of dropping out. Indeed, the extremely high within-school PISA score dispersion indicates that even greater efforts are necessary to adapt education to the needs of highly diverse learners. This emphasises the value of high-quality teaching. A recent OECD report noted that teacher assessment is variable, linkages between teacher assessment and professional development are weak and there does not seem to be a clear career pathway for effective teachers (Nusche et al., 2012). These issues should be addressed, including by professional development of leaders and boards themselves. Teacher training geared to difficult learners should likewise be stepped up.

Schools may be hampered in their ability to deliver quality and innovate by continuing central control over personnel and capital budgets, which limits their flexibility to distribute resources in line with school needs. This suggests the desirability of devolving funding for an even greater share of overall school costs, thereby providing budgetary room for manoeuvre to meet student needs. It is furthermore unclear whether current mechanisms for targeting resources to disadvantaged students are effective. Schools are often hamstrung in their ability to attract and retain good teachers in disadvantaged areas or to devote sufficient resources to teaching disadvantaged students more generally. Given the high impact of socio-economic status on student achievement, this problem warrants further attention.

The system's fragmented structure moreover limits opportunities for learner and teacher networking, scale efficiencies and specialisation, while burdening leaders with excessive administrative duties and limiting competition in their selection. Incentives and opportunities should therefore be provided to encourage greater collaboration and clustering among schools.

Early childhood education (ECE) can help to overcome initial disadvantages. Substantial resources have been put into ECE in recent years, and there is a strong regulatory framework that supports high quality ECE. Culturally appropriate centres such as *te kohanga reo* and Pasifika language nests are part of the ECE landscape in New Zealand. Nevertheless, participation rates of Maori and Pacific children – who need it most – are lagging. Parental engagement is key to rectifying this situation, and some home instruction programmes have been shown to improve parental demand for ECE (BarHava et al., 1999). Some poorer areas suffer from a dearth of ECE capacity, however.

The government has set targets for reduced drop-out rates and backed them up by novel pathways for non-academically inclined learners to stay engaged and progress to tertiary studies (see below). It should also consider obligating learning – defined as being

either in education, training or work while continuing to engage in study toward qualifications – up to age 18 (from 16 currently), as the United Kingdom is doing. Research shows that the "stick" of compulsion can help students to stay the course when temptations to quit abound (Chapter 2).

Education-work interface

Vocational education and training (VET) can play a central role in preparing youth for work, developing skills and meeting labour-market needs (OECD, 2010b). The NZ Youth Guarantee gives students who have either dropped out or are at risk a chance to continue with their studies toward minimum job-market qualifications in a tertiary setting, notably via the new Trades Academies, with stronger links to the world of work. Another programme, Vocational Pathways, brings together the standards and skills recommended by businesses and links them to study and employment possibilities. By making VET more relevant and accessible, these measures can improve options in an otherwise academically focused system for young people who learn better in an applied context.

Prior to the recession, industry training and apprenticeship programmes expanded significantly. However, all in-work training is costly, requiring equipment, close supervision and mentoring. Previous attempts have suffered from lack of money and uneven quality, while completion rates were very low. Encouragingly, the government has announced an expansion of funding designed to lift quality and increase the number of apprenticeships (Key, 2013). Businesses also need to make financial commitments, since they derive major benefits from successful apprenticeships. Unions should be involved too to protect apprentices' rights and help monitor programme quality. Quality apprenticeships should have a strong training component, resulting in new competencies. They should be flexible, encouraging a wide range of skills and adaptability for the changing needs of the knowledge economy, as NZ apprenticeships generally do.

The links between tertiary education and firms need to be strengthened. There already appear to be incentives for this to happen. Under a qualifications review, employer/industry representatives are involved with tertiary institutions in curriculum setting and rationalising the confusing plethora of qualifications (NZQA, 2013). A review of careers information, advice, guidance and education (CIAGE) is also underway (ERO, 2012). Sectoral reports are being published indicating career options and employment outcomes (MBIE, 2003), helping students with study choices. Such careers education should be embedded in the curriculum and made available to all secondary and tertiary students to inform them accurately of labour-market needs and train them to manage their own careers as an ongoing skill.

Box 5. **Recommendations for improving the school-to-work transition**

Pre-school and school: reducing drop-outs

- Ensure greater ECE participation by children from disadvantaged backgrounds by increasing incentives for suppliers to enter into areas of low provision and for demand from parents to increase.
- Provide incentives and opportunities to amalgamate and cluster fragmented school networks so as to achieve efficiencies and educational benefits.
- Devolve funding for a greater share of overall school costs, including teacher pay, providing schools with greater flexibility to allocate resources and maximise performance.
- Review current mechanisms for targeting resources to students of low socioeconomic background.
- Consider mandating learning (in-work or formal education) up to age 18 while improving relevance of curricula for disaffected students. Make greater efforts to keep such students in mainstream education.

Tertiary education for jobs

- Strengthen the quality of apprenticeships, by facilitating participation by disadvantaged youth, improving quality assurance, and ensuring funding adequacy and enhanced accountability for outcomes.
- Make education job-relevant by strategic planning (with involvement of business and labour), geared to likely market needs for different skills.
- Improve the quality of careers guidance at secondary and tertiary education levels through specialised professional development, networking with employers and clear links to school curricula.
- Increase tertiary sector responsiveness to labour market needs by information provision to students, formalising linkages between providers and employers, and directing funding to projected areas of skills shortfall.

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ANNEX

Progress in structural reform

This Annex reviews actions taken on recommendations from previous *Surveys*. Recommendations that are new in this *Survey* are listed at the end of the relevant chapter.

Recommendations	Action taken since previous *Survey* (April 2011)
Labour markets and social programmes	
Loosen restrictions on fixed-term contracts, especially for older workers.	No action taken.
Product market competition	
Clarify the responsibilities of ministries and regulators, particularly in telecoms and transport, to ensure independence. Increase the use of periodic reviews, sunset clauses and commit to minimising regulatory burden. Periodically assess the impact of independent regulators on the markets they regulate.	The Treasury has conducted and published a review of all major regulatory regimes against its Best Practice Regulation Principles. Ministers have set new expectations for departments' regulatory stewardship, including monitoring and assessing at regular intervals regulatory regimes' fitness for purpose. Result 9 of the Better Public Services Programme commits the government to developing faster online services and key performance ratings similar to leading private-sector firms, and reducing business costs from dealing with government by 25% by 2017.
Abolish the government's "Kiwi share" in Telecom. Make coverage obligations contestable by other telecommunications companies and technologically neutral.	The government has brought forward a wide ranging review of the Telecommunications Act, including the Telecommunications Service Obligation.
Use Regulatory Impact Assessments (RIAs) more consistently and rigorously in forming regulation.	Two independent evaluations have been made of samples of RIAs from across government to assess departmental performance with respect to RIAs and quality assurance, with results used for continued training and guidance.
Pass a suitably refined Regulatory Responsibility Act, and refine the "principles of reasonable regulation" that requires minimal interpretation by the courts.	Ministers have agreed to introduce legislation requiring disclosures to assess the extent to which regulatory expectations have been met, significant features or powers have been conferred, and costs, possible economic losses, and likely levels of compliance and enforcement realised.
Authorise the Commerce Commission to use a wider range of interventions to resolve cases more quickly. Expand the use of *ex post* evaluations of Commission decisions to assess performance. Enhance co-operation with the Commission's Australian counterpart.	The Commerce (International Co-operation, and Fees) Amendment Act was passed in 2012 to facilitate co-operation between the NZ Commerce Commission and the Australian Competition and Consumer Commission.
Move towards privatisation of SOEs.	The government will sell minority shares in four energy companies and Air New Zealand.
Remove all remaining tariffs and Zespri's export monopoly on kiwifruit.	No action taken.
Innovation and business creation	
Foster a closer integration of education, immigration and labour-market policies with innovation policies.	No action taken.
Tie public R&D funding to private-sector funding. Ensure business R&D incentives work in concert with different R&D support programmes.	The Government recently established Callaghan Innovation to improve the transfer of knowledge, know-how and technology to firms and connect businesses accessing those grants with other publicly funded R&D activity.
Expand foreign-credentials recognition to a larger number of countries and facilitate residency acquisition for foreign students after graduation.	No action taken

Recommendations	Action taken since previous *Survey* (April 2011)
Taxation	
Eliminate the double-taxation of trans-Tasman profits distributed to shareholders by continuing to work towards agreement with Australia on mutual recognition of imputation and franking credits for foreign investment.	A joint Australia-New Zealand Productivity Commissions study was completed on the trans-Tasman relationship, which included analysis of mutual recognition of imputation credits.
Realign corporate, capital and top marginal income tax rates, or reduce capital income tax rates.	No action taken.
Introduce a comprehensive realisation-based capital gains tax, or tax only the real portion of interest income, or move to an exempt-exempt-taxed (EET) system. Limit the tax deductibility of losses from rental property investments by allowing them to be offset against future rental income.	No action taken.
Introduce a property or land tax based on land value per hectare, and scale the tax rate by the owner's marginal income tax rate. Remove local rate differentials across residential, commercial and rural properties.	No action taken.
Deepening financial markets	
Ensure there is a streamlined regulatory framework that requires firms offering collective investment instruments to have appropriate governance structures with sufficiently stringent requirements for trustees to make sure that they are capable of discharging their duties.	The several Acts defining governance requirements for managed investment schemes will be replaced with a single governance regime, the Financial Markets Conduct Bill, for retail managed investment schemes. It will require a licensed external supervisor and for all managers of managed investment schemes to be licensed.
Adopt a more rigorous approach to disclosure requirements for fees and expenses for collective investment instruments so as to enhance transparency and allow for easier comparability across products.	The KiwiSaver (Periodic Disclosure) Regulations 2013 will require schemes to provide periodic reports on fund performance, fees, asset allocation, conflicts of interest and other matters using standardised calculation methods and disclosure statement templates, by 1 July 2013. The Financial Markets Conduct Bill will require managed investment schemes to produce shorter and simpler disclosures for investors that ease comparisons between products.
Overcoming geographic disadvantages	
Facilitate maritime trade by cutting the time taken and documents needed to clear customs. Implement a single electronic window for different permits and authorisations.	A Joint Border Management System which includes an electronic Trade Single Window, is in final stages of development and expected to be fully operational sometime in 2013.
Consider reducing local government ownership of port assets to bring more market discipline to the sector.	No action taken.
Healthcare reform	
Give sufficient spending autonomy to DHBs, including responsibility for maternity and disability spending. Decentralise wage bargaining to allow the DHBs the flexibility to innovate.	The Ministry of Health retains responsibility for most maternity and disability support spending. Some primary health organisations (PHOs) have been given budget holding for additional services (e.g. community radiology). DHBs as employers determine their wage bargaining approach, within state sector guidelines.
Use economic criteria to examine opportunity costs of alternative allocations of the marginal health-care dollar.	A Capital Investment Committee has been established to assess major capital proposals. The National Health Committee (NHC) was appointed in 2011 to use evidence to prioritise new and existing health interventions, focusing on cost effectiveness and sustainability. The NHC has started a programme to identify areas of high expenditure and/or rapid growth and to prioritise new investments.
Evaluate whether government ownership of public hospitals, or outsourcing hospital management to an independent agency might help resolve DHB conflicts of interest and stimulate cost consciousness, efficiency and competition in the hospital sector.	No action taken.
Allow capitation payment to better "follow the patient", eliminating restrictions on access to such payments by individual physicians and practices.	No action taken.
Consider a role for wider private health-insurance coverage, with appropriate regulation and/or taxation.	No action taken.
Reduce the proportion of GP reimbursement paid by capitation while keeping a modest level of out-of-pocket fees. Set PHO patient fees in line with budget holding obligations, with full or partial reimbursement by the DHB contingent on patient outcomes.	The government is introducing changes designed to strengthen and improve performance in primary care, including a better performance management framework, increased performance funding for PHOs and practices and increased access to flexible funding.

Recommendations	Action taken since previous *Survey* (April 2011)
Embed DRG payments within a hospital budget-holding approach following a points system. Publish comparisons of track records across individual hospitals. Determine doctors' salaries within the budget envelope set by output-based payment system.	DHBs are responsible for determining hospital funding, and can use DRGs in setting funding levels. DRG case weights are used to inform pricing where DHBs purchase services from one another, and where the Accident Compensation and Rehabilitation Corporation (ACC) purchases services from public hospitals. DHBs (but not individual hospitals) are benchmarked as part of their reporting against national health targets. There is also a focus on reducing duplication of audit and contracting requirements across NGOs.
Housing markets	
Treat KiwiSaver withdrawals for first-home purchases as interest-bearing loans or limit them to low-income members.	No action taken.
Begin regular tenancy re-assessments for all occupants of state housing, accompanied by increased efforts to help tenants achieve financial independence and self-sufficiency.	First steps have been taken. Three-year reviewable tenancies have been applied to all new tenants since 1 July 2011.
Evaluate whether state housing tenants requiring more permanent housing provision such as the elderly and disabled may benefit from placement in specialised long-term housing facilities better catered to their needs.	No action taken.
Remove water rate subsidies to tenants paying market rents.	No action taken.
Adopt spatial planning systems for all urban areas, and reform the Resource Management Act (RMA) to better incorporate urban development needs.	The RMA is currently being reformed to include new principles for RMA decision-makers to consider the effective functioning of the built environment and the availability of land for urban expansion, use and development. Councils intend to consolidate the three or more existing documents in their district into one within five years to improve planning for issues currently spread across areas/jurisdictions.
Re-evaluate Metropolitan Urban Limits (MULs), and assess social, economic and environmental costs and benefits. Establish a comprehensive framework to value land based on cost-benefit analyses of alternative uses. Increase use of pricing mechanisms to influence the location of development (e.g. financial contributions, road user charges, congestion tolls), and improve public transit services.	Auckland Council is in the process of defining a rural urban boundary (RUB) to ensure it has 30 years supply of greenfield land for residential and business growth. The RUB will replace the MULs and is being widely consulted on.
Distribute the cost of infrastructure through higher user fees on those benefitting from its services.	No action taken.
Green growth	
Improve horizontal and vertical co-ordination of sustainable development policy. Central government should set national environmental standards and provide national policy statements and technical training for local authorities.	The Discussion Document on Resource Management Act reform released 27 February 2013 includes proposals to increase the ability of government to give national direction on these matters.
Ensure the Environmental Protection Authority (EPA) has sufficient independence and analytical capacity to oversee environmental policies.	The EPA was established as a stand-alone Crown Agent on 1 July 2011, with an independent Board. Under the Resource Management Act the EPA has the authority to make decisions on proposals of national significance, through an independent Board of Inquiry process.
Amend the RMA to integrate urban and rural land- and water-use planning and to facilitate the possible uses of market-based instruments. Enforce the RMA's requirement to consider the costs and benefits of alternative policies.	Draft legislation currently being considered by Parliament increases the specificity required in cost-benefit analyses.
Improve the measurement of water abstraction and quality via evolving national guidelines. Implement water charging for domestic, industrial and agricultural uses.	The Resource Management (Measurement and Reporting of Water Takes) Regulations 2010 introduced metering requirements to be phased in from 2012-16. By 2016, meters will cover 98% of all consented takes (which excludes domestic use and stock drinking water). Water permit holders must provide records to regional councils from 30 June 2013. The Government has just released a proposed package of reforms to the freshwater management system, including a National Objectives Framework to assist regional councils in setting limits for water quantity and quality; regulations requiring consistent accounting for water takes and discharges; and guidance on good management practice and water-use efficiency. Charging for reticulated water supply and wastewater disposal is currently undertaken in Auckland.
Allow water consents to be tradable. Apply pollution-rights trading to address water and air pollution, with no free rights for newcomers.	The proposed RMA reform will consider ways for making transfer and trade of freshwater consents easier and less costly, including by using separate permits for water take and use and the development of standard trading platforms. The Bay of Plenty Regional Council is designing a nutrient trading scheme for the Rotorua Lakes. Recent changes to the Resource Management (National Environmental Standards for Air Quality) Regulations 2004 require that new industries be permitted to discharge only if they reduce emissions from other sources to prevent overall emissions from increasing.

Recommendations	Action taken since previous *Survey* (April 2011)
Discontinue free emissions permit allocations to new entrants into protected EITE sectors.	No action taken.
Provide incentives under the ETS to create permanent carbon sinks, by protecting indigenous forest plantings and wetlands reclamation. Maintain afforestation grant schemes.	The government has extended the funding for the East Coast Afforestation Grant Scheme to 2020.
Investigate and promote innovations (e.g. smart metering, pastoral missions mitigation technology) proven to enhance responsiveness to ETS price signals.	In 2012, the Cabinet agreed to a work programme exploring complementary measures, in addition to the ETS to promote long-term emissions reductions.

Chapter 1

Policies to support sustainable long-term growth in New Zealand

As its workforce ages and major economies shift towards producing higher value-added goods and services, New Zealand will face increasing challenges to remain globally competitive and maintain high living standards. Future growth will need to come increasingly from productivity gains, and resources will have to shift towards activities that rely more on skills, technology and intangible assets. Strengthening international linkages will be crucial to overcoming geographic disadvantages and will require improvements in the information and communications technology infrastructure, together with innovation leveraged off the country's strong primary industry knowledge base. Continuing to raise skill levels and the pensionable age will also help counter the effects of ageing. Lifting national saving, partly by targeting a higher public saving rate, will reduce the persistently high relative real interest rates and the sustained overvaluation of the real exchange rate, which potentially harm economic activity. To improve the sustainability of growth, revenues from non-renewable resource extraction need to be invested for the benefit of future generations and greater efforts devoted to mitigate the damage to natural capital from economic activity, particularly with respect to water quality.

New Zealand's labour productivity levels and growth rates have long lagged those in other OECD countries, and globalisation and the changing patterns of world trade risk leaving it further behind unless structural reforms are undertaken to overcome its disadvantages as a small and remote economy. As demographic trends place downward pressure on growth prospects, future sources of prosperity will need to come increasingly from innovation and skills to shift the country's comparative advantages towards knowledge-intensive activities for which demand is less sensitive to distance. In addition, the sustainability of growth will depend on how efficiently it uses its abundant natural capital.

This chapter discusses the various factors affecting New Zealand's future growth prospects and proposes policies to safeguard and improve long-term economic prosperity. A new long-term projection model for the OECD and major non-OECD economies, described in Johansson et al. (2013), is used to construct a baseline scenario for growth over the next 50 years as an underlying framework. The model is then used to explore the potential growth implications of various structural policy changes, including reforms that improve international trade linkages, product market regulations, labour force participation, human capital and national saving.

Long-term growth outlook for New Zealand

New Zealand's economy faces the complex challenge of shifting from a recent pattern of growth powered by private-sector borrowing and terms-of-trade gains towards more sustainable productivity increases. Since the early 1990s, high rates of labour utilisation have been a key driver of per capita income gains but are likely to diminish as the population ages. Overall living standards as measured by GDP per capita have been well below the OECD average over the last 20 years, with little sign of convergence. Decompositions of per capita GDP suggest that New Zealand's longstanding shortfall relative to other OECD countries reflects in large part poor multi-factor productivity (MFP) growth (OECD, 2011c). Capital intensity also appears comparatively weak, following consistently low shares of business investment in GDP since the 1960s.

Using the OECD long-term projection model, a baseline scenario for economic growth in New Zealand is presented in Table 1.1, which assumes that all countries take appropriate policy actions to restore their economies to sustainable paths. The scenario suggests that annual potential output growth in New Zealand might stabilise at a rate of close to 2% over the long term, assuming no major structural policy changes. In the long run, projected increases in real income per capita will be driven mainly by multi factor productivity trends (MFP). As the population ages, labour input will begin to decline from around 2025 (Figure 1.1). These demographic changes could place downward pressure on national saving rates, and a substantial current account deficit may persist into the long term. These growth projections are predicated on the economic theory of conditional convergence, whereby in the long run all countries eventually grow at the same rate determined by the pace of

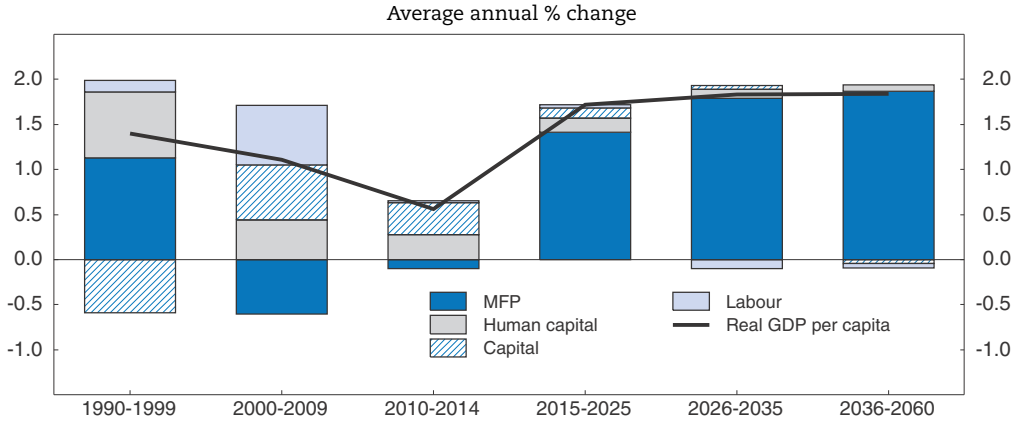
Table 1.1. **Baseline long-term projections for New Zealand**[1]

	2011	2012	2013	2014	2020	2025	2030	2040	2050	2060
Output growth (annual)	0.5	1.6	2.4	2.9	2.7	2.6	2.4	2.3	2.1	1.9
Potential output growth (annual)	1.4	1.5	1.7	1.9	2.7	2.6	2.4	2.3	2.1	1.9
Potential labour productivity growth (annual)	0.4	0.5	0.6	0.8	1.7	1.8	1.9	1.9	1.9	1.8
Trend multi-factor productivity growth (annual)	-0.4	-0.2	0.0	0.2	0.9	1.1	1.2	1.3	1.2	1.2
Potential employment growth	1.0	1.1	1.1	1.1	1.0	0.7	0.5	0.4	0.2	0.1
Trend labour force participation rate	67.5	67.5	67.5	67.5	67.2	66.6	65.6	64.2	64.0	63.2
Structural unemployment rate	6.2	6.4	6.4	6.4	5.6	5.0	4.6	4.3	4.3	4.3
Fiscal Balance (% GDP)	-7.9	-4.3	-3.6	-2.1	-0.9	-0.9	-0.9	-0.9	-0.8	-0.7
Gross government debt (% GDP)	48.3	51.3	54.3	55.6	55.9	56.1	56.3	56.6	56.9	56.8
Real long-term Interest rate	2.8	0.7	1.4	2.4	3.0	3.3	3.3	3.7	3.6	3.5
Total national saving (%GDP)	14.6	15.0	15.8	16.5	16.6	15.5	14.3	12.5	12.2	11.4
Investment (% GDP)	18.7	20.8	22.0	22.7	21.5	20.4	19.6	17.8	16.6	15.4
Current account (% GDP)	-4.1	-5.5	-5.9	-5.9	-4.6	-4.7	-5.1	-5.2	-4.4	-4.0
Real GDP per capita (USD 2005 PPP)	24 8254	24 9688	25 2971	25 7672	28 2830	30 915	33 803	40 725	49 139	58 515

1. Due to timing issues, the numbers reported here for 2011-2014 are taken from the *OECD Economic Outlook 92 Database*. As a result, they differ from those presented earlier in Table 1 of the Assessment and Recommendations, which are based on the *OECD Economic Outlook 93 Database*.

Source: OECD calculations.

Figure 1.1. **Contributions to growth in real GDP per capita in constant USD 2005 PPPs**



Note: To ensure that the components add up to GDP per capita the decomposition is done in log differences since the decomposition is multiplicative. Annual growth in real GDP per capita is equal to the product of the components MFP, Human capital, (*Physical capital/GDP*)$a/(1-a)$ (where a is the capital share in income) and the employment/population ratio. Nevertheless, because period averages for the components are shown here, they do not sum up exactly to the total.

Source: OECD calculations.

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technical progress, but differences in institutional settings and capital/labour endowments create persistent gaps in living standards across countries (Box 1.1).

In this baseline, it is assumed that no policy changes are implemented in New Zealand to raise the pension age or rates of human capital accumulation. This differs somewhat from the assumptions made in the benign scenario presented in Johansson et al. (2013), which assumes all countries enact reforms to boost effective retirement ages and converge towards educational attainment levels of the world frontier. Under those assumptions, through the conditional convergence process, New Zealand's income gap *vis-à-vis* the United States narrows to about 27% by 2060 (from 42% in 2011), and more modestly with respect to

Box 1.1. **Model properties and assumptions underlying the long-term baseline scenario**

The baseline represents a stylised scenario anchored on the short-term economic projections from *OECD Economic Outlook* No. 92 for the 2012-14 horizon, beyond which real GDP converges towards potential output within five years. Potential output follows a Cobb-Douglas production function with constant returns to scale and with physical capital, human capital and labour as inputs plus technological progress in the form of multi-factor productivity (MFP) gains. MFP follows a conditional convergence process based on the framework of Bourlès et al. (2010) and Bouis et al. (2011), moving toward its own steady-state trajectory, which is determined by the worldwide rate of technical progress and country-specific structural settings, as captured in product market regulation indicators. Each country's speed of convergence depends on its absorption of international technology spillovers, as proxied by its trade intensity. Other factors that may influence productivity such as investment in R&D or innovation are not explicitly taken into account in the model.

For most countries, current account balances are projected as the difference between saving and investment. Private saving rates are determined by demographic factors, fiscal balances, the terms of trade, availability of credit, productivity growth and net oil balances. Investment is backed out from projected capital stocks, whose evolution depends on the user cost of capital and historical capital-output ratios.

Long-term interest rates are determined by expected short-term interest rates, a fixed term premium and a fiscal-risk premium. The fiscal-risk premium increases by 2 basis points for every percentage point that public debt exceeds 75% of GDP and an additional 2 basis points for every percentage point that the public debt ratio exceeds 125%, based on the findings of Égert (2010).

Labour force participation rates are projected using a cohort approach, which assumes that all future cohorts participate in the labour force at the same rates as the most recent cross-section of cohorts. Age-gender specific labour force participation rates are then aggregated using relative population weights of each cohort, with population projections sourced from the *United Nations Population Database* and Eurostat.

For the period beyond 2014, the projections incorporate the same macroeconomic policy assumptions as in Johansson et al. (2013):

- Inflation is determined from a Phillips curve that includes the output gap and commodity prices. Real oil prices are assumed to rise by about 5% per annum from 2014 to 2020, 2% per annum from 2020 to 2030 and 1% per annum thereafter.
- Bilateral exchange rates between most OECD countries remain unchanged in real terms. The real dollar exchange rates for non-OECD countries, and OECD countries below a certain real per capita income threshold, appreciate in line with convergence in living standards, through the so-called Harrod-Balassa-Samuelson effect.
- Policy interest rates continue to normalise as output gaps close and beyond that converge to a neutral real short-term rate, which equals the potential growth rate of the economy. The inflation target is 2% for most countries including New Zealand.
- Actions are taken to stabilise the public debt-to-GDP ratio, with a gradual increase in the underlying fiscal primary balance of ½ percentage point of GDP per year from 2014 onwards through a combination of reduced government spending and higher revenues until the ratio of government debt to GDP is stable, given long-term trend growth and long-term interest rates. The impact of consolidation on demand is assumed to be partly offset by favourable Ricardian effects.

Box 1.1. **Model properties and assumptions underlying the long-term baseline scenario** *(cont.)*

- There is no further harm to government balance sheets as a result of asset purchases or guarantees made in dealing with the financial crisis. No contribution to deficit or (gross) debt reduction is assumed from government asset sales.
- Effects on public budgets from population ageing and continued upward pressures on health spending are not explicitly included, or, put differently, they are implicitly assumed to be alleviated through reforms of relevant spending programmes or offset by other budgetary measures.

Assumptions on structural policies are the same as those in Johansson et al. (2013), except those regarding the pensionable age and educational attainment for New Zealand:

- There is no change to the legal pensionable age for New Zealand. Labour force entry and exit rates for each age cohort are assumed to remain constant, and changes in the aggregate labour force participation rate reflect solely the effects of demographic ageing.
- There are no labour-market hysteresis effects: structural unemployment gradually returns to the lowest value estimated between 2007 and 2013; for New Zealand this is 4.3%.
- There is no change to NZ educational policy, and the stock of human capital evolves with the ageing population: average years of schooling per worker (the proxy that represents human capital) increases as the more highly educated younger cohorts age and less educated older workers retire. Successive generations are assumed to have the same attainment as the current cohort with the highest years of schooling.
- Product market regulations remain unchanged in New Zealand (and converge towards the OECD average for countries whose stances are more restrictive than average).
- Trade intensity, as defined by the sum of exports and imports as a share of GDP, remains constant.

Australia to 23% (from 30% in 2011). In either case, the projection assumes that MFP contributes much more to growth in the future than has ever been observed in the past.

Relative to Australia, New Zealand's slower labour productivity growth since 1990 appears to reflect both lower average growth in MFP and (to a lesser extent) in capital accumulation. Analysis that takes into account industrial structure reveals that structural differences between Australia and New Zealand account for less than one third of the labour productivity level gap, whereas performance at the sector level matters most (NZIER, 2011). However, New Zealand's lower overall capital intensity appears to be 90% explained by differences in industrial structure. None of the economy's major sectors have experienced substantial MFP gains since the 2000s.

The reasons for New Zealand's productivity underperformance despite its strong institutions (the "productivity paradox") are not well understood. Indeed, New Zealand is an outlier in the extent to which actual labour productivity growth has undershot predicted rates based on policy settings (Barnes et al., 2011). Part of its disappointing performance may reflect the persistence of comparatively high real interest rates since the 1990s, which may have helped depress business investment, and which appears to reflect low domestic savings relative to the investment needs of a rapidly growing population. Furthermore, the real exchange rate has failed to adjust downward with the country's relative decline in productivity *vis-à-vis* other advanced economies since

the 1980s (Reddell, 2013). This exchange rate overvaluation may have constrained growth in the tradables sector.

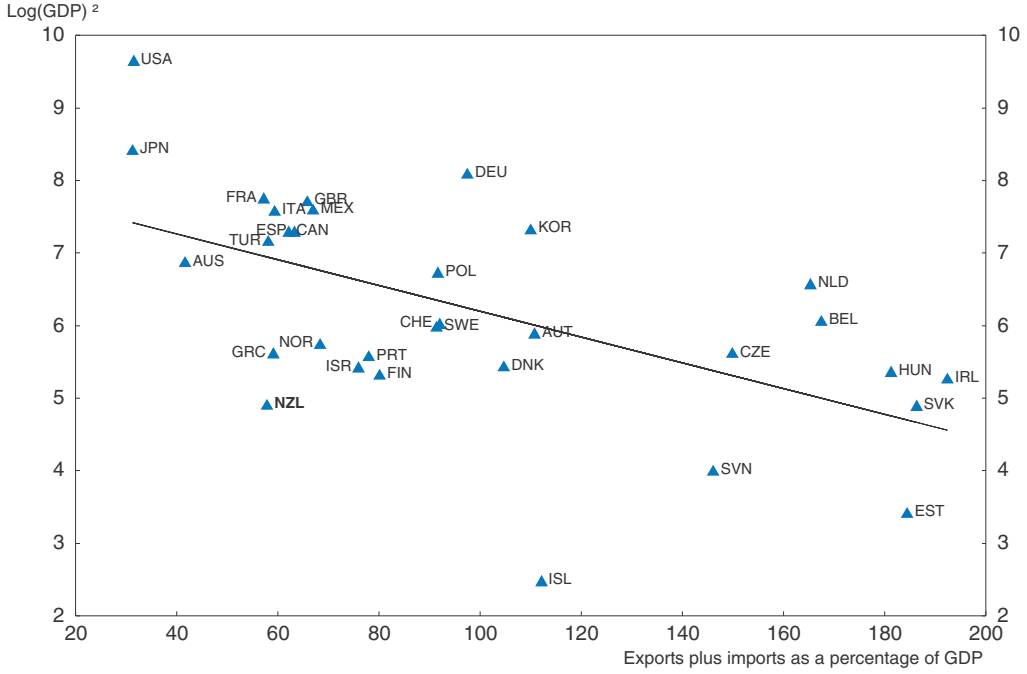
It is widely recognised that New Zealand's size and geographic isolation have constrained its economic performance, perhaps reducing per capita GDP by up to 10% (Boulhol and de Serres, 2008). Good policies can nonetheless help counter New Zealand's geographic obstacles, and indeed the long-run deterioration in relative per capita incomes came to an end following the significant structural reforms of the 1980s and early 1990s (McCann, 2009). Strong institutional settings may explain the finding that both Australia and New Zealand perform better than predicted, given their distance to markets (Dolman et al., 2007). Nevertheless, bad geography argues for the need to have particularly strong structural policies, especially as isolation may reduce the returns to structural and institutional reform (Gallup and Sachs, 1999). In particular, reforms that lower the cost of transportation and communications and diminish barriers to trade should help shorten New Zealand's effective economic distance from trading partners and favour greater integration with the global economy.

Taking advantage of globalisation

A dynamic tradables sector may provide longer-term benefits to overall productivity and growth through various channels, including the diffusion of foreign technologies and knowledge (New Zealand Treasury, 2010). Trade intensity is low in New Zealand compared to other OECD countries of similar size (Figure 1.2) and has remained roughly unchanged since the 1980s, despite increasing globalisation. This may be attributable in large part to

Figure 1.2. **Trade intensity**[1]

2012 or latest available year



1. Intensity is defined as the sum of nominal exports and imports of goods and services divided by GDP.
2. USD billion, current prices, current PPPs.

Source: OECD Economic Outlook 92 Database.

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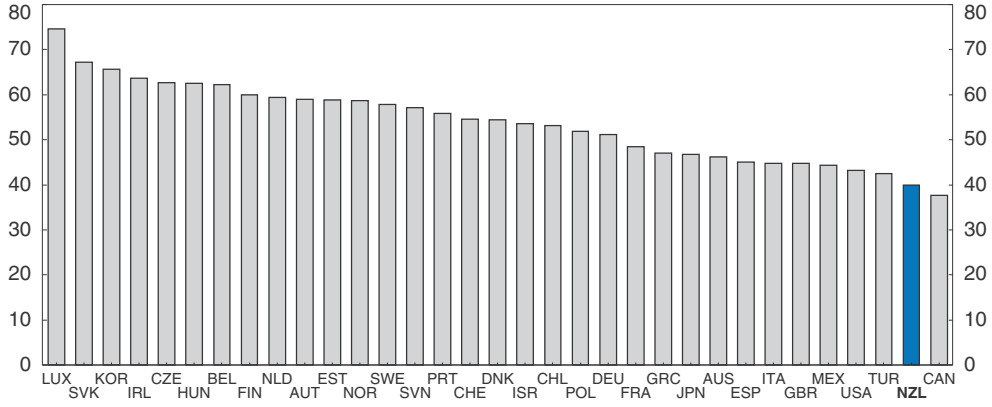
the country's isolation, given analyses based on "gravity models" that suggest trade intensity is not far from what would be predicted given its remoteness (Battersby and Ewing, 2005; OECD, 2013c). While the country ranked 21st out of 60 nations in a recent Ernst and Young index of global connectedness, this was down two places from its 1995 standing (Ernst and Young, 2012). Furthermore, recent OECD work using the OECD-WTO *Trade in Value Added* (TiVA) database suggests that New Zealand's overall participation in global value chains (GVCs) is low by international standards (Figure 1.3). This finding suggests that it may have benefited less from many of globalisation's productivity-enhancing effects than others. However, this work also reveals that New Zealand's connection to GVCs is among the highest within the agriculture and food sectors (Miroudot and de Backer, 2012).

Figure 1.3. **Global value chain participation index in OECD countries**

2008



Source: OECD (2012), *Policy Dialogue on Aid for Trade, Mapping Global Value Chains*.

How to read this figure: The participation index is calculated as the sum of: i) the share of foreign inputs in overall exports; and ii) the share of gross exports that are used as inputs in other countries' exports.

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While engaging in GVCs can be a powerful driver of growth, productivity and employment, a country's position in the chain also determines how much it will benefit. In particular, the highest value tends to be created in upstream activities, like R&D and product design, or in the downstream segments of marketing and branding (OECD, 2013a). As will be discussed below, a highly skilled labour force and strong institutions should give New Zealand a comparative advantage in these types of activities. Increasing investment in knowledge-based capital can also help it upgrade its value added within GVCs (OECD, 2013a).

The evolving importance of geography

Remoteness and a small, scattered population limit the extent to which domestic firms can exploit scale economies while weakening competitive pressures to innovate and seek efficiencies. Because of the thin domestic market, NZ firms outgrow it sooner and must therefore internationalise at an earlier stage in the life cycle (New Zealand Treasury, 2009b). Many eventually relocate operations entirely overseas to be closer to large markets, resulting in a loss of high-skill jobs, tax revenues and other benefits. International knowledge diffusion may also be slower to distant countries (Comin et al., 2012).

These geographic disadvantages are probably compounded by other structural factors and policy settings that together limit New Zealand's international connections and the extent to which the economy has benefited from them. In particular, its export base remains heavily reliant on agriculture, which is highly productive but typically faces greater supply constraints and higher trade barriers worldwide; by one estimate, full global liberalisation of agriculture and food markets could increase NZ exports in these goods by 72% (Anderson, 2008). Outward direct investment is among the lowest in the OECD, with little use of offshoring in the manufacturing sector in particular (New Zealand Treasury, 2009b), which may again be due to high distance-related transportation costs. It may also reflect the fact that many high-growth firms that do offshore manufacturing processes eventually move all their operations overseas to exploit co-location synergies (Sweet and Nash, 2007). The relatively strict taxation regime on offshore investments that was in place until 2009 may have also played a role (OECD, 2007a). Finally, New Zealand's main export sectors tend to be dominated by firms with governance structures that may be less conducive to competition and innovation (state owned enterprises, cooperatives, privately held trusts).

Whether globalisation and technological advances have made geographic obstacles more or less important for New Zealand's economic performance is open to debate. On the one hand, studies suggest more generally that the importance of physical distance for trade has not diminished (Boulhol and de Serres, 2008) and may have even increased over time for both goods and services (Nordäs, 2008a), despite declining costs of transportation and communication. Globally, the average distance of trade has actually shortened over the past few decades, with more trade occurring between neighbours rather than with distant countries (Skilling and Boven, 2007). These patterns reflect the highly regional nature of GVCs as well as the increasing importance of speed to market, flexibility and timeliness of supply. This implies that proximity to markets and co-location with other suppliers may heavily influence firms' location choices. Global competition has reduced mark-ups and increased the substitutability of goods, which may make trade even more cost sensitive (Boulhol and de Serres, 2008). Such factors place firms operating in distant markets such as New Zealand at a competitive disadvantage in selling certain products.

On the other hand, the gravitational shift of global economic activity from west to east is improving the country's proximity to major markets. While these markets may be more distant in terms of linguistic and cultural differences, New Zealand may be better placed than many others to overcome these barriers, given its large Asian population and strong social ties to the region. By the mid-2000s, New Zealand was the ninth largest recipient of Asian immigrants in the OECD, and almost 40% of these immigrants had tertiary education (Table 1.2). Asians account for over 8% of all students at the tertiary level, with only Australia boasting a higher share (Figure 1.4). Studies have shown that immigrant networks significantly increase trade in goods and services (Rauch and Trindade, 2002; Rauch, 1999), although for New Zealand they have tended to stimulate imports more than exports (Law et al., 2009). Furthermore, compared to the West, the smaller time zone difference between New Zealand and East Asian markets can benefit FDI and services trade, since many services require real-time communication (Kandilov and Grennes, 2012).

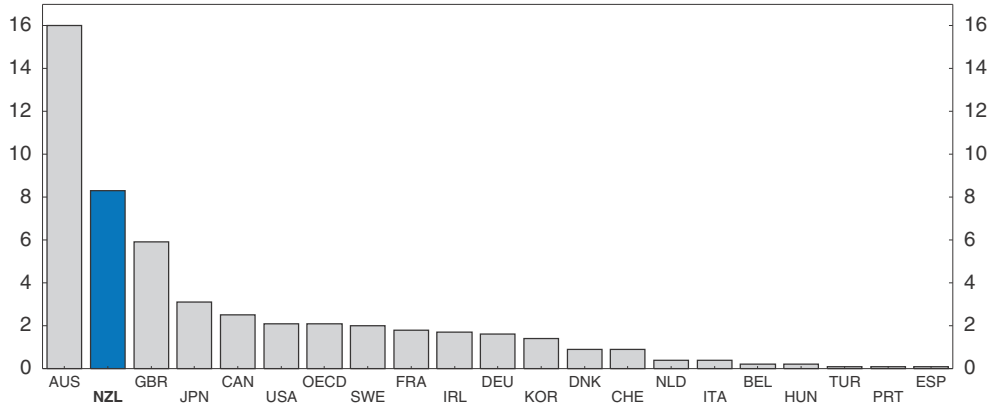
Firms can offset the disadvantages of isolation through greater offshoring of production and distribution processes to facilities closer to major international markets or hubs (Skilling and Boven, 2007). This levels the playing field with foreign rivals as far as production and distribution costs and speed to market and could shift the basis of competition towards higher value-added activities such as R&D, branding and design.

Table 1.2. **Migrant stock of persons born in Asia living in OECD countries, 2005-06**

Country of residence	Asian migrants aged 15 and over	Share of population aged 15 and over	Share among total immigrant population	Share of tertiary-educated among Asian migrants
	Thousands	Percentages		
United States	7 760	3.3	20	52
Canada	2 143	8.0	35	52
United Kingdom	1 557	3.2	29	39
Australia	1 155	7.0	28	42
Japan	546	0.5	42	25
France	436	0.9	7	30
Italy	266	0.5	9	7
Netherlands	264	2.0	18	25
New Zealand	**225**	**6.9**	**29**	**37**
Germany	222	0.3	2	19
Korea	179	0.5	78	32
Spain	119	0.3	3	18
Sweden	99	1.3	9	25
Switzerland	93	1.5	6	32
Denmark	70	1.6	19	18
Norway	68	1.8	21	16
Belgium	63	0.7	5	31
Austria	61	0.9	6	20
Ireland	44	1.3	8	59
Czech Republic	43	0.5	8	13
Israel	34	0.7	2	31
Other	71	0.0	5	13
Total	**15 518**	**1.6**	**31**	**40**

Note: Information on data for Israel: *http://dx.doi.org/10.1787/888932315602.*
Source: Database on Immigrants in OECD Countries 2005/06.

Figure 1.4. **International students from Asia in OECD countries**
In tertiary education, as a percentage of all students, 2009



Source: OECD International Migration Outlook 2012.

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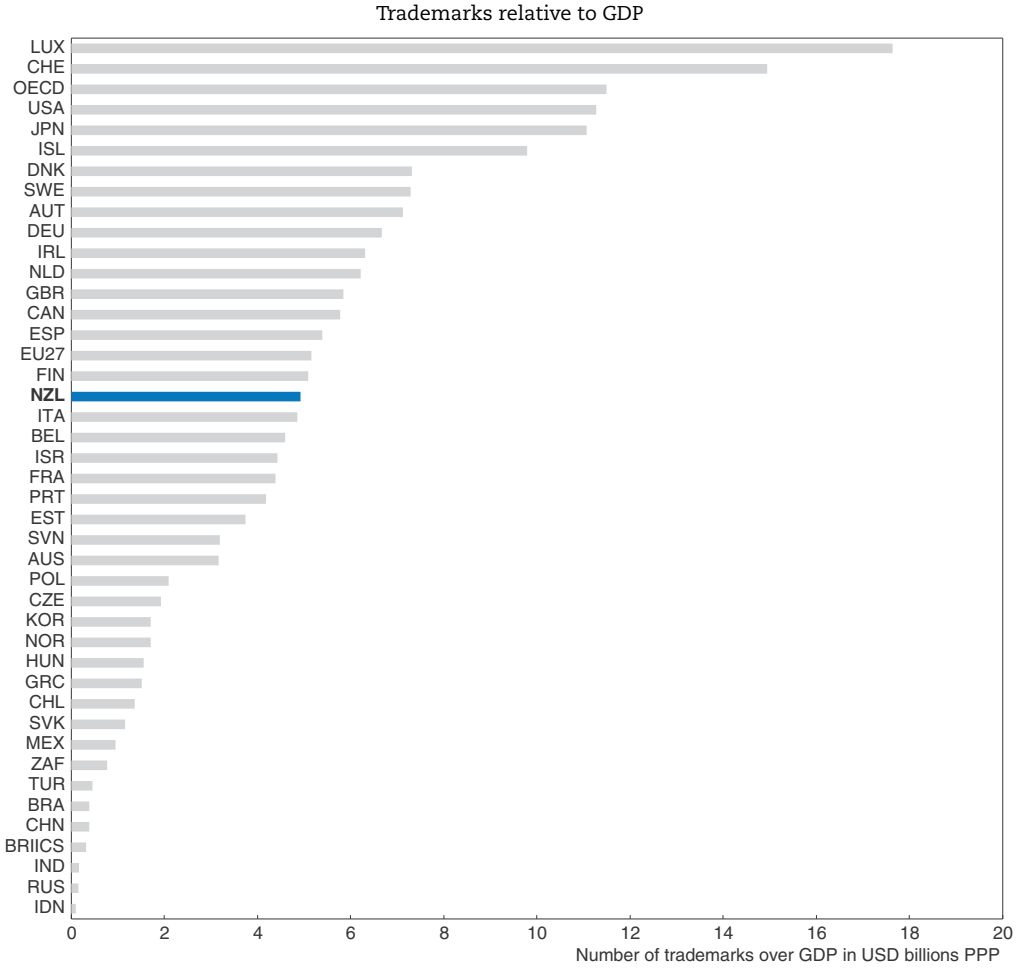
Indeed, New Zealand appears to perform reasonably well in trademark activity by OECD standards, signifying some potential strengths in branding and design (Figure 1.5).

Figure 1.5. **Triadic trademark applications at JPO, OHIM and USPTO, 2007-09 average**



Source: OECD Science, Technology and Industry Scoreboard 2011.

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Factors shaping New Zealand's comparative advantage

Changes in transportation costs significantly affect the importance of distance for trade by altering relative prices across exporters. From the 1950s until the mid-2000s, the real cost per kilogram of air cargo declined significantly relative to maritime shipping, contributing to a growing share of long-distance trade occurring via air rather than ocean (Hummels, 2009). Furthermore, there are indications that prices declined more for long-haul flights than for intra-continental flights during this period (WTO, 2008). Those gaining most from its cost reductions would have been faraway countries producing high-value, low-weight goods for which rapid delivery is critical. In particular, vertical supply chains in manufacturing rely heavily on air transport, consistent with findings that the most time-sensitive trade flows are in parts and components (Hummels and Schaur, 2012). The share of New Zealand's merchandise trade value that is transported by air has hovered around 20% since 1989, compared to international norms of about 35-40% (Skilling and Boven, 2007). The country's agriculture-based exports tend to be heavy, relatively low value per tonne and not time-sensitive, making transport by ship much more economical. Going forward, however, further increases in fuel prices may erode the relative gains from

shipping by air rather than ocean. Indeed, US and EU data reveal that the real cost of air cargo has increased since the early 2000s, while air usage has dropped, probably reflecting higher energy costs and security regulations.

While distance appears to have become less important for trade in standardised, low value-added goods and services, it remains a barrier for activities that require human interaction, variety, customisation and local knowledge (McCann, 2009). New Zealand's population sparseness further places it at a disadvantage for realising agglomeration economies, which have become more important for many high value-added, knowledge-intensive activities. For example, firms in the information and communications technology (ICT) industry often prefer clustering together in either large cities or where deep specialised labour pools already exist. Such locations provide greater opportunities for chance encounters with potential investors, clients or partners, as well as for face-to-face brainstorming sessions that can be more productive than phone calls or e-mails. A survey of NZ export-oriented firms reveals that a lack of critical mass with specific technology skills is a major factor behind decisions to rebase activities in foreign countries, where larger labour markets make such skills more readily available (Sweet and Nash, 2007).

In services, the importance of distance for tradability varies significantly by the type of service. A study by Nordäs (2008b) presents empirical analysis suggesting that distance is a significant factor determining whether any two given countries will engage in business services trade. That study also finds that the disadvantage of remoteness is larger for smaller countries. It reasons that trade costs for commercial services depend on the transaction costs of searching for a suitable supplier and of drawing up and monitoring contracts. Because the quality of service outputs is more difficult to measure and assess than that of manufactured goods, there may be a stronger home bias in establishing business service contracts.

Because of these various transaction costs, Nordäs (2008a) argues that the most tradable commercial services are those that can be codified and transmitted electronically, that have high information content and that require no face-to-face contact. As with manufactured goods, the more generic the product, the easier it is to verify and enforce a contract and therefore engage in trade. By contrast, less easily tradable (but nonetheless tradable) services are those emphasising customisation, local knowledge, trust and face-to-face interaction, such as consultancy, design and R&D. These types of services are generally higher value, and delivery may require a commercial presence in the foreign country and physical movement of people. Because these non-standardised services involve greater risks with contract enforcement, countries with strong institutions like New Zealand have a comparative advantage in producing them (WTO, 2008), and this could translate into either higher exports or outward foreign direct investment (FDI).

It has been argued that continued preferences for timely delivery and improvements in communications technology are likely to shift the comparative advantage of remote countries like New Zealand towards exporting lightweight high-value goods and services that are relatively insensitive to distance (Harrigan, 2010; Skilling and Boven, 2007). The value per tonne of NZ exports has actually increased very little over time, however: by only about 10% between 1989 and 2012. Meanwhile, others have predicted that the growing importance of China and India in the world economy will tend to strengthen New Zealand's comparative advantage in agriculture, forestry products and coal (Dimaranan et al., 2007).

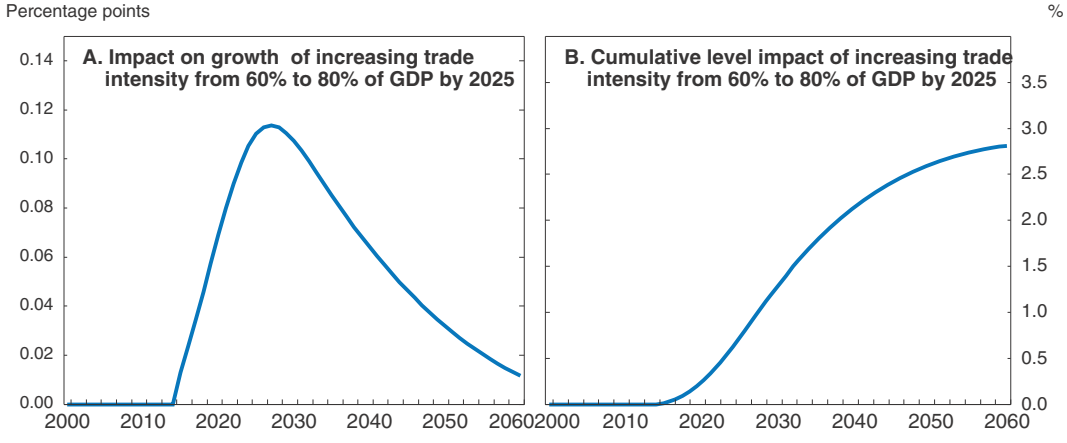
Reforms to increase international connectedness and value added

Improving New Zealand's international linkages via trade, FDI and various forms of human interaction is crucial for mitigating the penalty of distance on growth and expanding the possibilities for knowledge transfer. Adopting ideas and technology from abroad is particularly vital for driving innovation in a small open economy that is not at the technological forefront. The government is seeking ways to boost trade intensity and has set an ambitious goal within its Business Growth Agenda to increase the share of exports to 40% of GDP by 2025 from current levels of about 30%. Not only is a high-performance transportation and ICT infrastructure critical, but New Zealand needs to lower spatial transactions costs by even *more* than other countries to reduce its effective distance from markets (Boulhol and de Serres, 2008).

Transferring resources towards high-value added activities that leverage off New Zealand's strong primary-industry base may hold the most promise for strengthening productivity and competitiveness. Focus will need to be shifted towards activities that rely more on knowledge, technology and intangible assets. New Zealand has already made some noteworthy advances in this direction, notably in biotechnology, and is beginning to devote resources to developing a high-value manufacturing and services sector.

Simulations using the OECD long-term growth model suggest that boosting trade intensity steadily from 2015 to achieve the Business Growth Agenda target of a 40% share of exports in GDP (and the same share for imports) by 2025 would raise annual real output growth by up to 0.1 percentage point (Figure 1.6, Panel A). The positive impact occurs through a more rapid catch-up of MFP towards its steady state level, based on faster diffusion of technology and knowledge from abroad. Assuming trade intensity remains constant thereafter, the effect on growth would then slowly diminish, with real GDP levels 3% higher in the long run (Panel B).

Figure 1.6. **Simulated real GDP impact of increasing trade intensity**



Source: OECD calculations.

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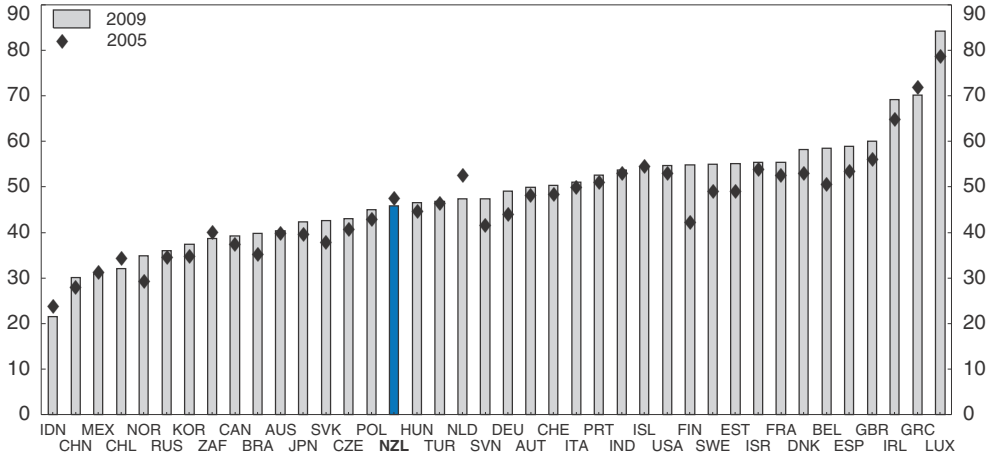
Facilitate services trade through high-performance ICT infrastructure

There are several reasons why expanding the role of services trade has significant potential to drive New Zealand's future growth. These include, first, the declining costs of ICT and increasing Internet adoption worldwide, which allow smaller firms to enter foreign

markets at lower cost. Second, services make up over 70% of New Zealand's GDP, but only about one quarter of its exports based on national accounts gross measures. However, OECD-WTO TiVA data suggest that services value added in exports is almost twice as important, accounting for 46% of total exports in 2009 (Figure 1.7). Third, in contrast to its traditional agricultural export base, services face fewer natural-resource constraints such as land availability and environmental objectives. Finally, tradable business services employ high and medium skilled workers more intensively, who tend to earn higher wages than those in manufacturing or non-tradable services (Gonzales et al., 2012).

Figure 1.7. **Services value added as a share of gross exports**



Source: OECD, *OECD-WTO Trade in Value Added Database*.

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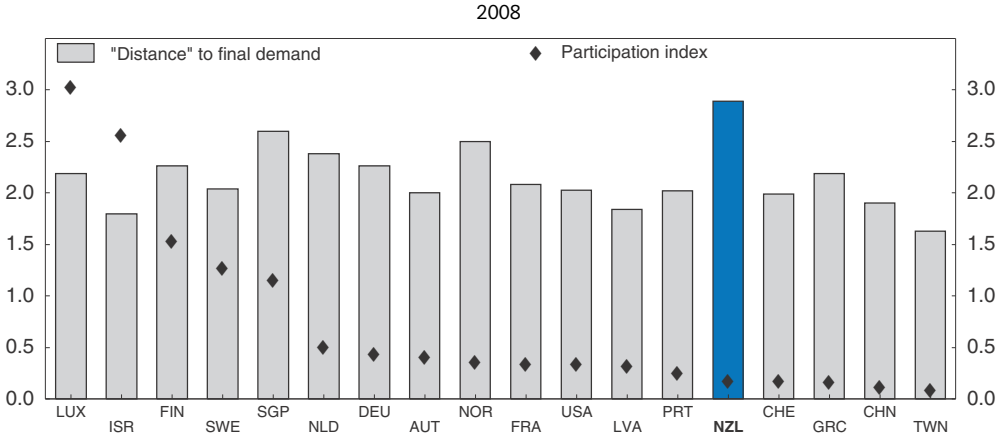
In New Zealand gross services trade has shrunk as a share of both total trade and GDP over the last decade, declining to about 24% of total trade in 2012 compared to 27% in the early 2000s. The majority of both services imports and exports is in tourism and transportation services. Travel accounts for the largest share at over one half of total services exports, which is based on the physical movement of people and therefore highly dependent on air transport. "Weightless" services exports (e.g. communication services, financial and insurance services, computer and information services) account for only about 20% of total services exports, compared to 50% on average for OECD countries. New Zealand has generally been a net importer of business services, but its exports in this area have increased at twice the pace of imports since 2000. Financial and computer and information services have experienced among the highest growth in exports over this period. Furthermore, even if NZ exporters of computer services are not heavy participants in GVCs, they tend to be located favourably at the upstream end, based on measures of "distance" to final demand (Figure 1.8), indicating a specialisation in high value R&D and design.

Numerous barriers to services trade can arise, including natural barriers such as language and culture, as well as those arising from differences in technology, labour mobility and domestic regulation (New Zealand Treasury, 2009b). Direct trade barriers can include restrictions on foreign ownership and other market access, while implicit barriers can take the form of behind-the-border regulation, such as licensing procedures (Nordäs, 2008a). Based on the World Bank's Services Trade Restrictiveness Index, the services sector overall ranks as one of the most open to trade among OECD countries and also quite

Figure 1.8. **Participation and position in computer services global value chains**



Source: OECD (2012), *Policy Dialogue on Aid for Trade, Mapping Global Value Chains*.

How to read this figure: The participation index is calculated as the sum of: i) the share of foreign inputs in overall exports, and ii) the share of gross exports that are used as inputs in other countries' exports. The distance to final demand is a measure of "upstreamness" in a global value chain. Longer distances indicate a specialisation in producing inputs closer to the beginning of the value chain, which includes higher value activities such as R&D and product design.

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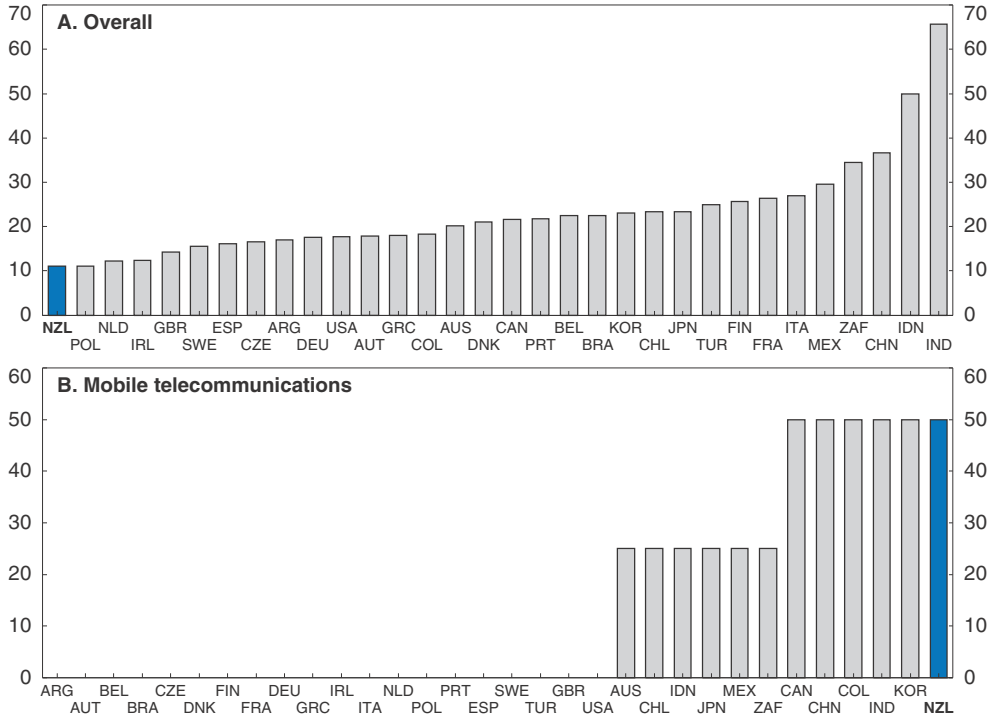
Figure 1.9. **Services Trade Restrictiveness Index**



Source: World Bank.

How to read this figure: This index summarises the restrictiveness of applied policies on services trade, on a scale of 0 (completely open) to 100 (completely closed). Scores are assigned for various service sectors, and to construct the aggregate index each sector is weighted by its share in the country's value added.

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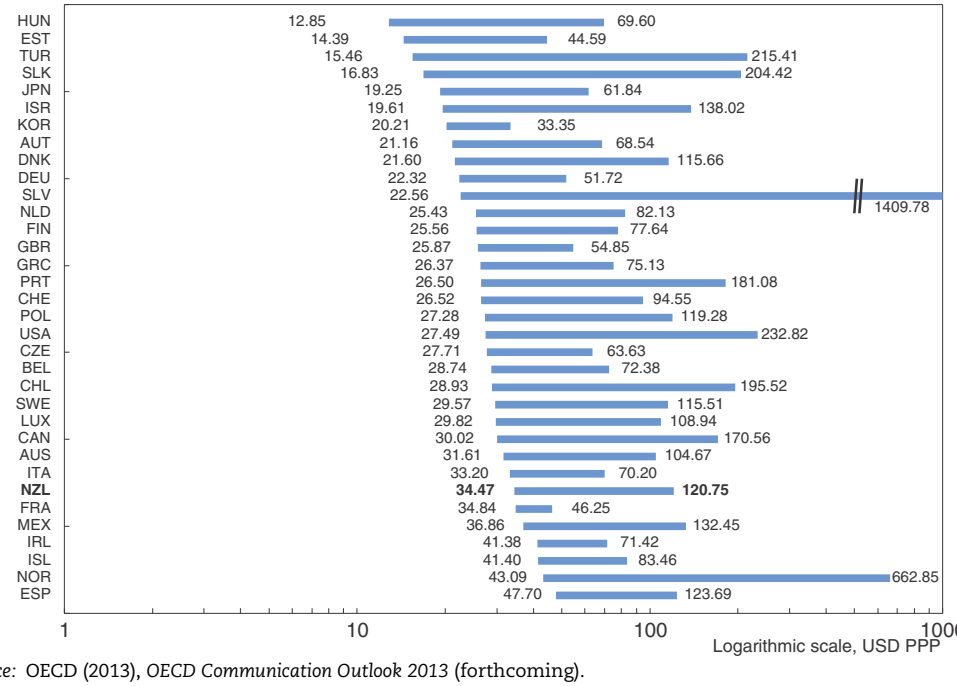
favourably across most sub-sectors (Figure 1.9, Panel A). The main exception is in telecommunications (Panel B), which reflects in large part a limit of 49.9% on foreign ownership of Chorus, the major telecommunications infrastructure provider. Few other OECD countries have retained foreign investment restrictions in telecommunications. As argued in the 2011 *Economic Survey* (OECD, 2011c), such restrictions and the Telecommunications Service Obligations (TSO) (e.g. to provide free local calling) distort competition, create inefficiencies and should be eliminated. Indeed, New Zealand users face comparatively high prices for fixed line and mobile communications across most residential and business consumption baskets (OECD, 2013b), though this may also reflect a lack of retail competition. These issues should be considered within the telecommunications regulatory review currently underway.

A high-performance ICT infrastructure is essential to overcoming the country's geographic disadvantages and expanding services trade. As a share of GDP, ICT expenditures in New Zealand are well below the OECD average (New Zealand Government, 2011). Broadband internet penetration is nonetheless comparatively high, with over two-thirds of inhabitants connected through a wireless subscription and over one quarter through a fixed wire at end-2011. Almost 95% of businesses report broadband access. Internet access remains relatively slow and expensive, however, with broadband entry prices among the highest in the OECD (Figure 1.10), although prices have come down by over 20% since 2008. New Zealand is one of the few countries to impose data caps on all broadband packages offered. Relatively high prices may reflect in part the cost of providing widespread network coverage across a sparsely populated country.

Figure 1.10. **Range of broadband prices for a monthly subscription – including line charge**

September 2012, USD PPP



Source: OECD (2013), *OECD Communication Outlook 2013* (forthcoming).

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The government is currently investing significantly in laying ultra-fast broadband (UFB) with the goal of bringing higher speed Internet access to 75% of the population by 2020. The scheme involves construction of a fibre network via a number of public-private partnerships, involving NZD 1.5 billion in direct subsidies. There appears to be widespread industry acceptance globally that optical fibre will become the predominant technology of the future (Stanislawski and Krauze, 2013), given its greater speed and lower lifetime cost relative to copper. While regulated prices charged for broadband normally incorporate the future cost of replacing the infrastructure, the monopolistic nature of the industry has resulted in little private investment in fibre thus far. As a result, governments have tended to play a major role in the migration towards fibre, with those of Japan, Korea and Australia being most notable. While greater and faster internal Internet connectivity should foster productivity gains, the strength of New Zealand's links to the rest of the world will remain dependent on the single Southern Cross cable joining Auckland to Sydney. Capacity has been added incrementally over time and currently appears sufficient for domestic needs. It is presumed that broadening high-speed Internet usage internally first will help stimulate demand and competitive pressures to ultimately invest in a second cable.

The UFB initiative introduces considerable regulatory uncertainty into the sector's competition framework. As the fibre network is being deployed, the government continues to require competitive wholesale pricing on the existing copper network. Reforms implemented over recent years to enhance competition and limit market power in the copper network include local loop unbundling in 2006, followed by the structural separation of Telecom NZ into two independent companies in 2011: Chorus (for the fixed access broadband network and wholesale operations) and Telecom (for mobile networks and retail functions). At the same time, a switch to forward-looking cost-based pricing required the Commerce Commission to set wholesale prices for Chorus' access to the copper infrastructure (UBA) by benchmarking against corresponding prices charged in comparable countries that use a forward-looking cost-based approach. The Commerce Commission's 2012 review, which is subject to consultation, proposed steep cuts to the prices that Chorus can charge for its UBA service. The government has resisted these recommendations by postponing any change in UFB prices by one year, while in the meantime launching a comprehensive review of the entire telecommunications regulatory framework. Because Chorus is one of the major partners contracting with the government to deliver UFB (and therefore owns both fibre and copper infrastructure), the government is concerned that: *i)* such price discounts would substantially reduce Chorus' income and capacity to invest in UFB; and *ii)* cheaper access to the copper network could undermine the uptake of fibre.

Part of the problem is lack of clarity over how the fibre rollout will affect the copper network's future. This contrasts with the Australian approach, which involves decommissioning copper as fibre is laid (Howell, 2012): although this may facilitate longer-term investment planning and accelerate broadband uptake because of its transparency, it penalises those who own and use the copper network. To improve regulatory predictability for investors and consumers, the government should adjust its competition policy framework for the broadband market to ensure consistent regulation and pricing practices between copper and fibre networks. For example, wholesale prices for fibre access could be set using the same forward-looking cost-based methodology used for copper.

Reduce regulatory restrictions in international trade, investment and transport services

Given the importance of transportation costs in determining trade flows, having an efficient transport system is necessary to minimise costs and overcome geographic barriers. Infrastructure quality and market power for shipping lines are primary drivers of differing shipping costs across countries (Hummels, 2009). In 2012 the Productivity Commission completed a comprehensive examination of the efficiency of New Zealand's international freight transport system and concluded that the sector is quite effective overall in facilitating trade, though certain areas could use improvement (New Zealand Productivity Commission, 2012). The inquiry found that NZ ports and airports generally perform well compared to Australia's, but with substantial variation across different ports. The country's physical remoteness means its ports are not on major shipping lanes, and speed to market remains slow (Skilling and Boven, 2007). Furthermore, the consolidation of the shipping industry and the trend towards larger container ships imply that ships may visit NZ ports less frequently in the future. Many of the country's 12 major ports are small and have low financial returns due to over-investment in capital equipment (Skilling and Boven, 2007), suggesting there may be efficiency gains from some consolidation. As recommended in the 2009 *Economic Survey*, privatisation of port assets may help improve efficiency.

The Productivity Commission inquiry also identified regulatory impediments to competition in the shipping industry. In particular, international agreements between carriers are exempt from domestic competition law, including provisions that allow them to fix prices and limit capacity, based on the view that liner collaboration is necessary to ensure reliable services. However, international experience has provided little evidence that rate-fixing practices deliver net benefits, and many governments (including all EU countries) have removed the exemption of such agreements from competition law. Indeed, these exemptions may encourage inefficient anti-competitive behaviour that may raise costs unnecessarily. The government plans to pass a Commerce (Cartels and Other Matters) Amendment Bill that addresses this issue. This Bill will criminalise cartel conduct while permitting "collaborative activities" that create a net benefit without affecting prices. It would subject all ratemaking agreements to evaluation by the Commerce Commission on a case-by-case basis.

Regulation in the air transport sector may also need revisiting. Most air cargo is transported to the rest of the world on passenger aircraft, whose traffic routes depend on internationally negotiated air service agreements (ASAs). Although the impact of regulatory constraints on freight volumes is not clear, passenger capacity limits under ASAs with China, Hong Kong, India, Indonesia and France appear to have been reached and may be restraining both tourism and air cargo flows (New Zealand Productivity Commission, 2012). These ASAs should thus be urgently revisited to ensure capacity limits are not hindering trade.

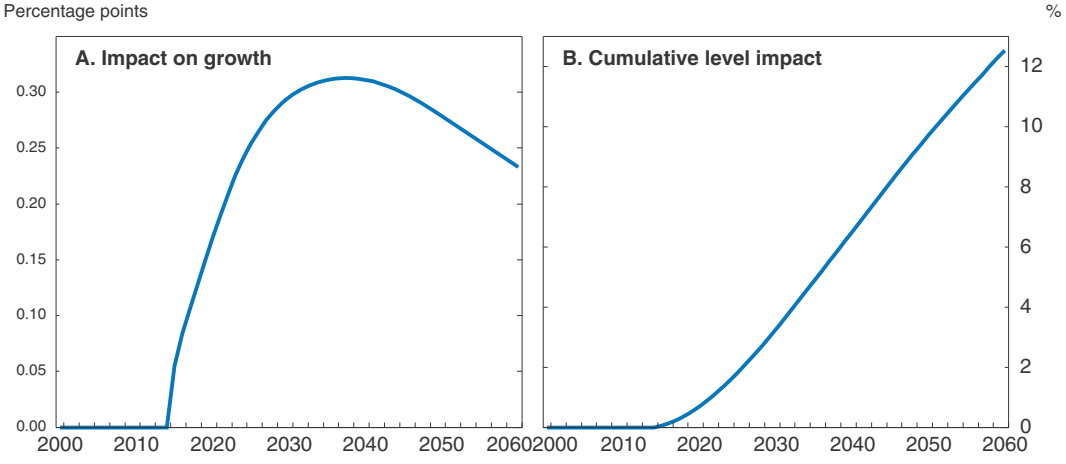
Formal trade barriers are low in New Zealand, with 95% of goods imported tariff-free (New Zealand Treasury, 2009b). With the most recent reduction implemented in 2009, tariffs remain on some domestically sensitive sectors, and the average weighted tariff rate is around 2.2%. Border services are relatively efficient, and the government is developing a Trade Single Window to streamline export and import documentation requirements through a single electronic submission.

FDI can be a material source of productivity-enhancing knowledge spillovers. New Zealand has a relatively large stock of inward FDI (about 50% of GDP), reflecting in part

its low domestic saving and capital intensity, and dependence on foreign capital. Despite international evidence that FDI brings increased productivity and capital deepening, analysis of firm-level data finds no signs that high levels of FDI in New Zealand have had such effects (Fabling and Sanderson, 2011). Inward FDI has typically been concentrated in the banking industry, which accounts for almost 40% of total inflows, rather than in tradable sectors. A government evaluation of public programmes to facilitate FDI inflows reports that knowledge spillovers from FDI to the wider economy have been disappointingly small. This may be due in part to inadequate capacity to absorb foreign knowledge and technologies, which may be related to factors such as underdeveloped financial markets, a lack of human capital in areas such as engineering and management capabilities, low R&D intensity and poor international connectedness (MED, 2011). These factors may constrain the country's ability to attract the type of "high-quality" FDI that enhances innovation and generates beneficial spillovers to productivity.

OECD model simulations suggest that moving New Zealand's product market regulations (PMRs) towards best-practice levels of restrictiveness could increase annual GDP growth by 0.2-0.3 percentage point, with a long-term level gain of 12% (Figure 1.11). These estimates may be optimistic, however, given New Zealand's historical productivity underperformance relative to what would be predicted by its PMR settings (Barnes et al., 2011). By 2060, the gap between New Zealand's PMRs and the best-practice country narrows by 78%. Reforms that could boost growth include increasing the transparency of the FDI screening regime. Screening restrictions exist for foreign investment involving significant business assets, sensitive land or fishing quota. The majority of foreign investment applications involve sensitive land, of which about 3.5% were declined in 2002-08, whereas few business-type applications have been rejected since 1984. While these statistics indicate a reasonably liberal regime in practice, about 33% of the applications over this latter period were not decided upon for various reasons. Moreover, the screening regime may create uncertainties and dissuade applications from overseas investors due to the discretion used in weighting the criteria, as argued in the 2011 *Economic Survey*.

Figure 1.11. **Projected real GDP impact of moving product market regulations to best practice**



Source: OECD calculations.

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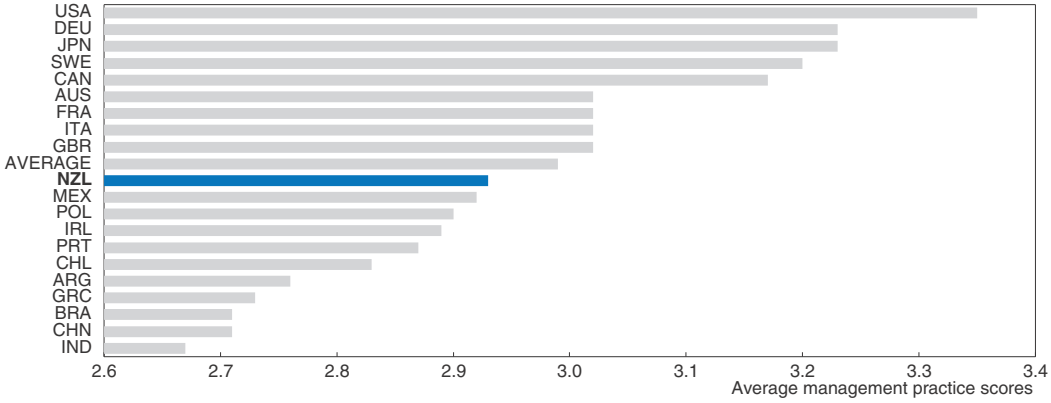
Adjusting policy settings to boost innovation

Fostering innovation is key to raising productivity and living standards. Given New Zealand's geographical challenges, it is particularly crucial to stimulate innovation in export-oriented sectors as well as outward FDI through knowledge-based capital. The OECD published a review of New Zealand's innovation system in 2007 (OECD, 2007b) and identified various strengths and shortcomings in its performance and structural settings, many of which remain in place today. The country appears to boast a relatively strong base for scientific innovation: it ranks highly among OECD countries for scientific articles published in top journals, PISA math and science scores among 15 year-olds (see Chapter 2), science graduates per million population, and number of researchers engaged in R&D (OECD, 2012a; OECD, 2011b). However, the supply of engineering graduates is low, and management capabilities appear weak (Figure 1.12): NZ firms are often seen as lacking in business acumen by their overseas counterparts (Procter, 2011). Business and government expenditures on R&D are relatively low (Figure 1.13): as a share of GDP, total R&D is half the OECD average, and business R&D just a third.

Figure 1.12. **Management scores in manufacturing**[1]

June 2011



1. The overall management score is the average across all 18 questions. All questions are scored the same across all countries and industries.

Source: Bloom, N. et al. (2011), "Management Practices Across Firms and Countries", *Harvard Business School Working Paper*, No. 12-052, December.

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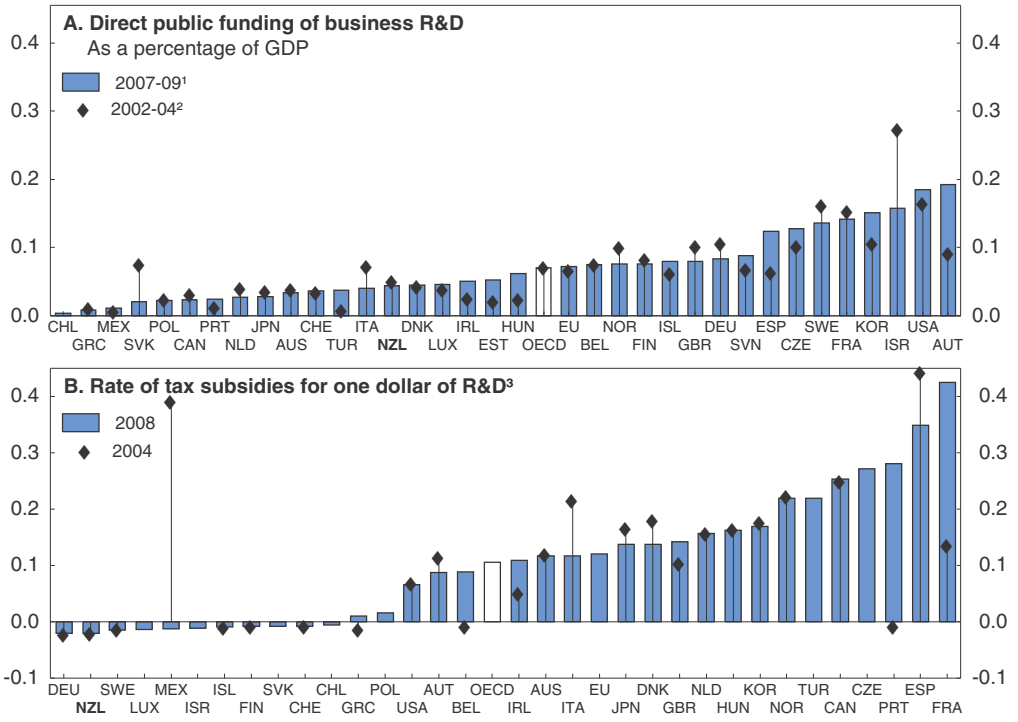
The NZ government has taken steps to implement many of the policy recommendations made in the 2007 *OECD Review of Innovation Policy* (OECD, 2007b) over recent years. Its Business Growth Agenda lays out a clear policy framework for achieving goals across a number of priority areas, including innovation, which aims to co-ordinate efforts across departments and to bring coherence to a fragmented system of support programmes. A new Ministry of Business, Innovation and Employment was formed in 2012, amalgamating the Ministries of Labour, Economic Development, Housing, and Science and Innovation to promote greater co-operation across different policy areas. Core funding is now provided to Crown Research Institutes (CRIs), whose financing had previously been entirely contestable, allowing a more stable environment for building long-term capabilities. To strengthen the linkages between science and business and improve commercialisation, the government introduced funding to establish two to four National

Figure 1.13. **Financial support for private R&D investment**



1. 2007 for Greece, Mexico and New Zealand; 2008 for Switzerland.
2. 2003 for New Zealand; 2004 for Switzerland.
3. Measures the generosity of tax incentives to invest in R&D, on the basis of the pre-tax income necessary to cover the initial cost of one dollar of R&D spending and pay corporate taxes on one dollar of profit (B-index). A value of zero on the chart would mean that the tax concession for R&D spending is just sufficient to offset the impact of the corporate tax rate. Average over small and medium enterprises and large firms.

Source: OECD, *Economic Policy Reforms 2012: Going for Growth*, Figure 3.30.

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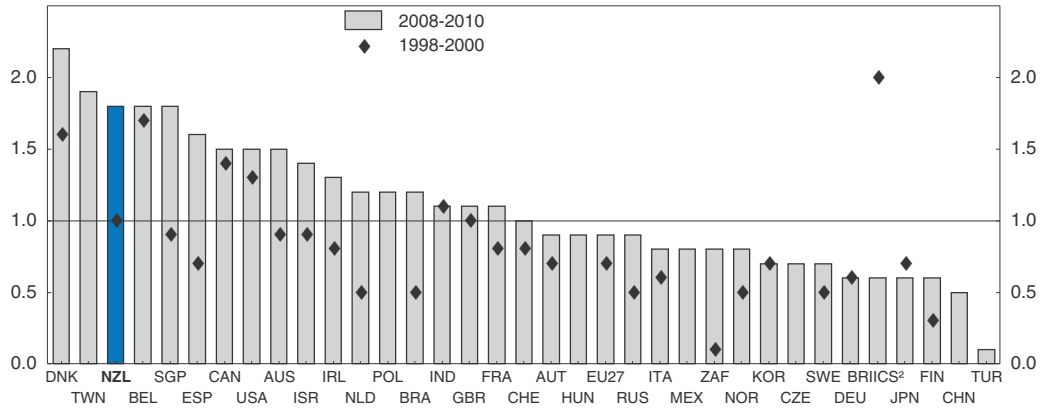
Network of Commercialisation Centres that connect research organisations, incubators, entrepreneurs and regional development agencies. It has also established Callaghan Innovation, a Crown agency aiming to better target research activities in universities and CRIs towards business needs.

The 2007 OECD Review advocated concentrating resources on "better exploitation of potential strengths in niche markets, and commercial exploitation of hotspots of scientific research in which New Zealand has world-class capability" (OECD, 2007b). The government is moving in this direction through significant co-investments with industry to promote research and innovation in the primary sector (Primary Growth Partnership), as well as in high-value manufacturing and services. The biotechnology sector has received strong support from government since the early 2000s and has expanded rapidly to become a major driver of innovation, as indicated by patent applications (Figure 1.14). It has already contributed substantially to raising productivity in agriculture (Kaye Blake et al., 2006) and has significant potential to become a major source of future productivity gains, export market growth and job creation.

Difficulty in accessing capital may be a factor limiting growth of innovative businesses and has likely worsened with increased risk aversion since the onset of the global financial crisis. Furthermore, very few domestic companies rely on equity listing to raise capital, due to the shallow NZ stock market and thin liquidity. The government has established the

Figure 1.14. **Revealed technological advantage in biotechnologies, 1998-2000 and 2008-10**[1]

Index based on patent applications filed under the Patent Co-Operation Treaty



1. The revealed technological advantage index is calculated as the share of country in biotechnology patents relative to the share of country in total patents. Only countries with more than 500 patents in 2007-09 are included in the figure.
2. BRIICS refers to Brazil, Russian Federation, India, Indonesia, China and South Africa.

Source: OECD, *Patent Database*, December 2012.

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New Zealand Venture Investment Fund (NZVIF) as a "fund of funds" to help catalyse the development of early-stage capital markets. NZVIF operates through two co-investment vehicles: *i*) the Venture Capital Fund, established in 2002 to invest NZD 160 million focussing on seed, start-up and early-expansion-stage local firms; and *ii*) the Seed Co-Investment Fund (SCIF), created in 2005 to provide NZD 40 million in matched funding with angel investors to support seed and start-up stage companies. While angel investment has remained strong throughout the financial crisis, the venture capital market shrank significantly, though it is now showing signs of recovery. Given the healthy supply of seed and start-up equity financing, shifting NZVIF's allocation to support more early-expansion stage businesses may help address the financing gap in this area.

Changing the settings of KiwiSaver default providers may also help stimulate domestic equity market development. The six current default funds' terms of appointment require that they adopt a conservative strategy of holding mostly liquid assets and bonds, with little invested in domestic equities. This is because the default funds were originally designed as temporary "parking spots" for new members until they made active investment decisions. However, the majority of KiwiSaver members who had entered a default fund since 2008 were still there in mid-2012 (MBIE, 2012). Changing the default investment strategy to a "life cycle" approach, which maximises retirement income by aligning risk profiles with the member's age, would allow for greater fund allocation towards domestic equity markets; this option is being considered by the government and should be adopted.

Features of the tax system may create uncertainties for potential venture capitalists that impede innovation. For instance, the current lack of a capital gains tax may give rise to ambiguous tax treatment of future asset sales (Lerner et al., 2005): income derived from the sale of assets is not taxable if acquired for the intent of long-term investment but is fully taxable if acquired for the purpose of profiting from resale. Uncertainty over how individual venture capital investments will be classified for tax purposes may be a

significant deterrent for investors. In the absence of a capital gains tax, these tax distinctions should be elucidated and clearly communicated to potential investors.

Compared to other OECD countries, New Zealand's tax treatment of intangible assets is not particularly conducive to attracting capital to innovative companies. For example, as in other OECD countries, patents are treated as depreciable assets rather than expenses that can be deducted in the year costs are incurred. However, most OECD countries provide some tax benefits to patenting activity by allowing accelerated depreciation, but New Zealand is one of the few countries that does not (Warda, 2006). Furthermore, many countries provide tax credits for the R&D expenditures that contributed to the invention, but New Zealand repealed its R&D tax credit in 2009. Finally, unlike other assets in New Zealand, the tax code treats the entire proceeds from a patent sale as taxable income, rather than just the gain. This inconsistent tax treatment may create distortions in investment behaviour, and the undepreciated capital cost should be netted out from the sale proceeds for taxation purposes. These tax settings are currently under government review.

Because intellectual capital is highly mobile, policies such as patent boxes (whereby patent earnings are taxed at a lower rate) and R&D tax credits can have a large influence on where multinational corporations decide to locate investment activities. In this respect, New Zealand's geographical disadvantage is magnified by its lack of favourable tax treatment for R&D and patents. Admittedly, however, it is not clear that engaging in fierce tax competition would attract sufficiently large amounts of capital to a small and remote country to be worth the fiscal cost. Much of New Zealand's low R&D intensity may be explained by its industrial structure and distance from large markets (Crawford et al., 2007). Nevertheless, some tax relief targeted at R&D may help prevent existing activity from moving overseas. Allowing more rapid depreciation of the costs of patenting for tax purposes may also help to "actively encourage more multi-national companies to conduct research in New Zealand", as stated in the government's Business Growth Agenda.

Doubts about how much additional R&D a tax credit could generate, combined with concerns over the fiscal and compliance costs during an economic downturn, led the new government to cancel it after only one year of operation. Nonetheless, public support for business-sector R&D is low by OECD standards and will need to be increased if the government is to achieve its ambitious goal of doubling the level of business expenditures on R&D to over 1% of GDP. To replace the R&D tax credit, the government has introduced Technology Development Grants (TDGs) (Box 1.2) to support technology-intensive firms. The grants provide NZD 60 million in funding per year to support business R&D, roughly 16% of the estimated annual fiscal cost of maintaining the R&D tax credit. In the first year of operation, one third of applications were approved, and the programme had been significantly over-subscribed until the most recent year. Furthermore, some discretionary judgment is required to allocate the funds, which reduces transparency and increases the administrative burden and compliance costs. Compared to a broad-based tax credit, the grant contains public costs through more targeted support, which may facilitate the immediate task of fiscal consolidation. However, because TDGs are accessible only to firms with a history of R&D, it places potentially innovative technology start-ups at a disadvantage. The government is currently reviewing the grant scheme and should redesign it to improve transparency in the approvals process and ensure access to new innovative enterprises. Once fiscal space becomes available in the future, it may be worth considering re-instating a more transparent, broad-based and administratively efficient refundable tax credit, but care must be taken to maintain some policy stability in this area.

Box 1.2. **New Zealand's Technology Development Grants (TDGs)**

Introduced in 2010, TDGs offer support over three years, funding 20% of eligible expenditures of a business's R&D programme, with up to NZD 2.4 million per business per year. To be eligible for funding, firms must be resident in New Zealand, have an R&D intensity of at least 5% of revenue, and revenue of at least NZD 3 million per year over the previous three years.

In addition to eligibility criteria, proposals are assessed against four subjective judgment criteria, according to various weights (in brackets):

- the business must have a successful track record in delivering and exploiting R&D, and meet due-diligence requirements to a high standard, including financial viability and management capabilities (40%);
- the business must have ambition to grow through investment in R&D (15%);
- the R&D programme must align with business growth aspirations (15%); and
- the R&D programme must generate wider benefits to New Zealand (30%).

Improving human capital

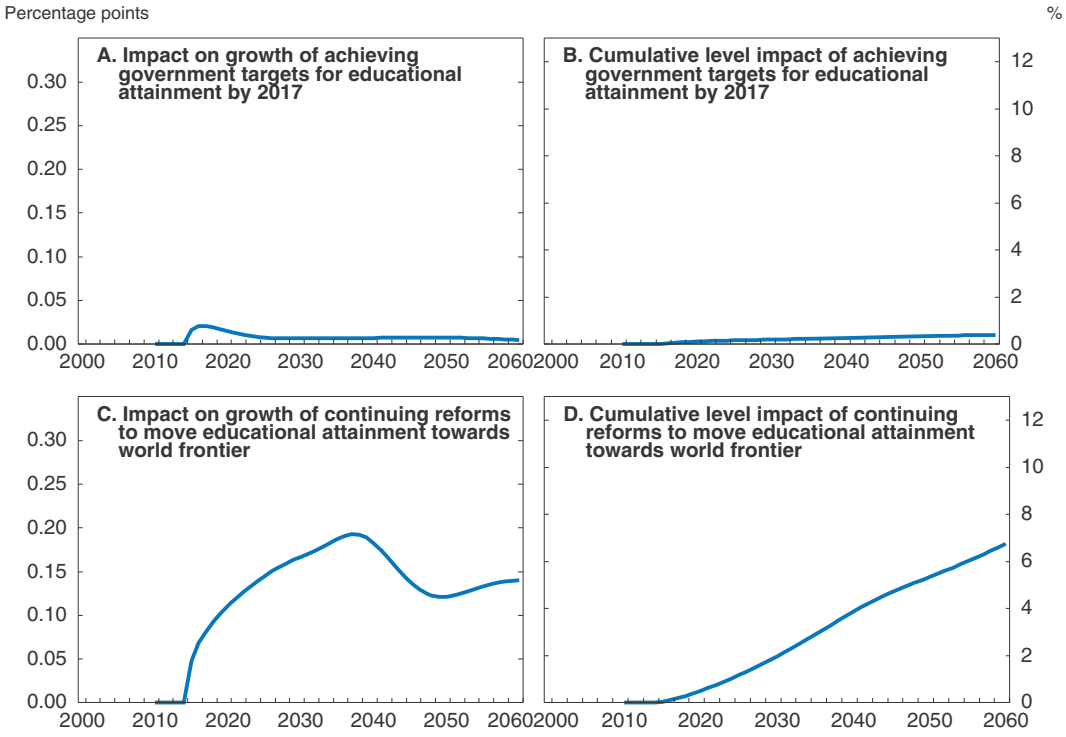
Expanding the supply of skilled labour will be necessary to increase the contribution of knowledge-based activities in the economy and promote sustainable, inclusive growth. The compulsory-school system performs very well on average based on relatively strong PISA scores, and tertiary attainment rates are among the highest in the OECD. However, these statistics mask a very wide distribution of educational achievement among youth (see Chapter 2) as well as low completion rates at the upper-secondary level (OECD, 2012b). While participation in vocational education is exceptionally high, university participation rates are close to the OECD average, with completion rates well below the average (Zuccollo et al., 2013).

As part of the Business Growth Agenda, the government is more clearly signalling the importance of pathways through which young people can gain the qualifications needed to move into employment and develop higher-level skills. It has set two broad educational goals to achieve by 2017: *i)* to raise the proportion of 18 year-olds with a National Certificate of Educational Achievement (NCEA) qualification level 2 (equivalent to a secondary school diploma) from the current 72% to 85%; and *ii)* to increase the proportion of 25-34 year-olds with NCEA level 4 or above (a one-year Polytechnic advanced trade certificate) from 52% currently to 55% (see Chapter 2).

The potential impact on long-term growth of achieving both of these targets can be estimated using the OECD long-term projection model. The model defines the stock of human capital based on the average years of schooling across the working-age population, combined with a simple assumption of diminishing returns to schooling. A crude assumption is made for modelling purposes that achieving NCEA level 2 qualification translates into 12 years of schooling and level 4 into 14 years of school. New Zealand's human capital stock is then constructed by aggregating the years of schooling across age groups, weighted by the population shares. Most recent 2006 census data suggest that the average years of schooling in New Zealand's working-age population is 12.8 years, roughly equivalent to the amount of time spent to achieve NCEA level 2-3 qualifications. According to this data, the cohort with the most years of schooling is the 25-34 age group, at 13.8 years. In the baseline scenario, policies are assumed to remain unchanged, and each cohort keeps the same level of schooling obtained at ages 25-29 for the remainder of their

lives; natural ageing results in an increase from 12.8 to 13.5 average years of schooling for the working-age population by 2060. Meanwhile, in a scenario where the government implements policies to achieve its targets for educational attainment (with no further changes beyond 2017), the difference in years of schooling relative to the baseline is minimal, about 0.07 additional years on average by 2060. As a result, the projected impact on potential output growth is also very small, peaking at 0.02 percentage points in 2017 before diminishing thereafter (Figure 1.15, Panel A). Meanwhile, if it is instead assumed that policy reforms continue to raise the educational attainment of 25-29 year olds beyond 2017 towards the world frontier (Korea), the estimated gains would be more substantial. Lifting the average years of schooling of the working age population by one additional year (relative to the baseline) by 2060 might add as much as 0.15 percentage points to real output growth and up to nearly 7% to the level of GDP over the long run (Panel D).

Figure 1.15. **Projected real GDP impact of educational reforms**



Source: OECD calculations.

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The effect of enhanced skill levels on growth will depend on whether those skills are demanded and sufficiently valued by the domestic labour market. The rewards to investing in higher education may be relatively weak in New Zealand, and the potential reasons are discussed in Chapter 2. Relatively low private returns to higher education are probably related to the economy's poor productivity performance and may explain the large outflows of skilled workers in search of better earnings prospects abroad. Migration flows shape the stock of human capital considerably in New Zealand, with immigrants tending to be more skilled on average than the native-born population (Dumont and Lemaître, 2005). Furthermore, the probability of emigrating appears to increase with the level of educational qualification (Papadopoulos, 2012). The population share of the country's skilled diaspora is among the largest in the OECD, with almost one quarter of tertiary-

educated New Zealanders living abroad, almost 80% of whom live in Australia. In 2008, New Zealanders doing similar jobs in Australia earned on average 19% more in real terms than those remaining at home (Stillman and Velamuri, 2010).

High-skilled emigration undermines the economic and social benefits from the public investment made in education. Furthermore, tertiary graduates who leave the country are not required to repay their student loans as long as they remain overseas, but they do accrue interest on those debts during their absence. In contrast, graduates who remain at home do not pay interest on student loans but must make income-contingent repayments. The growing debts that await overseas graduates may at the margin create disincentives to returning home. The government is currently exploring options to track down overseas student debtors. Since the majority of tertiary-educated emigrants live across the Tasman, it would be worthwhile to collaborate with the Australian tax authorities to enforce the same repayment obligations on NZ student debtors working there as those who remain at home.

The implied loss of human capital via emigration is offset to a great extent by the large inflows of highly skilled migrants, representing a "brain exchange" rather than a "brain drain". Immigrants account for almost one quarter of the country's population, the fifth largest share in the OECD. NZ immigration policy targets high-skill individuals through a points system similar to Australia's and Canada's (Box 1.3), with strong links to the labour market. However, analysis by Stillman and Maré (2009) finds that newly arriving immigrants

Box 1.3. **Immigration policy in New Zealand**

New Zealand first adopted a points system for accepting immigrants under the Immigration Amendment Act 1991, whereby applicants were selected if they attained a set minimum number of points, which were awarded for employability, age, educational qualifications and settlement funds. Beginning in 2002, minimum standards for English-language ability were set to the level required of students entering university. In 2003, the pass mark system was replaced by a process that placed applicants with a certain level of points into a selection pool. A skilled migrant category was introduced, whereby applicants are allocated points based on identified skills shortages in the economy. Applicants that fulfil the requirements for an occupation on the immediate skills-shortage list may be eligible for a temporary work visa, whereas those qualified for an occupation on the long-term skills-shortage list may be considered for both temporary and permanent residence grants (after two years). About 60% of residence places are granted to skilled/business migrants, with the remainder under humanitarian and family-sponsored categories (New Zealand Treasury, 2009b).

The link between temporary and permanent migration is exceptionally strong in New Zealand (Hodgson and Poot, 2010) – the skilled migrant category prioritises the selection of temporary foreign workers either currently employed in the country, with NZ work experience or with job offers, in order to maximise employment outcomes (a so-called two-step migration process). Such onshore skilled migration accounted for 83% of primary applicants for immigration in 2008-09. This contrasts with only 35% in Australia, where the majority of onshore applicants are former international students. In this respect, New Zealand's points system has historically placed a heavier emphasis on potential labour-market integration (especially favouring areas of skills shortage) and required a higher minimum standard of English than Australia. Meanwhile, New Zealand weights less heavily the age of its migrants, with points awarded to applicants aged 20-55 (more for the youngest), compared to 18-44 in Australia (recently extended to 49).

experienced employment rates on average 20 percentage points below those of comparable native-born individuals and, when employed, tended to earn 10-15% lower hourly wages. These outcomes may reflect lower average English literacy and numeracy skills of immigrant degree holders compared to those born in the country (Smyth and Lane, 2009). However, this employment shortfall tends to disappear after 10-15 years, while the wage gap narrows considerably and even vanishes for university-qualified immigrants. This pattern of convergence appears to compare favourably to that of other OECD countries, and more generally New Zealand fares better than most in integrating its immigrants (OECD, 2012d). Meanwhile, immigrants who arrive before the age of 18 experience labour-market outcomes no different from those of comparable native New Zealanders (Stillman and Maré, 2009).

While immigration can help offset the economic impact of population ageing by targeting younger people, gains in its contribution to growth may be limited in the future. Attracting foreign talent may become more difficult as more and more countries, particularly in Asia, shift towards higher value, knowledge-based activities. Moreover, immigrants often bring with them older family members. Nonetheless, the ageing workforce and high rates of emigration suggest it would be worthwhile to continue efforts to attract high-skilled immigrants to maintain a competitive and dynamic economy.

Skills for innovation

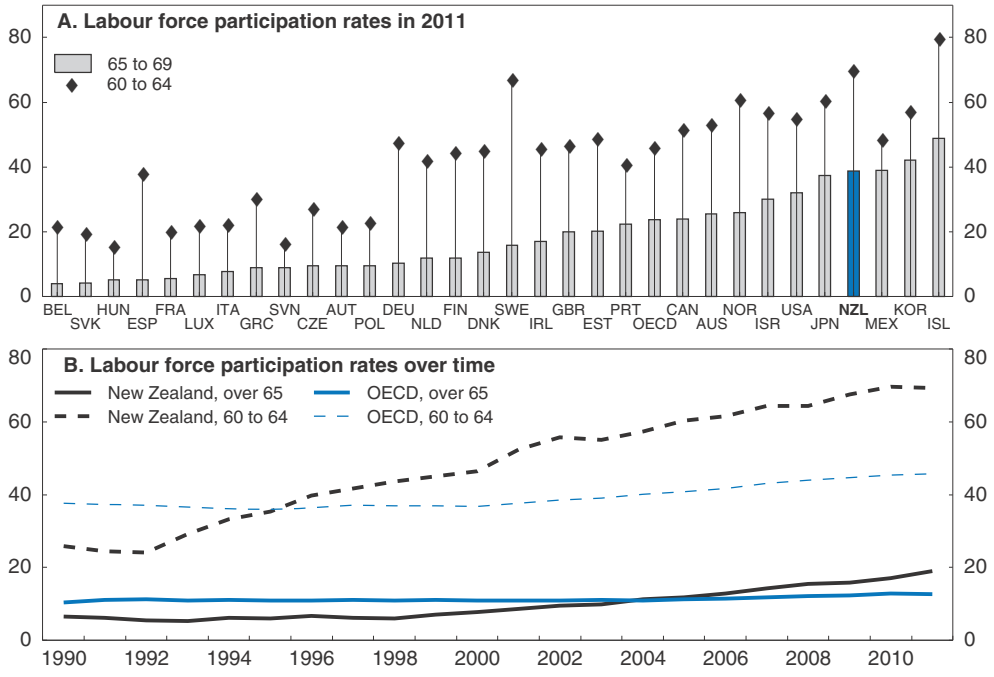
Skills play an essential role in driving innovation, especially in the areas of science, technology, engineering and mathematics (STEM). New Zealand produces a comparatively low proportion of engineers at the tertiary level relative to other subjects, although it graduates a relatively high share in the sciences. Similarly, at the secondary level, the percentage of 15 year-olds aspiring to engineering careers is about half the OECD average (OECD, 2012b). To address concerns about a long-term shortage of engineering skills in the country (IPENZ, 2010), the government announced it will provide NZD 42 million over four years to increase tuition subsidy rates for engineering students and raise the number of engineering graduates by 500 per year by 2017. The extent of the current skills shortage in engineering is not clear, however. A government analysis reveals that tertiary education enrolments and completions in engineering increased at a faster pace on average than all other fields between 2001 and 2007 (Department of Labour, 2008). Moreover, salaries for engineers grew at the same pace as the rest of the labour market in 2005-07, indicating little evidence of demand pressures. However, it may be that firms have been unwilling to pay the higher wages needed to fill their skills shortages (see Chapter 2). Although the planned funding increases may encourage enrolment in engineering, they do not guarantee that graduates will fill industry needs or even remain in the country. NZ engineering salaries are very low by international standards, comparable to those in emerging market economies (Department of Labour, 2008).

Furthermore, employers have expressed dissatisfaction with the practical experience possessed by the stock of engineering graduates in the country (Department of Labour, 2008). To encourage the development of engineering skills the government should consider promoting stronger academic-industry linkages and practical training. This could be done through support for student internship opportunities and improved career placement services within tertiary engineering faculties. Such efforts may reap more valuable benefits especially if concentrated in the engineering clusters, such as those in Dunedin and Taranaki.

Countering the effects of ageing on growth

Across most OECD countries, population ageing is expected to significantly affect long-term growth, fiscal sustainability and saving-investment balances. A slower expansion of the working-age population is likely to depress future growth but may be countered by measures to increase the participation rates of older workers. OECD analysis suggests that older workers' participation depends significantly on the legal age for receiving full retirement pensions, the implicit tax on continued work and the health status of older workers (Johansson et al., 2013). In New Zealand, seniors' employment rates are higher than in most other OECD countries (Figure 1.16, Panel A). Moreover, their participation rates have been increasing at a much faster pace than the OECD average since the early 1990s (Panel B). Improving health outcomes can explain part of this increase, given the extension in life expectancy of 4-5 years over this period. In addition, pensioners' participation rates tend to increase with educational qualifications (Khwaja and Boddington, 2009). However, financial incentives provided by changes in retirement-income policies have likely played a much more prominent role (Gorman et al., 2012). These changes include the abolition of the mandatory retirement age in 1999 and a phased increase in the age of public-pension eligibility from 60 to 65 years between 1992 and 2001. During this period, participation rates of the 60-64 age group more than doubled (and have continued to rise), and a notable upward trend shift can be seen for the 65+ group as from 1998 (Panel B).

Figure 1.16. **Labour force participation rates of older workers**



Source: OECD, *Labour Force Statistics Database*.

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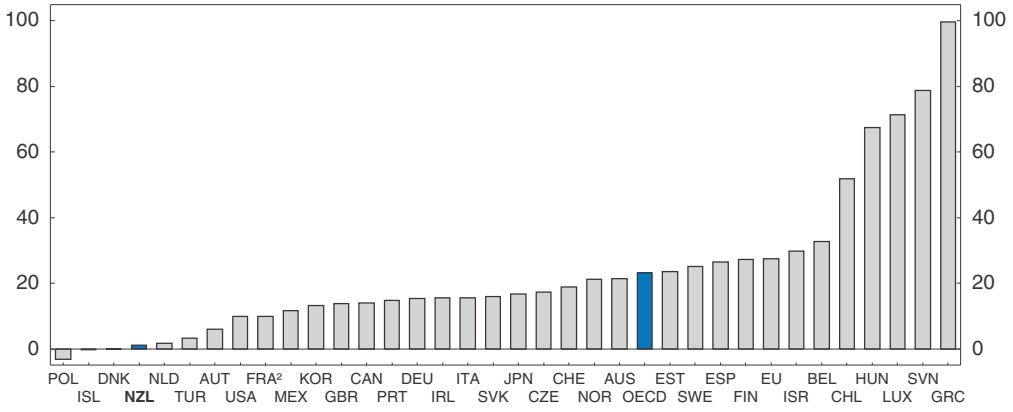
The high participation rates of older New Zealanders probably also reflect features of NZ Superannuation (NZS), the universal public pension system, which tends to discourage early retirement by providing very limited access before the age of 65 (New Zealand

Treasury, 2009a). NZS serves as the primary source of retirement income for many, due to a tradition of low private saving and household preferences for holding real rather than financial assets (Hurnard, 2005), although this may change with the recent introduction of alternative superannuation schemes, such as KiwiSaver. While public income support may be available to those who retire before age 65 in the form of unemployment and disability benefits, it is subject to qualifying conditions and provided at a lower rate than NZS. The lack of early retirement options has tended to create a strong link between the official age of pension eligibility and the age at which most residents choose to retire.

Because NZS pays a flat rate to all who reach age 65 regardless of whether they remain employed, the implicit tax on continued work at older ages is one of the lowest in the OECD (Figure 1.17). This feature also implies that incentives to retire at the pensionable age depend heavily on pre-retirement earnings: retiring at 65 is financially attractive for those with low earnings who therefore face minor opportunity costs of stopping work. Empirical analysis suggests that being eligible for NZS reduces male labour force participation rates by 21 percentage points; female participation rates drop by 7 percentage points at the age of eligibility and by 11 percentage points in the preceding few years (Hurnard, 2005). Meanwhile, those with higher income face lower incentives to retire at the pensionable age, but working part time may become more attractive. Indeed, most recent (2006) census data indicate that 52% of employed New Zealanders over the age of 65 were working part time.

Figure 1.17. **Implicit tax on continued work: old-age pensions**[1]

2009, percentage of average worker earnings



1. Implicit tax on continued work in regular old-age pension system for 60 year-olds.
2. For France, year 2010.

Source: OECD, *Economic Policy Reforms 2012: Going for Growth*, Figure 3.5B.

StatLink http://dx.doi.org/10.1787/888932833903

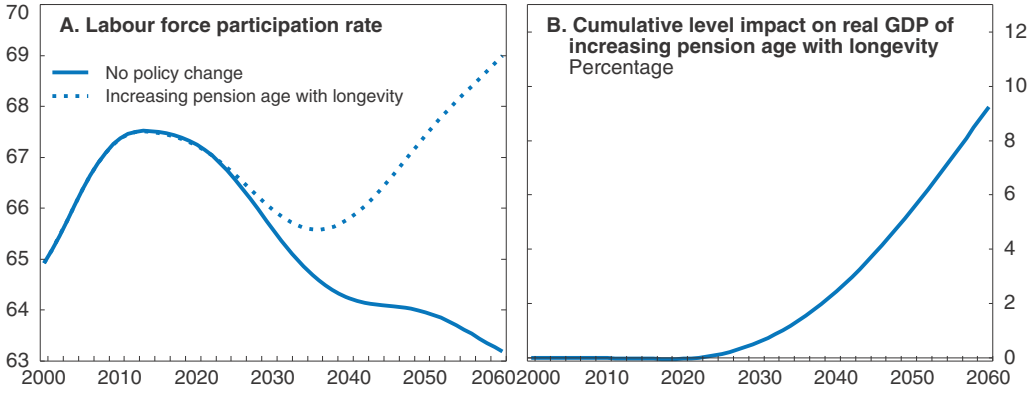
Impact of increasing the pensionable age

These considerations suggest that raising the age of pension eligibility is likely to increase the participation rates of older workers substantially. Ideally, this would be done by linking the age of eligibility to life expectancy. If policy remains unchanged, OECD model projections suggest that demographic ageing would push the aggregate labour force participation rate down from 68% in 2012 to about 63% in 2060, assuming older workers continue to work in line with historical behaviour. In contrast, if the pensionable age were to increase in line with longevity, so that the number of years individuals spend working (i.e. their "active lives") lengthens proportionally with their expected lifetimes, the projected

total labour force participation rate would instead increase to almost 70% by 2060 (Figure 1.18). In this scenario, the participation rates of those older than 65 would more than double from 17% in 2012 to over 40% in 2060. The average life expectancy is projected to rise from 80 years in 2012 to 86 years in 2060, and the average time spent working would rise by 2-3 years. Such a change would increase projected average annual output growth in the long run by 0.4 percentage point and the level of GDP by almost 10%.

Figure 1.18. **Projected impact of raising the pensionable age in line with life expectancy**

Percentage



Source: OECD calculations.

StatLink http://dx.doi.org/10.1787/888932833922

It is likely that these projected impacts of raising the pensionable age may be overoptimistic, in part because they assume "healthy ageing", i.e. the gains to longevity are all treated as years in good health. Additionally, because those who already continue to work beyond age 65 tend to be the higher skilled and more productive workers, raising the pensionable age may serve to keep some less productive workers in the labour force for longer, while shifting others onto unemployment or disability benefits.

Correcting large macroeconomic imbalances that may harm long-term growth

New Zealand has long grappled with the persistence of wide external deficits, associated with low domestic saving, a high cost of capital and an overvalued exchange rate. Net foreign liabilities have trended higher for several decades and were estimated to have reached 95% of GDP at the peak of the housing boom in 2006. They have since fallen back to about 70% of GDP, but much of this decline may reflect cyclical factors and the transitory effects of reinsurance claims following the Canterbury earthquake. Large imbalances may cause a prolonged and marked drag on economic activity if they undermine confidence in financial prospects and dampen business investment (André, 2011). They may also distort the overall structure of the economy, with possible adverse consequences for long-term growth (Lane, 2011). For example, large net capital inflows arising from strong domestic demand pressures have probably contributed to a real exchange-rate appreciation and squeezed the domestic tradables sector. A shrinking trade sector may have long-term effects on growth, if financial constraints make capacity losses in export sectors difficult to reverse (Blanchard, 2007). Furthermore, "learning-by-doing"

effects may cause a period of lower exporting activity to permanently harm productivity levels in the traded sector (Lane, 2011).

Analysis by Cecchetti et al. (2011) based on a panel of 18 OECD countries suggests that very high levels (above 85% of GDP) of public and private non-financial debt are damaging to growth, with larger effects from government debt. In addition, high levels of private debt create risks for public-sector debt and vice versa. When private borrowing has public guarantees, default increases public debt – whereas the government's ability to sustain a given debt level depends on its ability to raise revenue, which may shrink if the private sector is heavily indebted. These results support a prudent strategy of aiming for debt levels well below these estimated thresholds to provide a buffer for shocks that push debt to damaging levels.

In New Zealand's case, low domestic saving relative to desired investment have helped keep real long-term interest rates higher than in most other OECD countries since the 1990s, pushing up the cost of capital and restraining business investment. The lack of domestic savings has resulted in a dependence on foreign capital and borrowing from abroad. Some outside observers have alternatively suggested that relatively high real interest rates may reflect a risk premium associated with the country's large stock of net foreign debt and the expectation of future real exchange-rate depreciation (Lane, 2011; Burnside, 2011). Indeed, the size of a country's net foreign assets is found to significantly affect real interest rate differentials (Box 1.4), although this does not necessarily reflect overseas investors demanding a risk premium to compensate for higher risk associated with larger external debt burdens. A significant portion of New Zealand's foreign borrowing is between parent and subsidiary banks, which may be less risky. Furthermore, as argued by Labuschagne and Vowles (2010), such a risk premium would probably lead to higher domestic saving and a lower exchange rate over time, which has not been the case in New Zealand.

Box 1.4. **Estimating the relationship between net foreign assets and real interest rates**

To estimate the relationship between net external debt levels and interest rates, a panel co-integration approach is used based on the approach of Lane and Milesi-Ferretti (2002) and Rose (2010):

$$\Delta IRLR_{it} = \beta' \Delta Z_{it} + \eta \Delta IRLR_{it-1} - \lambda (IRLR_{it-1} - \gamma' Z_{it-1}) + \varepsilon_{i,t}, \ldots Z_{it} = [NFA_{it}, PDEBT_{it}, REER_{it}]$$

where for each country *i*, the dependent variable *IRLR* is the interest rate on 10-year government bonds (deflated by lagged changes in the GDP deflator). Estimations were also performed replacing the dependent variable with the long-term real interest rate differential *vis-à-vis* the United States (*IRLRDIFF*). Co-integrating relationships were tested between *IRLRL* and the various variables in the vector *Z*, including the level of net foreign assets as a share of GDP (*NFA* taken from the *External Wealth of Nations II* dataset of Lane and Milesi-Ferretti, 2007), gross public debt as a share of GDP (*PDEBT*) and measures of the real exchange rate, both in effective terms (*REER*) as well as in dollar terms (*RER*). The one-period-ahead change in the real exchange rate is used to proxy future expectations. Variables for short-term real interest rates (*IRSR*) and their differential versus the United States (*IRSRDIFF*) are also included. Panel regressions are estimated on annual data for a sample of 25 OECD countries over the 1970-2007 period, to exclude the extraordinary effects of the financial crisis. Time period fixed effects are included to account for the influence of a time-varying world real interest rate.

Box 1.4. **Estimating the relationship between net foreign assets and real interest rates** *(cont.)*

The results (Table 1.3) support a significant and negative long-run relationship between *NFA* and interest rate levels. The estimated impact is fairly small: a 10 percentage point increase in net foreign debt as a share of GDP would be associated with a 13 basis point increase in long-term real interest rates, with similar results when using *IRLRDIFF*. These estimates are of similar magnitude found in other studies, such as Rose (2010). Non-linear effects on interest rates were tested for high levels of government debt, in particular for values of *PDEBT* above 75% and above 125%, based on the findings of Égert (2010), as well as for high absolute levels of *NFA*. However, such effects were found to be statistically insignificant. Further technical details can be found in Cheung (2013).

Table 1.3. **Results from panel regressions on real long-term interest rates**[1]

Dependent variable	[1]	[2]
	$\Delta IRLR$	$\Delta IRLRDIFF$
Constant	1.00***	-0.111**
	(0.18)	(0.05)
Long-run: NFA_{t-1}	-0.013***	-0.014***
	(0.00)	(0.00)
ECM adjustment parameter[2]	-0.30***	-0.257***
	(0.05)	(0.04)
$\Delta REER_{t+1}$	-0.001	
	(0.01)	
ΔRER_{t+1}		0.009
		(0.01)
$\Delta PDEBT_t$	0.029**	0.010
	(0.01)	(0.01)
$\Delta IRLR_{t-1}$	0.175***	
	(0.03)	
$\Delta IRSR_t$	0.256***	
	(0.02)	
$\Delta IRLRDIFF_{t-1}$		0.163**
		(0.07)
$\Delta IRSRDIFF_{t-1}$		0.181***
		(0.02)
Adjusted-R^2	0.438	0.245
S.E.E.	1.102	1.301
Number of obs.	616	613
Fixed time effects	Yes	No

1. Robust standard errors in parentheses. *, **, and *** signify statistical significance at 10%, 5%, and 1%, respectively.
2. Ericsson and Mackinnon (2002) critical values.

Source: OECD calculations.

The impact of a higher public saving rate over the long term

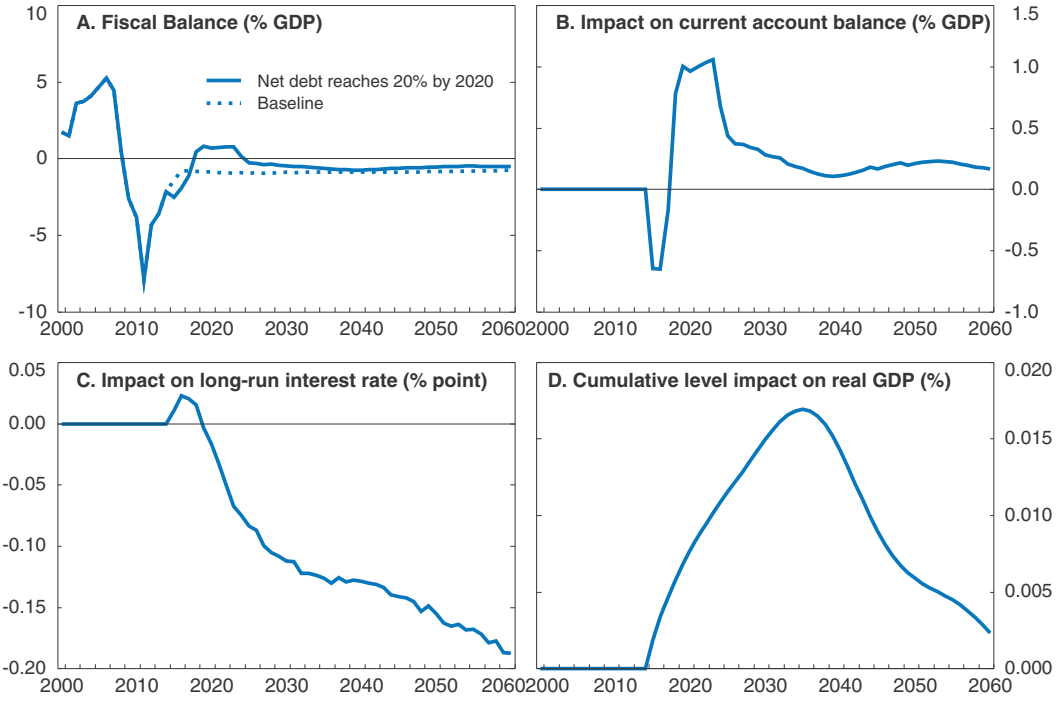
As recommended in the 2011 *Economic Survey,* reducing external vulnerabilities will require not only structural reforms to encourage private saving, but fiscal policies that raise the level of public saving over the long term and provide a buffer against macroeconomic shocks. The NZ Treasury is currently examining different policy options to move to a sustainable debt path in preparation for its next long-term fiscal statement to be published in mid-2013. One potential "sustainable debt scenario" is explored in Bell (2012), which would stabilise "core Crown" net debt (which includes only central government liabilities

and excludes NZ Superannuation Fund assets) at 20% of GDP by 2025 and onwards. This scenario would require small general government deficits of on average 0.4% over 2015-60. Assuming net capital expenditures evolve in line with their historical average and local governments maintain balanced budgets, this would translate to central government operating surpluses of on average of 1.9% of GDP for the decade from 2014-15, followed by surpluses averaging 1.3% of GDP to 2060.

In the OECD model, changes in fiscal policy affect long-term growth through an interest rate risk premium that is imposed when government debt levels exceed 75% of GDP (Box 1.1). Fortunately, New Zealand's public debt levels are not high enough to impinge on future growth prospects. To explore the potential impact that the above "sustainable debt" scenario may have on long-term growth, a simplifying assumption is made for the sake of modelling purposes that fiscal policy may also affect growth through its impact on external imbalances, which markets penalise via an additional interest-rate risk premium. The OECD model's equation for long-term interest rates in New Zealand is thus adjusted to incorporate a risk premium that varies with changes in net foreign assets, according to the estimated relationship described in Box 1.4.

The baseline (Table 1.1) already assumes a benign scenario in which fiscal policy adjusts to stabilise the gross debt ratio over the long term at about 56% of GDP and that any ageing-related pressures on health spending are offset through budgetary reforms (Box 1.1). The "sustainable debt scenario" of Bell (2012) implies only slightly higher fiscal balances in the long run than in the baseline scenario (Figure 1.19, Panel A), which results

Figure 1.19. **Projected impact of policies to reduce core Crown net debt to 20% of GDP by 2020**



Source: OECD calculations.

StatLink http://dx.doi.org/10.1787/888932833941

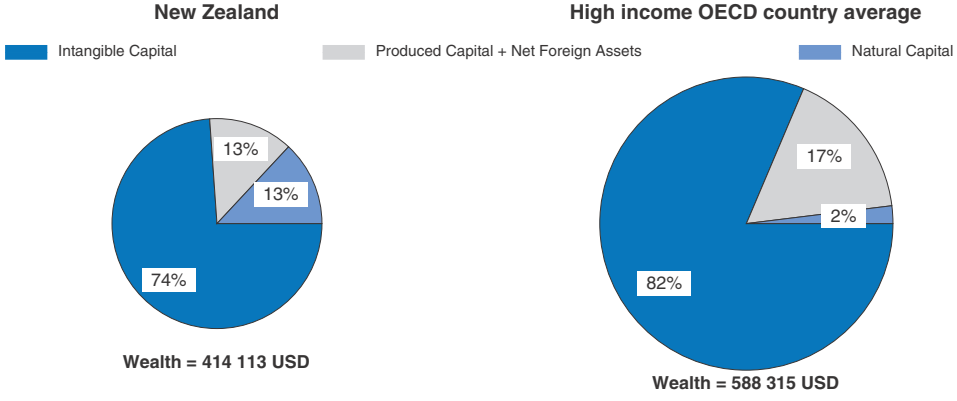
in a gross debt ratio of 49% of GDP by 2060. About 40% of the increase in public saving is assumed to be offset by lower private saving through Ricardian effects. The positive effect on national saving rates is largest over the first decade, reducing the current account deficit by about 1 percentage point of GDP in 2020 relative to the baseline, but by only 0.2 point of GDP by 2060 (Panel B). The impact on long-term interest rates is derived by assuming that the level of net foreign assets changes by the amount of the current account each year (with no change in valuation effects), and the risk premium evolves accordingly. The model simulations suggest that this "sustainable debt scenario" would not change potential output much relative to the baseline: by 2060, real long-term interest rates are lower by about 0.2 percentage point (Panel C), and the impact on real output is very small (Panel D). However, the reduction in external vulnerabilities is noteworthy, with net foreign debt almost 12 percentage points of GDP lower (almost one standard deviation) by 2060.

Managing natural capital and climate change

The sustainability of economic growth depends on the importance of non-renewable natural resource extraction for overall income generation and the rate at which environmental capital is permanently degraded in the process. Along with labour, physical and human capital, natural assets such as minerals, fossil fuels, land and water are used and depleted in the production process. Natural capital plays a particularly important role in New Zealand's economy relative to its peers (Figure 1.20), and protecting this base is discussed in the in-depth chapter on green growth of the 2011 *Survey*. Furthermore, economic activity produces negative externalities in the form of pollution and climate change that can worsen productivity, biodiversity, agricultural yields, human health and overall well-being. Devoting resources to reducing these externalities can enhance long-term production possibilities and living standards, but at a cost to market output in the short term. Traditional measures of productivity growth that do not take environmental damage into account may therefore overestimate a country's long-term growth potential.

Figure 1.20. **Total wealth per capita**

2005



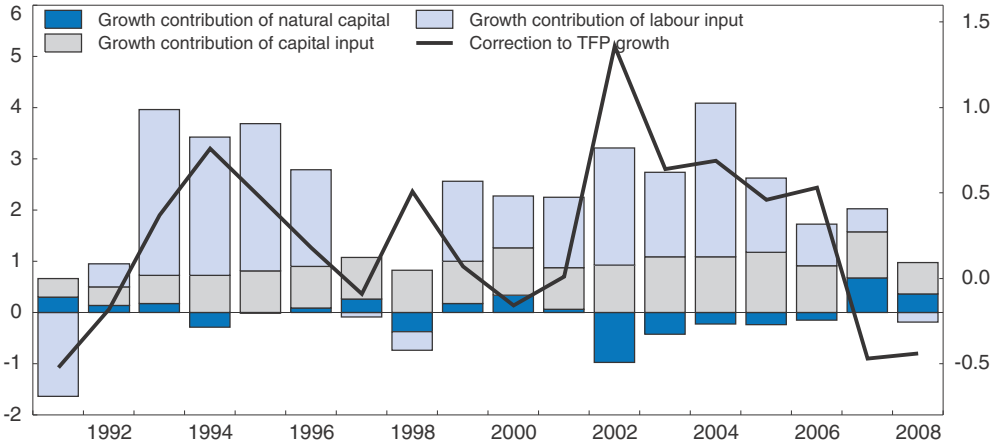
Source: World Bank (2011), *The Changing Wealth of Nations Database*.

StatLink http://dx.doi.org/10.1787/888932833960

Recent OECD work addresses this issue by constructing "green" productivity measures that adjust the productivity measurement framework for both the use of natural resources in production as well as undesired outputs (Brandt et al., 2013). The latter include

greenhouse gas (GHG) emissions, air pollution and nitrogen balances (which indicate the amount of nitrogen that is released into the environment as a result of excessive fertiliser use in agriculture). This analysis shows that when the natural resource inputs of land, forestry and sub-soil assets (such as oil, gas, coal and minerals) are incorporated into the production function, estimated annual MFP growth for New Zealand is about 0.2 percentage points higher on average over the 1985-2008 period. The positive adjustment appears to reflect increasingly efficient use of land, as agricultural output has grown rapidly, while the use of land as an input factor has hardly increased over the investigated period. However, a sharp negative correction to MFP growth occurs in 2007-08 due to faster growth in oil and gas extraction in those years (Figure 1.21) in response to higher energy prices.

Figure 1.21. **Productivity growth adjusted for natural capital inputs and bad outputs**



Source: Brandtet al. (2013), "A Green Productivity Measure",*OECD Economics Department Working Papers*, forthcoming.
StatLink http://dx.doi.org/10.1787/888932833979

Meanwhile, GHG emissions rose at only a slightly slower pace than output over the 1990-2008 period, resulting in very little additional adjustment to effective MFP growth. These results suggest that the efficiency with which natural capital is used in New Zealand's production has been stable or even increasing over time. Yet, that does not imply that income generation has caused no damage to the environment. On the contrary, further progress is needed. Growth in GHG emissions was the third highest in the sample of 22 OECD countries, as about half of these countries saw their emissions decline in this period. Furthermore, nitrogen balances increased the most among OECD countries between 1990 and 2008, pointing to growing pressures on water quality.

Sharing the benefits of resource extraction

Various studies have revealed vast potential undiscovered mineral reserves in New Zealand, most notably in coal, lignite, ironsand, gold, phosphate and petroleum (Barker, 2008; Christie and Braithwaite, 1999). The extraction of publicly owned, non-renewable assets such as oil, gas and coal represents a temporary economic gain that should be shared with future generations via an appropriate royalty regime. The NZ government collects royalties for petroleum and minerals under the Crown Minerals Act Regime 1991 (Box 1.5),

which is currently being reviewed to ensure royalty rates provide a fair return that properly balances economic, environmental and safety objectives. Combined with the general corporate income tax rate of 28%, the government receives about 42% of profits generated from oil production (Ministry of Economic Development, 2012). This government take appears low by international standards; a review conducted for the State of Israel estimated that the average take among OECD countries with appreciable oil and gas exploration activities was 61-65% (Hemmings, 2011). These settings made the NZ tax regime the seventh most attractive jurisdiction for oil and gas exploration and production in 2011, according to the Fraser Institute's *Global Petroleum Survey* (MED, 2012).

Box 1.5. **The royalty and tax regime for fossil fuels**

The royalty regime for publicly owned minerals and petroleum is specified in the Crown Minerals Act Regime 1991. The 2005 Minerals Programme for Petroleum established royalty rates for exploration and mining permit holders as:

- 5% *ad valorem* royalty (AVR) on net revenues from petroleum sales (net of transport or storage costs); or
- 20% accounting profits royalty (APR) from petroleum production revenues net of costs including production and capital costs as well as indirect and decommissioning costs.

Companies with exploration permits are liable to pay only the AVR, whereas those with mining permits and net sales above NZD 1 million must pay the higher of either the AVR or APR in any given period. In 2005, a tax exemption was introduced for non-resident companies engaged in exploratory or development activities on offshore fields. This exemption will remain in effect until 2014 and was intended to offset distortionary effects of the "183-day rule", whereby under some double-tax agreements, non-resident rig or ship operators could be taxed only if they stayed in New Zealand longer than 183 days. This rule created incentives for non-resident operators to leave the country prematurely to avoid the tax liability.

Specific royalty rates are also stipulated for 19 low value-to-weight minerals such as coal, clay, peat and pumice. In addition, gas discoveries made prior to 1986 are subject to the Energy and Resources Levy (ERL) of NZD 0.45 per GJ produced. The ERL is also payable on coal discoveries made after 1977 at a rate of NZD 1.50 per tonne for South Island lignite and NZD 2 per tonne otherwise.

A government review of the petroleum royalty regime concluded that the current system remains appropriate, given the small size of the industry, high exploration risks and its frontier location (MED, 2012). Revenues from royalties are meagre, accounting for only 0.7% of total government revenues at peak energy prices in 2008. Nonetheless, there may be efficiency gains from removing the revenue-based AVR (Box 1.5) or moving completely to a rent-based system. Revenue-based royalties are less efficient and regressive because they do not take into account the costs of exploration and may thus discourage investments in new or marginal fields. One approach adopted by countries like Australia and Israel applies a rent tax (40% in the case of Australia) only above a certain threshold rate of return, which has the appeal of better capturing the "pure rent" in excess of profits generated from standard levels of risk, which are taxed at the lower corporate tax rate (OECD, 2011d). However, the NZ government review found that unless prices and discovery increase significantly, moving to a rent tax would probably reduce the government take and could impose costs in terms of

administrative complexity. Even so, removing the revenue-based AVR in favour of a pure profit-based royalty system would improve efficiency. The government's concerns that this would eliminate a source of "guaranteed return" should hold little weight: these receipts have never been stable, being driven mainly by volatile energy prices. Moreover, any further expansion of non-renewable resource extraction should be accompanied by clear communication of how royalty revenues will be managed and used. To ensure they provide a long-term benefit to society, resulting proceeds should be used to pay down debt or saved in a sovereign wealth fund, from which only a small share would be withdrawn each year to finance current expenditure needs.

Through the 2009 Petroleum Action Plan, the NZ government explicitly positioned itself as a pro-active partner in expanding petroleum resource development. To encourage oil and gas exploration, it provides a number of tax concessions for expenditures on prospecting and exploration by allowing these to be deducted in the year they are incurred, rather than over the economic lifetime of the well. Once commercial viability is established, these items are clawed back and then deducted over the life of the well. Since 2005, the government has also allowed a tax exemption on income earned from the drilling of both exploratory and development wells offshore by non-resident companies (Box 1.5). These allowances may be justified to the extent that exploration activities generate knowledge spillovers (comparable to R&D) that businesses cannot fully appropriate, leading to under-investment in the absence of government support (Mintz and Chen, 2012). Since most of New Zealand's oil is exported, there is potential for such tax provisions to boost export growth. However, the tax benefits create an unwarranted preference for investments in fossil fuel production relative to more sustainable sources of growth. Thus, they are counterproductive to New Zealand's efforts to combat global climate change and should be removed.

Managing water resources

A growing policy concern in recent years is deteriorating water quality and regional shortages related to the intensification of pastoral farming activity and inefficient allocation among competing uses. As described in Bibbee (2011), a key problem has been the lack of national measurement and standards for water use and quality. In 2009, the Land and Water Forum (which brings together a broad range of stakeholders) produced a series of recommendations and reports around the management of New Zealand's freshwater resources. The government then launched a package of initiatives known as "Fresh Start for Fresh Water", aligning with the Forum's advice. This includes the 2011 National Policy Statement, requiring local governments to set objectives and limits for water quality and use and devise plans to maximise the efficient allocation of fresh water. This new regulatory regime will have profound implications for all water-intensive land users, including the dairy industry. Financial assistance has also been provided to restore contaminated freshwater bodies and to help develop irrigation infrastructure systems. To enable farmers to monitor their activities' effects on waterways, free access is available to a widely-used computer-based nutrient-management tool developed and funded in part by the government. In March 2013, it released a paper (MfE, 2013) proposing reforms to freshwater management that build on the Land and Water Forum's recommendations. Initiatives that are to be implemented immediately include establishing a National Objectives Framework that sets objectives for ecosystem health and human contact and requires councils to better account for local water use and sources of contaminants.

A significant amount of research is underway into the development of technologies such as nitrification inhibitors, which slow the release of nitrous oxide – a potent greenhouse gas (GHG) arising from fertiliser use or livestock urine – in soil. However, the use of nitrification inhibitors on less than 5% of dairy land led to traces of dicyandiamide (DCD) being detected in NZ dairy products. Despite posing no human food safety risk, the resulting media interest highlights a key hurdle the agriculture sector faces to "greening" its growth. Concerns over the presence of DCD in milk arise from the lack of international standards on acceptable levels in food from its use on pasture land.

The highly successful cap-and-trade system for nitrogen discharge allowances at Lake Taupo may serve as a model for other regions to design efficient mechanisms to achieve water-quality targets where conditions are appropriate. However, such schemes involve substantial upfront costs and leverage the long-run incentives provided by the NZ Emissions Trading System (ETS) (Bibbee, 2011), underlining the importance for the government to stand firm on its commitment to continue the scheme.

Strengthening climate protection

The NZ ETS has been the main instrument for charging GHG emitters for the environmental costs of their activities since its introduction in 2008. While a commendable step forward, ETS price signals remain weak because of temporary provisions, including a price cap on emission units and free permit allocations to vulnerable sectors. Recently passed legislation enables the government to begin capping and auctioning domestic allocations, which would help strengthen price signals. However, New Zealand's ability to

Figure 1.22. **Fuel taxes**

2012 Q4[1]

1. Or latest available year.
2. Unleaded premium 95 RON; taxes comprise both excises and VAT.

Source: OECD, *Energy Database* and OECD, *EEA Database*.

StatLink http://dx.doi.org/10.1787/888932833998

reduce emissions intensity is limited by its relatively high proportion of agricultural methane and nitrous oxide emissions (Bibbee, 2011). Farming has been left out of the ETS pending the development of viable abatement technologies. Following the sharp increase in global dairy prices, the rapid expansion of the dairy sector over the 2000s and the associated fertiliser use helped drive nitrous oxide emissions to about 25% above 1990 levels by 2010. Meanwhile, total methane emissions increased only 4% between 1990 and 2010, placing New Zealand as a world leader in cutting methane emissions per dairy cow. This gives the country a strong comparative advantage in developing cost-effective technologies to reduce agricultural emissions. The government is investing substantially in R&D in this area through the Primary Growth Partnership initiative, Change Research grants and through its active role in the Global Research Alliance on Agricultural Greenhouse Gases.

Meanwhile, the main source of growth in GHG emissions since 1990 has been the energy sector, reflecting to a large extent rising motor vehicle use and an old car fleet (Bibbee, 2011). Although the government has implemented regulations to encourage fleet renewal, prices for automotive fuels and tax rates on gasoline and diesel are very low by international standards (Figure 1.22). The government began a series of petrol tax hikes in July 2012 that will amount to NZD 0.15 per litre (USD 0.125) over three years, mainly to fund infrastructure, but tax rates will remain lower than in most other OECD countries. More generally, the revenues collected from environmentally-related taxes are also relatively low, both as a share of GDP and of total government revenues. However, there are preliminary signs that the NZ ETS has influenced diesel and petrol prices somewhat and provoked a reduction in deforestation (Covec, 2011).

Box 1.6. **Policy recommendations to support sustainable long term growth**

Boosting international linkages

- To promote a high-performance ICT infrastructure, clarify the competition policy framework for the broadband market, and adjust regulations to ensure consistent pricing strategies of copper and fibre networks.
- Review air service agreements to ensure capacity limits are not restricting trade growth, especially with Asian countries where limits have been reached.
- Pass the Commerce (Cartels and Other Matters) Amendment Bill to strengthen competition in international transport by eliminating ratemaking agreements exemptions from the Commerce Act.
- Improve the transparency of the FDI screening regime.

Strengthening innovation and human capital contribution

- To address equity financing gaps, shift the allocation of the NZ Venture Investment Fund to provide greater support for early-expansion stage firms. Clarify the tax treatment of venture capital investments. To encourage equity market development, change the investment strategy of KiwiSaver default funds to a life-cycle approach.
- To improve the conditions for intangible asset investments, adjust tax treatment of patent sales to be consistent with that of other assets. Consider allowing accelerated depreciation of patent assets. Redesign the Technology Development Grants to simplify the approval criteria and ensure access to small, innovative start-ups, and continue to monitor its effectiveness.

Box 1.6. **Policy recommendations to support sustainable long term growth** *(cont.)*

- Consider boosting practical training components within engineering degrees through support for student internship opportunities, especially with tertiary education institutions located near engineering clusters.
- Collaborate with Australian tax authorities to enforce the same repayment obligations on NZ student debt-holders working there as those who remain at home.

Reducing macroeconomic imbalances and the effects of ageing

- Link the age of pension eligibility with life expectancy to encourage older workers' labour force participation.
- To mitigate external vulnerabilities and ageing-related cost pressures, raise public saving by permanently targeting a low net public debt ratio.

Managing natural capital and climate change

- Remove the preferential tax treatment for petroleum exploration expenditures and the income tax exemption on offshore oil and gas activities for non-resident companies. For the petroleum sector, eliminate the revenue-based royalties and move to a pure profit-based regime; if significant discoveries are made, switch to a rent-based system. To ensure that proceeds are shared with future generations, clearly designate them for debt repayment or, if significant discoveries are made, for sovereign wealth fund contributions.
- Strengthen price signals within the ETS by phasing out transition provisions. In the meantime cap and auction domestic allocations.
- Continue to encourage the development of market-based mechanisms where possible to manage the supply and quality of fresh water.

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Chapter 2

Improving school-to-work transitions

The NZ labour market is among the most flexible in the OECD, and outcomes for its young people have been among the best. However, labour-market opportunities are heavily determined by initial education, where New Zealand's system is also successful and innovative in many ways. Average PISA results are among the OECD's highest, but the dispersion of performance is also high, indicating a sizable group of underachievers. Those in disadvantaged groups tend to have poor scholastic outcomes. These initial educational handicaps show up in higher drop-out rates and youth joblessness, greatly limiting these youths' future life chances. Indeed, intergenerational persistence in educational and employment outcomes appears very high. From both a social and economic point of view, it will be essential to develop more fully the human capital of the fast growing demographic group of ethnic minorities. Better teaching quality is needed, with more attention devoted to diversity of student needs and learning approaches to keep children in school. A related problem is the apparently large divergence between the nature of skills supplied by the education sector and the skills demanded by employers. A greater role for youth apprenticeships could help to raise skill levels while aligning them better to the economy's needs. All this has an important bearing on the government's ambition to secure strong and sustainable growth with rising living standards and equal opportunities for all.

New Zealand's disappointing record on productivity growth reflects, in part, a skills deficit that impedes firms' ability to innovate and grow. Technology and globalisation put a high premium on skills, which may not be well supplied by the education sector when change is rapid, but also on experience as a means of acquiring skills, disadvantaging youth. The global crisis has intensified the structural disadvantages of the young, as skills and experience are even more highly prized when macroeconomic conditions worsen.

Establishing stronger linkages between education and work would help to assure that the acquired skills of graduates better fit the needs of business. The education system must also do more to develop the human capital of low skilled youth, who are particularly vulnerable to shocks. Businesses need more profitable market opportunities, via reforms, to allow them to pay for requisite skills. Otherwise, skills shortages may constrain growth as the working population ages and the youth share shrinks further, limiting the possibilities for continued expansion of the labour force. More skills of the right type, and their effective utilisation, will enable youth to move more seamlessly from education to work.

The analysis in this chapter will: *i)* look at relative strengths and weaknesses in the NZ youth transition; *ii)* review youth labour-market performance, institutions and policies to improve the demand for youth labour; *iii)* examine the performance of the education system and discuss policies to reduce drop-out rates; and *iv)* shed light on policy issues regarding vocational education and training (VET), on-the-job learning, career advice and school-employer linkages in skills development and better work transitions.

Youth transition difficulties

New Zealand performs very well *vis-à-vis* other countries in terms of initial education and youth employment outcomes (Table 2.1). However, youth transitions (as elsewhere) are more complex and less linear than they once were (Rea and Callister, 2009). Early job experience involves high turnover, uncertainty and little on-the-job skills development. Furthermore, one-third of 20 to 24 year olds have left education without completing a school-level qualification, which seems far too high for the needs of a productive economy with a high level of social capital. Many of them will get trapped in chronic joblessness and a cycle of poverty that risks becoming multi-generational. Population ageing, macroeconomic adjustment and slower trend growth require a significantly more education-oriented youth culture.

Unemployment

Unemployment among those aged 15 to 24 halved from close to 20% in the early 1990s to 10% on the eve of the crisis, a laudable achievement. But this improvement was considerably smaller than that of NZ adults (including many

Table 2.1. **Scoreboard for youth aged 15-24,[1] 2001 and 2011**

	2001			2011		
	New Zealand	EU[2]	OECD[2]	**New Zealand**	EU[2]	OECD[2]
Employment rate (% of the age group)	**55.4**	40.2	43.3	**49.9**	33.4	37.8
Unemployment rate (UR) (% of the labour force)	**12.1**	16.5	14.5	**17.3**	22.8	19.0
Relative UR youth/adult (15-24)/(25-54)	**2.9**	2.5	2.6	**3.5**	2.7	2.7
Unemployment to population ratio (% of the age group)	**7.6**	7.3	6.7	**10.4**	9.0	8.1
Incidence of long-term unemployment (% of unemployment)	**8.7**	25.4	18.7	**3.9**	28.0	22.1
Incidence of part-time work (% of employment)	**37.3**	16.8	20.6	**39.6**	25.4	27.9
NEET rate[3] (% of the age group)	**11.1**	12.0	12.3	**12.7**	11.7	12.3
School drop-outs[4] (% of the age group)	**36.6**	19.9	22.7	**33.7**	15.1	19.6
Relative UR low skills/high skills[5] (ISCED<3/ISCED>3)	**2.0**	2.6	2.5	**1.8**	2.3	2.2

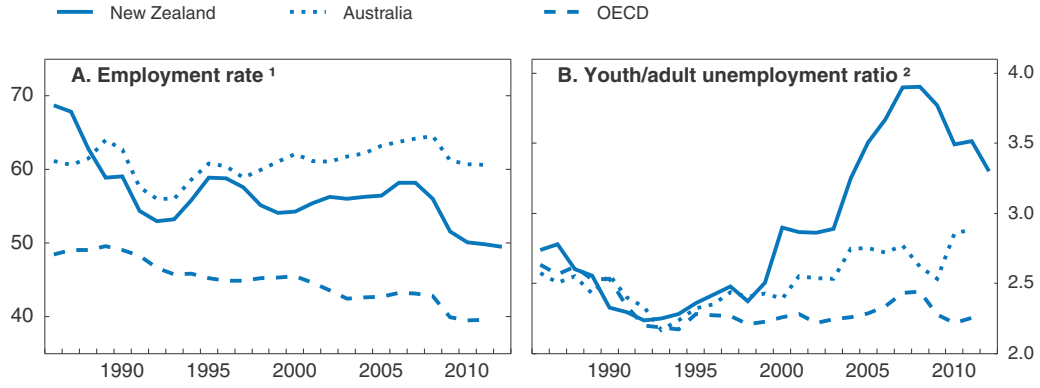
Note: UR: unemployment rate; NEET: neither in education nor in employment or training; ISCED 3: international standard of education referring to upper-secondary education.

1. Except 16-24 for Iceland, Spain, Sweden, the United Kingdom and the United States.
2. Unweighted average of the 21 EU and 34 OECD countries.
3. First year exceptions: 2002 for Austria and Ireland, 2003 for Estonia, Finland and Slovenia, 2004 for New Zealand. Yearly data are represented by Q1 for all OECD countries except Australia and New Zealand, for which May and Q2, respectively, are used.
4. Share of youth aged 20 to 24 not in education and without an ISCED 3 educational attainment; 2004 and 2009.
5. 1999 and 2009.

Source: OECD project on Jobs for Youth (*www.oecd.org/employment/youth*); OECD (2012), *Education at a Glance* and OECD estimates from *National Labour Force Surveys*.

Figure 2.1. **Youth employment and unemployment indicators**

15 to 24 year-olds, percentages



1. Employed as a percentage of total population in the age group.
2. Unemployment rate of youth (15-24) divided by unemployment rate of prime-age adults (25-54).

Source: OECD Labour Force Statistics Database.

StatLink http://dx.doi.org/10.1787/888932834017

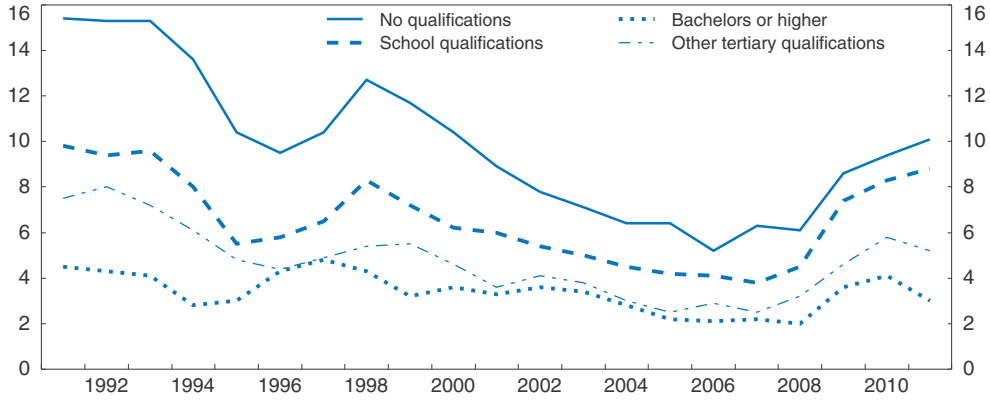
immigrants), and the reversal since then has been sharp with the rate back up to 19% by end-2012. Youth unemployment as a ratio to adult unemployment has also risen much faster in New Zealand since around the turn of the millennium than in Australia and in the OECD on average (Figure 2.1, Panel B). Employment rates of youth, conversely, are high compared to the OECD average, though lower than in Australia (Figure 2.1, Panel A). This reflects rapidly rising youth participation and by the fact that more youth

work and study simultaneously than elsewhere. Another positive feature is a much lower (and falling) incidence of long-term unemployment among NZ youth than in most other OECD countries.

As elsewhere, education appears to be the best protection against unemployment for youth and adults alike. However, the penalty to lower qualifications in the form of unemployment risk has declined markedly since the previous downturn in 1998, even if it has slightly rebounded since the crisis (Figure 2.2), and it is now lower than elsewhere in the OECD (Table 2.2). This could reflect diminishing marginal employment gains from rising educational attainment, as well as skills shortages which have allowed even those with poor qualifications to find work. However, cyclical factors were probably paramount as the 1999-2006 economic boom tightened already taut labour markets, bidding in many marginal workers. The same phenomena may help to partly explain relatively low pecuniary returns to tertiary education, discussed below.

Figure 2.2. **Unemployment rates of the population aged 15 and over by highest qualification**

Per cent



Source: Education COUNTS Database.

StatLink http://dx.doi.org/10.1787/888932834036

Table 2.2. **Youth unemployment rates (15-24) by schooling and gender**

2011

	Overall		Schooling[1]			Gender		Age	
	2007	2011	Below upper secondary level	Upper secondary level	Tertiary and advanced programmes	Men	Women	15-19	20-24
New Zealand	**10.1**	**17.3**	**17.2**	**9.1**	**11.8**	**18.2**	**16.1**	**25.7**	**12.2**
Australia	9.4	11.3	14.7	7.1	4.1	11.9	10.8	16.1	8.3
Canada	11.2	14.2	22.3	11.7	8.4	15.9	12.4	19.5	10.9
France	19.1	22.1	38.1	19.0	13.7	21.2	23.2	29.5	20.4
Germany	11.7	8.5	16.3	7.2	6.6	9.1	7.8	10.0	8.0
Norway	7.3	8.6	13.6	5.4	4.3	9.3	7.9	11.2	7.2
United States	10.5	17.3	32.7	16.8	7.8	18.7	15.7	24.4	14.6

1. 2010, unemployment rates for ages 20-24.

Source: Calculations from *Education Directorate Database* and *OECD Labour Database*.

Average gains in employability diminish with successive levels of qualification (as wages also rise). One NZ anomaly, however, has been *greater* unemployment on average among youth with tertiary and other advanced qualifications than for those with only a high school diploma (Table 2.2). Though relatively many youths with post-secondary, non-tertiary qualifications (ISCED 4) are included in this category in New Zealand, this factor would be expected to reduce its employment payoff but not erase it. Young women experience lower rates of unemployment than their male counterparts, as in other countries shown except France. High NZ youth unemployment is concentrated among 15-19 year-olds, whose unemployment gap with 20-24 year-olds is greater than elsewhere. However, this may be in large part due to a high participation rate by students.

Job turnover

An important feature of youth transition is the dynamics of initial job search. The NZ transition process is relatively smooth because of the traditionally low likelihood and short duration of unemployment spells. The OECD's 2008 *Jobs for Youth* study (OECD, 2008a) estimated the average time lag between the end of schooling and the start of an initial job for NZ youth at around five months, compared with 1½ to 2 years in the other OECD countries examined. These intervals are likely to have lengthened since the recession, however. But the NZ youth transition is also marked by a high rate of job mobility during the first few years of labour-market participation (Table 2.3). The share of low-skill youth (about one-third at the time of the *Jobs for Youth* study) whose first job is part time or temporary and often casual in nature have been increasing over time, though the majority of job changes are voluntary (OECD, 2008a) and the result of deliberate decision-making strategies rather than dysfunction (Vaughan and Boyd, 2005). Furthermore, first jobs are frequently unrelated to subject areas in which young people have gained their qualifications, though many in the end find jobs for which they are suited.

Table 2.3. **Average tenure rates in initial jobs**

Jobs held per year of experience, by age group

		2000-05	2006-11
France	15 to 19	1.07	1.01
	20 to 24	0.59	0.55
Germany	15 to 19	0.64	0.66
	20 to 24	0.38	0.40
Norway	15 to 19	0.68	0.75
	20 to 24	0.48	0.49
United Kingdom	15 to 19	0.87	0.80
	20 to 24	0.43	0.40
New Zealand	**15 to 19**	**1.47**	**1.45**
	20 to 24	**1.36**	**1.36**

Note: Average job tenure rates are a proxy for turnover rates, i.e. the number of workers who had to be replaced as a ratio to the total number of workers in a given period.
Source: Statistics New Zealand and *OECD Database on Employment*; OECD calculations.

"Job-hopping" during initial employment may be efficient if it is the outcome of a matching process whereby youths try out different alternatives before a more stable choice is made, especially where information asymmetries are high, i.e. employers know little about youths' skills and youth know little about prospective jobs. The downside is that frequent job changes, initial working out of field and tenuous relationships to jobs provide

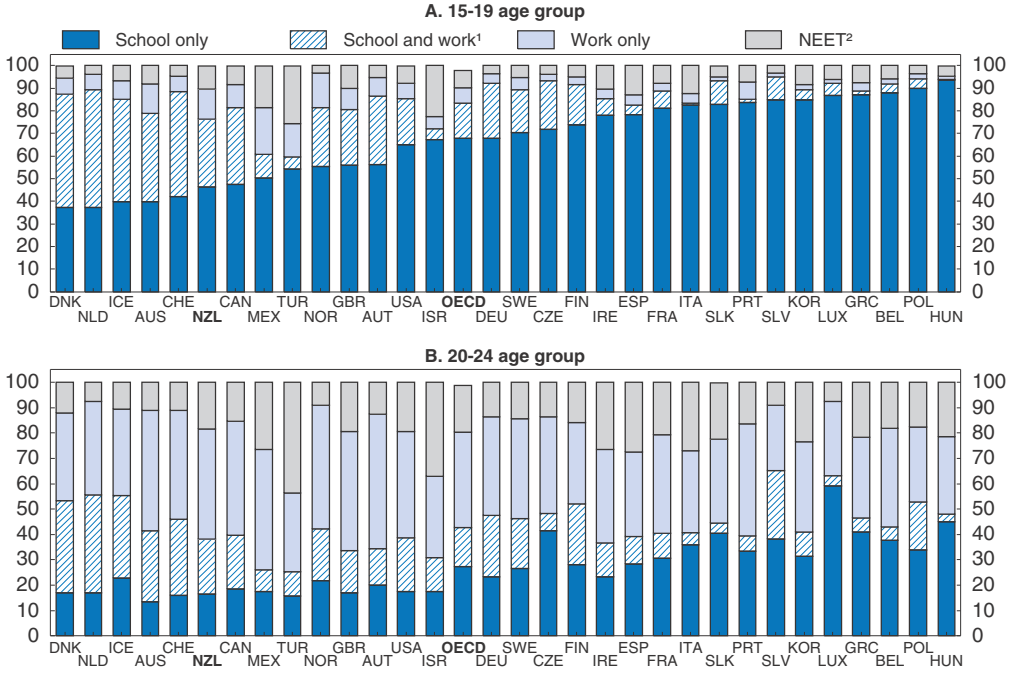
little possibility for on-the-job training, with adverse effects on development of skills (OECD, 2008a). Also, job turnover is not costless to firms, who incur fixed costs of search and retraining each time a worker needs to be replaced. Though on balance higher labour market churn may be neutral, with both advantages and disadvantages, the real concern is with the group of young people who do not gain any secure attachment to the workforce and have no useful educational qualifications. They require more focused career advice and clearer vocational pathways while still at school in order to be able to access on-the-job skills development immediately upon transitioning to work.

Non-standard work

Youth part-time work has been rising in most OECD countries, though its incidence remains far higher in New Zealand, likely skewing upwards the NZ youth employment rate (Table 2.1). Mixed education-work states are accordingly common among NZ youth. Fewer than half of those aged 15-19 are engaged in education only, with a fair number working part-time and studying full-time (Figure 2.3, Panel A). A similar pattern can be seen in Denmark, the Netherlands, Iceland, Australia, Switzerland and Canada. NZ teens also show somewhat higher work-only states than those in peer countries, whereas children in Europe and Japan tend to focus more exclusively on their studies and in that sense are shielded from unemployment but pay the price of having no work experience when they graduate. Older youth aged 20-24 unsurprisingly have lower enrolment rates than do teens and higher work-only rates in all countries, but New Zealand again shows a relatively low

Figure 2.3. **Percentage of 15-24 year-olds in education and not in education**

By 5-year age group and work status, 2010



1. In the labour force (employed or unemployed).
2. NEET are people who are neither employed nor engaged in education or training.

Source: Calculations from *Education at a Glance 2012*, Table C5.2a.

StatLink http://dx.doi.org/10.1787/888932834055

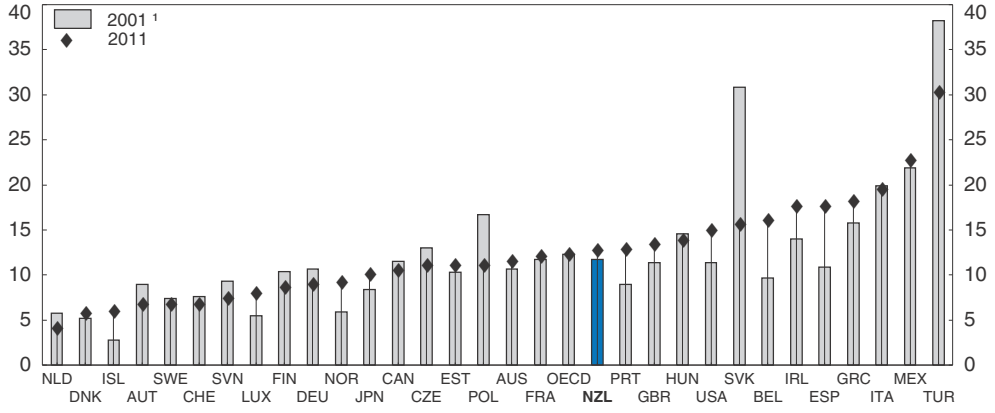
school-only rate, with work-school combinations only slightly more prevalent than elsewhere; conversely, work-only rates are comparatively high (Panel B). Full-time enrolment by older youth may be lower than in Europe because tertiary education can be completed much faster (in Spain, Italy or France, for example, few graduate before 22-23, while it is roughly 20-21 in New Zealand) and because of the lower unemployment rate.

Joblessness

Unemployed youth not having or choosing the option of going back to (or staying in) school to improve their chances in a bad job market may slip into prolonged joblessness and eventual withdrawal from both work and education, or NEET (not employed nor in education or training). In all countries NEET mainly affects older youth. But even though NZ long-term youth unemployment is among the lowest in the OECD, its NEET rate is close to the OECD average (Table 2.1 and Figure 2.4). This may reflect that NZ unemployment rates include full-time students who are also seeking part-time work, so are a less useful measure than NEET in capturing youth inactivity. Also, NZ NEET rates have risen more over the past decade than in the OECD on average (Table 2.1). It should be noted that NEET includes all jobless persons who are not in education or training, without reference as to whether they are officially looking for work. Because the line between unemployment and inactivity is often blurred for young people with limited access to benefit systems, it is a better measure of youth joblessness and disadvantage more generally.

Figure 2.4. **NEET rate of youth aged 15-24 across OECD countries**

Per cent



Note: NEET denotes persons neither in education nor in employment or training. Because of distortions implied by school holidays, yearly data are represented by Q1 for all OECD countries except Australia and New Zealand, for which May and Q2, respectively, are used.

1. 2002 for Austria and Ireland, 2003 for Estonia, Finland and Slovenia, 2004 for New Zealand.

Source: OECD (2012), *Education at a Glance* and OECD estimates from National Labour Force Surveys.

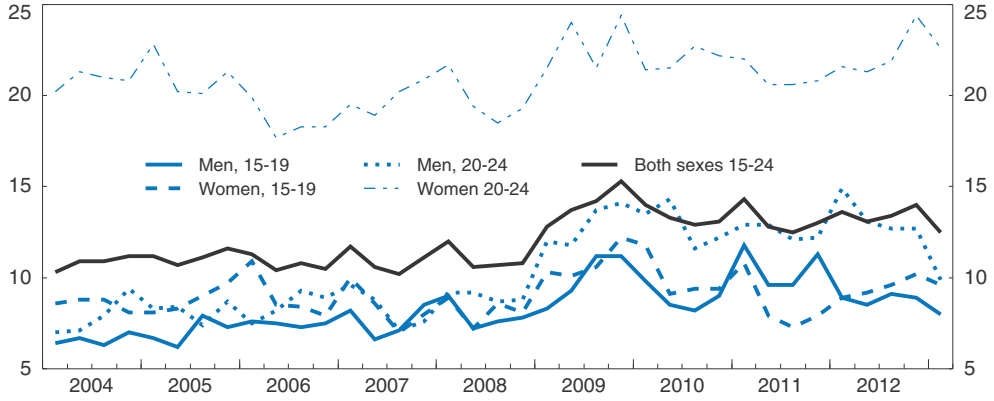
StatLink *Note:* To download the data corresponding to this graph, refer to *Figure 24.*

Part of NEET may be voluntary. Some young people (who can afford it) may choose leisure and travel at the end of studies, and, indeed, this option has been popular in New Zealand. In some countries, youth entering military service gets counted as NEET if labour market statistics cover only civilian jobs. Youth in certain countries may enter in significant numbers into informal labour markets. Others (notably women) may turn to full-time family care-giving responsibilities. In New Zealand, this latter form of disengagement is high as indicated by the much higher NEET level for women aged 20-24

(Figure 2.5). Until recently, the NZ definition of NEET excluded caregivers, who accounted for nearly one-quarter of the overall rate in 2012, on the logic that they are engaged in unpaid work (Statistics New Zealand, 2011). However, even if young mothers choose to stay home, this does not mean that this will ultimately prove good for them or their children – in the case of sole parents, it can create intergenerational welfare dependency. Young and sole mothers should be a strong focus of policy concern and given the means to resume their education. Recent welfare reforms support such a shift of focus (see below).

Figure 2.5. **NEET rates by gender and age group**

Per cent



Source: Statistics New Zealand.

StatLink http://dx.doi.org/10.1787/888932834074

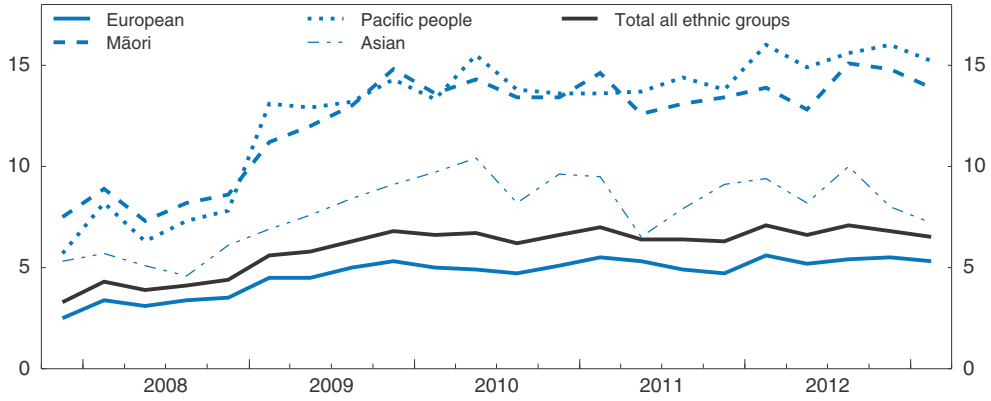
Ethnicity and well-being

Although unemployment rates by ethnicity are not available for youth alone, those for the overall working population are much higher for Maori and Pacific ethnic minorities, in particular since the 2008-09 recession (Figure 2.6). This could reflect a greater vulnerability of individuals with lower educational attainment to economic crises. However, significant differences can be observed even for equivalent qualifications (Figure 2.7). Youth from disadvantaged socio-economic backgrounds enjoy fewer contacts and less family guidance about educational and career choices. But they may also face implicit discrimination. Research has found compelling evidence of job segregation of Maori: they are overrepresented in lower occupational classes and underrepresented in higher ones, even after taking into account age and qualification differences with Pakeha (people of European descent); there appears to be wage discrimination within occupational classes as well (Sutherland and Alexander, 2002).

However, empirical research by Maani (2004) shows that: *i)* lower educational attainment is the single most significant factor explaining Maori income shortfalls; *ii)* market returns to upper secondary and tertiary education are in fact larger for Maori than for Pakeha (the income gap based on educational attainment within the ethnic group is far greater than the income gap across the ethnic groups and when controlling for educational attainment); and *iii)* economic liberalisation has only strengthened the link between educational attainment and employment. Whereas attainment levels since the 1980s have increased for all groups, they did so much faster for the Pakeha than for Maoris; hence public policies have lifted the average but accentuated educational and income gaps,

Figure 2.6. **Unemployment rates by ethnic group**[1]

Per cent

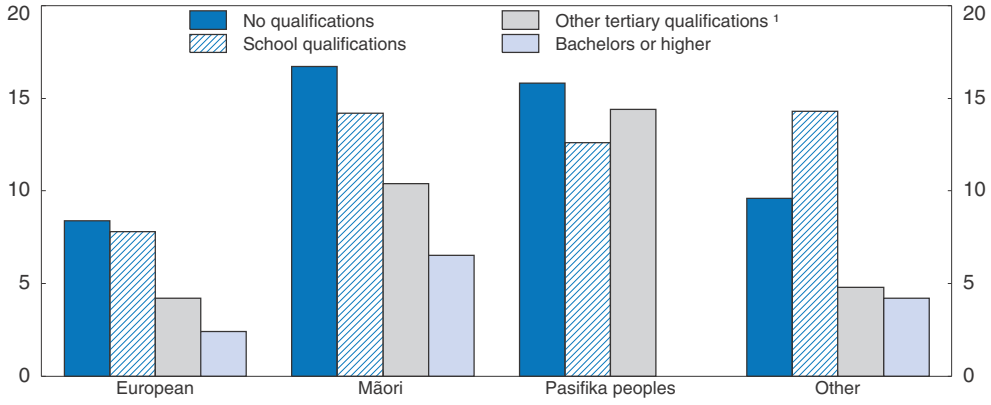


1. Total response measure of ethnicity.
Source: Statistics New Zealand.

StatLink http://dx.doi.org/10.1787/888932834093

Figure 2.7. **Unemployment rates of the population aged 15 and over by qualification and ethnicity**

2011 June quarter, per cent



1. Other tertiary qualifications include all post-secondary qualifications below bachelors-level.
Source: Education COUNTS Database.

StatLink http://dx.doi.org/10.1787/888932834112

as middle and upper classes capture the lion's share of education subsidies. The key problem is one of continuing barriers curbing Maori demand for education: financial, socio-economic, linguistic, local, school quality and the already large numbers without school qualifications (Maani, 2001; Box 2.1).

Demographic breakdowns for NEET rates likewise reflect a larger incidence among ethnic minorities. Maori and Pasifika youth are about twice as likely to be NEET as Pakeha, though Pakeha still account for the largest segment of NEET youth. Youth of Asian descent, by contrast, are less likely to be NEET than all other ethnic groups, including Pakeha, reflecting their higher scholastic and job-market success. It should be noted that young Maori and Pasifika women are two to three times as likely as their Pakeha counterparts to become NEET because of caring responsibilities, due to their higher fertility rates, and this accounts for about 30% of the overall differences in NEET rates (Table 2.4).

Box 2.1. **Ethnicity, socio-economic status (SES), gender and the demand for education**

A key policy question is what factors determine low educational attainment, and implicitly job market success and lifetime incomes, among Maori and Pasifika peoples, often in a way that is intergenerationally persistent. A general international observation is that adolescents from disadvantaged families tend to leave school at the time when it ceases to be compulsory, which often closes pathways to further education (Maani and Kalb, 2007). It also appears to be the case that boys are more sensitive to initial disadvantage than girls; conversely, girls are better able to escape from the intergenerational SES cycle. However, girls also outperform boys across all OECD countries and social levels, both in terms of test scores and scholastic attainment, for reasons still poorly understood.

Empirical studies based on both NZ longitudinal and OECD cross-country data provide the following insights:

- SES accounts for much of the observed ethnic differences in education and other outcomes, rather than unobservable variables (such as "culture"). Parental resources in early childhood are a key determining factor in NZ secondary-school achievement (Maani and Kalb, 2007). Furthermore, academic performance is one of the key factors influencing the school-leaving choice and should be a policy focus to reduce dropping out.
- Parental education and income levels carry more weight (via early home influences) on test scores than do gender or ethnicity *per se* (Wylie et al., 2008), and it is difficult but not impossible to raise low levels of performance after age 8.
- Much of the PISA performance gap between Maori and Pakeha is in fact attributable to unobservable variables and others that may be less amenable to public policy influence, notably children's enjoyment of reading and school decile (neighbourhood income ranking), both of which are more influential than the PISA socio-economic index (Lock and Gibson, 2010). Other studies, such as those noted above, implicitly attribute such factors to parental income and education.

A main conclusion of such studies is often that early childhood education (ECE) can help to counteract factors that influence the school-leaving choice over a long period of time, but interventions must be sustained throughout school life. Also, student need should be judged on the basis of interests and actual performance, rather than on social characteristics and prior performance (Wylie et al., 2008).

Hence, despite the good youth outcomes overall, there is a hard core of youth at high risk of exclusion, mainly due to continuing barriers to their further education, despite the best intentions of policy makers. Structural unemployment and inactivity among disadvantaged youth could harm their well-being considerably and become self-perpetuating, given the evidence in all OECD countries of strong path dependence in job-market outcomes. Young people, despite being naturally more resilient, are still vulnerable to the harmful effects of long-term unemployment, since they are still developing their skills and must compete with more experienced workers. European research shows that long or repeated unemployment spells affect their psychology and confidence quite negatively. Such state dependence tends to abate once they exit the labour market, since discomfort and labour-market ties seem to go together (Ryan, 2001). However, a deterioration of both soft and hard skills and hence severely diminished chances of future job success and income, is the likely result of prolonged joblessness.

Table 2.4. **Youth labour force and education status by ethnicity**

Ages 15 to 24, March 2013 quarter

Labour market and education status	Ethnic group[1]				
	Pakeha	Maori	Pacific Islanders	Asian	Total
	Per cent of working age population of the ethnicity				
Employed, in education	20.6	11.0	6.4	10.9	18.6
Employed, not in education	36.1	26.5	27.2	30.9	30.7
Unemployed, in education	3.7	4.6	3.9	4.8	3.9
Not in the labour force, in education	27.9	33.0	39.2	46.5	34.0
Not in employment, education, or training (NEET)					
Unemployed, not in education	4.9	10.6	10.6	2.8	4.9
Not in the labour force, not in education – care giving	3.0	7.7	6.6	-	3.5
Not in the labour force, not in education – not care giving	3.6	6.7	6.1	3.5	4.1
NEET rate	11.5	24.9	23.2	6.7	12.4

1. Total response measure of ethnicity. An individual may be counted in more than one ethnic group.
Source: Statistics New Zealand.

Various social pathologies may also be associated with prolonged joblessness. Even though youth long-term unemployment and NEET rates are not excessively high in New Zealand, its youth display high rates of risky behaviours which weigh more heavily on ethnic minorities (Figure 2.8). Given the higher Maori and Pasifika fertility rates, their youth population share is projected to grow (Table 2.5). They now comprise around one third of the school population (40-50% in major urban areas), and over half of the school-age population is expected to identify with multiple and non-European heritages within the next five years (Nusche et al., 2011). It is essential to implement policies to raise the human capital of disadvantaged youth, teach them skills for a changing economy and support them getting into work.

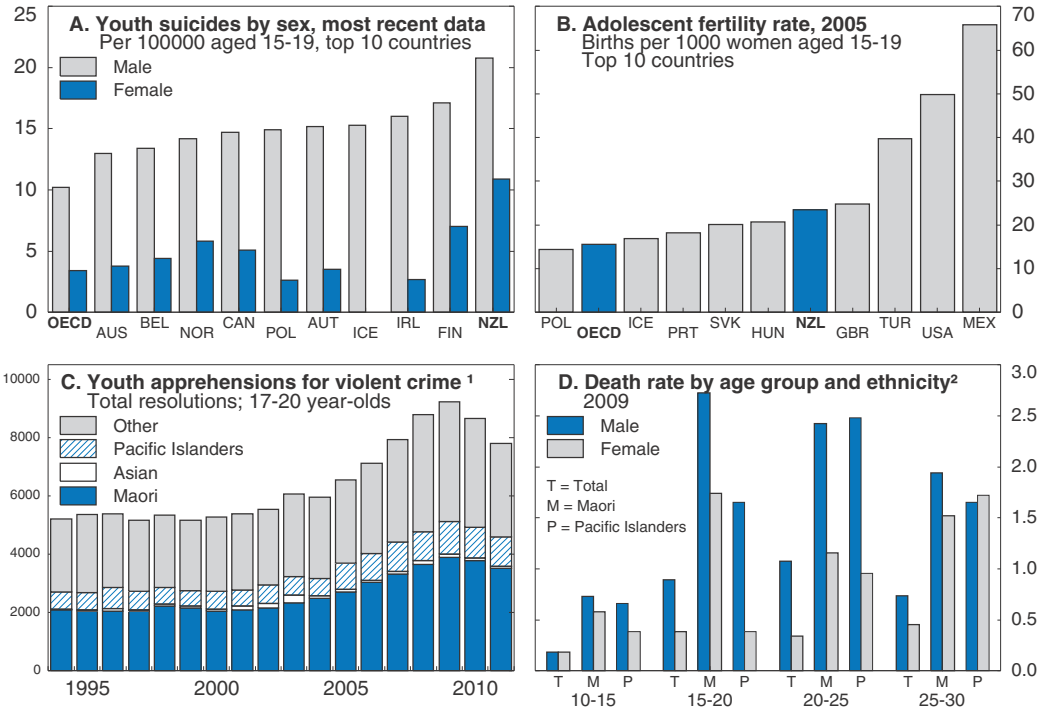
The youth labour market: Demand-side issues

The deteriorating labour-market performance of young people, relative to that of adults, may seem contrary to their declining population shares and higher levels of education compared with older cohorts. The demand for youth labour, however, is more strongly affected by cyclical conditions and structural shifts. Labour market regulations can also affect youth disproportionately. Increases in the minimum wage, for instance, make it harder for inexperienced and unskilled workers to find work, and tightening of employment protection, which increases employers' risk from hiring inexperienced workers, does likewise. The NZ government has taken steps to address these issues, via the Starting Out wage and the 90-day trial period.

Pay and employment: Some common OECD threads

The common OECD shocks of globalisation and technological change, notably the IT revolution, have deeply affected the pattern of labour demand, with *a priori* ambiguous impacts on youth. They have led to a structural decline of manufacturing employment, where older male workers are overrepresented, and the corresponding rise of services, which are more intensive in the use of youth and women. At the same time, they have induced skill-intensive labour demand, both in pursuit of non-price competitiveness as a means of business survival and as a complementary input to the expanding new

Figure 2.8. **Youth social indicators**



1. Apprehension statistics give the number of apprehensions of offenders and how such apprehensions were resolved. An apprehension means that a person has been identified by police as the offender and, where appropriate, dealt with in some manner, such as warned, prosecuted, referred to youth justice family group conference, or diverted. Violent crime includes homicide and related offences, acts intended to cause injury, sexual assault and related offences, dangerous or negligent acts endangering persons, abduction, harassment and other related offences against a person, robbery, extortion and related offences.
2. Percentage of deaths in the corresponding population.

Source: Ministry of Health, Statistics New Zealand and OECD (2009), *Doing Better for Children*.

StatLink *Note:* To download the data corresponding to this graph, refer to *Figure 25*.

Table 2.5. **National ethnic population projections by age group**[1]

As a percentage of total population

		0-14	15-39	40-64	65+	Per cent of total population
Pakeha	2006	14.2	22.9	23.4	10.2	70.7
	2026	11.0	18.6	18.8	14.0	62.5
Maori	2006	4.7	5.4	3.0	0.6	13.8
	2026	4.6	5.5	3.3	1.2	14.6
Asian	2006	1.8	4.3	2.4	0.4	8.9
	2026	3.0	5.5	4.2	1.6	14.2
Pacific Islanders	2006	2.4	2.6	1.3	0.3	6.6
	2026	3.0	3.4	1.7	0.6	8.7
Total	2006	23.2	35.2	30.1	11.4	100.0
	2026	21.6	33.0	28.1	17.4	100.0

1. Based on the estimated resident population of each ethnic group at 20 June 2006.

Source: Statistics New Zealand.

technologies being used to boost productivity. Robotisation (technology) and outsourcing (globalisation) have directly reduced demand for unskilled labour, fuelling the rising demand for technological skills. Insofar as experience is a means of gaining skills, youths

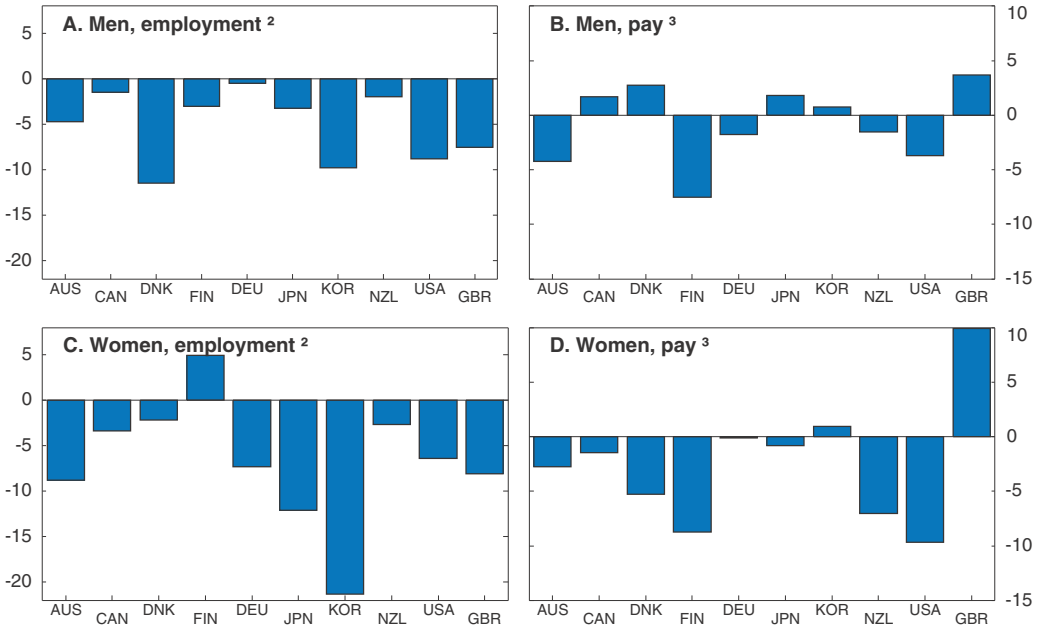
are disadvantaged by the skill bias in labour demand, which appears to have dominated the effect of decline in manufacturing.

Macroeconomic shocks have interacted with structural shocks. It is often thought that youth unemployment has greater cyclical amplitude than that of adults (Ryan, 2001). Young people, like immigrants, are marginal workers ("last-in, first-out") and, lacking an established track record, young recruits represent a greater hiring risk, contingent on the state of the economy.

Youth employment rates have followed a declining trend for at least the past couple of decades, most importantly due to rising tertiary enrolment required by the labour market. Over the past few years, the trend was strengthened by job losses due to the crisis, which may also have pushed some youth to stay longer in education. Since 2000, employment rates of NZ men and women aged 20-24 have fallen relative to 25-54 year-olds of the same gender, as in other countries, and relative pay has often declined as well (Figure 2.9). Relative employment declines for youth have been smallest in: New Zealand, Canada and Australia (for men), which have flexible labour markets and already high youth employment rates; in Germany and Japan (men), which have strong school-to-work transition institutions; and in Finland (women and men) where youth workers experienced notable declines in their relative pay.

Figure 2.9. **Changes in relative pay and employment rates of young adults**

Difference between 2011[1] and 2000,[1] percentage points



1. Starting year for pay: 2006 for United Kingdom. Ending year for pay: 2010 for Australia, Denmark, Finland and Germany.
2. Difference between employment rates of 20-24 and 25-54 year olds.
3. Difference in ratio of 20-24 year-old pay to 25-54 year-old pay.

Source: OECD Database on Average Earnings by Gender and Age; *OECD Employment Database* and OECD calculations.

StatLink http://dx.doi.org/10.1787/888932834131

The institutional setting

Tax and benefit rules affect youth differentially by setting explicit or implicit wage floors. In New Zealand, where social security contributions do not exist, the tax wedge on low-wage earners is one of the OECD's smallest (OECD, 2012c) and could be an important element in maintaining the demand for low-productivity workers such as youth. Yet, social benefits (notably to young parents) can hurt youth employment by setting reservation-wage floors that are high relative to effective productivity levels. Indeed, as in several other OECD countries, unemployment benefits can be claimed without any prior work experience, thereby covering the initial period of job search, and with no limit in time. In this sense they are generous, and replacement rates can also be quite high. Yet recent reforms have reinforced the principle of mutual responsibility and the role of activation policies, discussed further below.

Regulations on pay also matter. Progressive withdrawal of the youth derogation from the legal minimum wage has, all else equal, increased youth unemployment (Box 2.2).

Box 2.2. **Youth minimum-wage reform**

New Zealand has had three types of minimum wage: the adult minimum, a youth or "new entrants" minimum and a training wage. The age borderline and relativities between the first two have been subject to policy shifts, while the third is explicitly for trainees and apprentices. The adult minimum wage level, serving as the anchor for the youth minimum, is periodically adjusted upwards, while the training wage has typically been equal to the youth minimum.

The youth minimum wage was increased in two large steps in 2001 and 2008. This provided a "natural experiment" for examining the employment impacts of youth sub-minimum wages that were explored in two papers by Hyslop and Stillman (2004 and 2011). Originally, the youth minimum wage had been set at 60% of the adult level for 16 to 19 year-olds. A major reform in 2001 raised it to 80% and restricted it to 16 to 17 year-olds, resulting in a 41% (phased) increase in the minimum wage for this group; 18-19 year-olds moved to the adult minimum wage, resulting in a 69% (immediate) increase. A second reform in 2008 abolished the youth minimum wage altogether, replacing it by a "new entrants" minimum wage for 16 to 17 year-olds, equal again to 80% of the adult minimum wage but effective for only three months or 200 hours of employment, after which the adult minimum applies. This minimum wage was largely ignored by businesses and most 16 and 17 year-old workers were moved onto the adult minimum wage, resulting in a 28% increase in the minimum wage for this group.

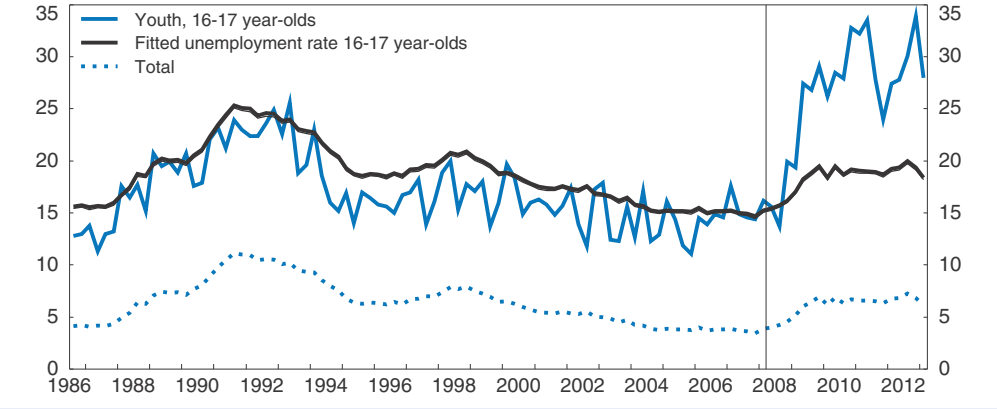
Although the effective minimum wage increase was larger for the 2001 reform than for the 2008 reform, the Hyslop and Stillman studies show that the 2001 reform had no significant adverse impacts on youth employment, at least in the short term, whereas the 2008 reform led to a stronger fall in employment of 16-17 year-olds. This was attributable to three factors, namely that the 2008 reform: *i*) moved 16 and 17 year-olds onto the adult minimum wage, possibly encouraging employers to replace them with more mature workers; *ii*) applied to a much larger proportion of 16 and 17 year-olds than did the 2001 reform (given that the pre-2001 youth minimum had often not been binding); and *iii*) took place just prior to an economic downturn. These factors are hard to disentangle, given the methodology used (a comparison with outcomes in the nearest age groups not affected by the reforms). Nevertheless, following the 2001 reform, there is evidence of a decline in educational enrolment and an increase in youth unemployment, inactivity and

Box 2.2. **Youth minimum-wage reform** *(cont.)*

benefit receipt, suggesting that while the increase in youth minimum wages increased teenagers' labour supply, it was not matched by as large an increase in employers' demand.

A much rougher, though illustrative, analysis compares the actual rise in the unemployment rate of 16-17 year-olds in the period following the 2008 reform with the counterfactual of an unchanged historical statistical relationship between the 16-17 year-old and adult unemployment rates. It suggests a huge adverse impact of the reform (Figure 2.10), but it is more likely that the relative price effect of the reform merely reinforced the impact of the macroeconomic shock. Furthermore, most 16 and 17 year-olds identified as unemployed are in full-time study (and seeking part-time work alongside study). This interaction would also help to explain the larger impact of the global crisis on NZ youth unemployment rates than elsewhere (except the United States). The same methodology shows no perceptible impact on youth unemployment from the (much larger) 2001 reform, which itself came on the cusp of a major labour demand boom, drawing many youths into jobs.

Figure 2.10. **Unemployment rates of 16-17 year-olds versus adults**[1]



Note: The vertical line represents the implementation of the 2008 minimum wage increase.
Source: Statistics New Zealand.

StatLink http://dx.doi.org/10.1787/888932834150

Though the persistently high rates of youth unemployment should make the option of reinstating the youth minimum wage (perhaps in a phased manner) one well worth exploring, the political economy is unfavourable: unions protest that the youth minimum is discriminatory and exploitative, and will lead to youth poverty, and popular opinion appears to agree. In this context it may be worth recalling that Hyslop and Stillman (2004) found an eventual *increase* in youth poverty following the large 2001 boost to the youth minimum wage because it provided incentives to stop studies, while raising the supply of youth labour. More research and experimentation (e.g. pilot studies) may thus be needed to determine the costs and benefits of youth sub-minimum wages. International research has shown, for example, that in Spain the impact of minimum wages on the youth labour market is more likely to be negative if there is no separate sub-minimum for younger workers and that in the United States and United Kingdom the legal minimum age for school leaving is a much more important determinant of continued school participation for 16-17 year-olds than minimum wages (Croucher and White, 2011).

Box 2.2. **Youth minimum-wage reform** *(cont.)*

The New Entrants minimum wage is being replaced in 2013 with a minimum Starting Out wage, which will apply to three groups of young people: *i)* 16 and 17 year-olds in their first six months of work with a new employer; *ii)* workers aged 18 and 19 who have been paid a benefit for six months or longer, and who have not completed six months of continuous work with any employer since starting on benefit; and *iii)* workers aged 16 to 19 undertaking at least 40 credits a year of a recognised industry training programme.

Earnings of NZ youth improved relative to the adult average in the nearly two decades before the crisis, as minimum pay rates converged to their adult counterparts' with minimal adverse impacts on employment, largely thanks to buoyant labour markets in the latter half of this period. But their relative position has deteriorated since then. Maori youth earnings, nonetheless, surpassed those of total youth in the run-up to the crisis, though they have since returned to parity. Maori youths' labour supply appears to be more responsive and demand for education less so with respect to wage changes and labour-market conditions than others' (Table 2.6).

Table 2.6. **Youth relative wages**

Average weekly wages of 15-24 year-olds relative to total adults aged 25 to 64

	European/Pakeha	Maori	Pacific peoples	Total ethnic groups
1998	0.52	0.51	0.47	0.51
2006	0.54	0.57	0.53	0.53
2007	0.50	0.50	0.55	0.48
2010	0.48	0.49	0.50	0.48
2012	0.51	0.51	0.58	0.51

Source: Statistics New Zealand.

Finally, New Zealand has among the OECD's most flexible labour markets, thanks to relatively low rates of employment protection legislation (EPL) and low coverage for collective bargaining agreements (OECD, 2012a; Box 2.3). This has avoided the need for many (involuntarily) temporary contracts for youth, which are common in countries with tight restrictions on employment contracts (e.g. France and Italy), and which tend to suffer long youth transitions, inefficient and unfair insider-outsider dualism in the labour market, high youth job precariousness and meagre youth training wages.

Youth activation measures

The NZ government has successfully switched from passive unemployment benefits to activation policy (OECD, 2008a). Since the labour market reform of the late 1980s, employment services have been integrated with benefit administration through the "mutual obligations approach", requiring job search or training in exchange for benefits. More recently, subsidised employment schemes have given way to educational upgrading of labour-market programmes. New Zealand explicitly aims to get youth and unskilled unemployed into education, training or work-based learning in recognition of the long-run benefits of acquiring qualifications, with less emphasis on their immediate job placement. A new Youth Services puts this into practise by incentive payments to clients and contracting with providers having good local knowledge (Box 2.4). The recent welfare

Box 2.3. **Employment contract reform**

A major labour market reform, the 1991 Employment Contracts Act (ECA), freed workers from compulsory unionism and mandatory collective bargaining, thus decentralising private wage bargaining to the individual firm level. Even flexible job markets such as in the United States did not give workers and employers such contracting freedom at the time. This institutional feature is an important source of the NZ youth labour market's strength and flexibility, though partly offset by legislated minimum wages. The ECA was subsequently replaced by the 2000 Employment Relations Act (ERA), which aimed to rebuild productive employment relationships through the promotion of good faith in all aspects of the employment environment and relationship by promoting collective bargaining (amongst other things).

A less desirable feature of both the ECA and ERA, however, was that employees retained the right to bring a personal-grievance case against employers for "unjustified dismissal", a restriction whose cost is initially borne by employers but that is partially shifted to workers in the form of lower wages and employment levels, especially those with inelastic supply such as less able, inexperienced and lower-skill workers (Baird, 1996). The OECD *Jobs Study* also warned of the undesirable employment effects of unjustifiable dismissal restrictions in employment contracts. The United States, as a counterexample, gives workers such a right only in the case of discrimination and other patently illegal behaviour, and the resulting ease of hiring and firing is thought to be an important facilitator of its high level of business risk-taking and innovation.

In 2009, the NZ government, wishing to ease this restriction, introduced a trial period of 90 days or less for new employees of firms with fewer than 20 employees and in 2011 extended the provision to all firms. It was hoped that reducing the cost of firing non-performers would encourage employers to take a chance with new hires, notably youth. While unions argue that the new rules could inhibit efficient job turnover (employees may be afraid to expose themselves to layoff risk by moving to a new job), these arguments have less force for youth just entering the job market. Preliminary data show that on average, hiring by SMEs was almost 6 percentage points higher than expected in the quarter following the 2009 introduction of the measure (NZIER, 2011), though more analysis is needed.

reforms as they apply to teen parents provide "wrap-around" support (intensive, individualised case management) and incentives for teen parents to re-engage in education, and training or work-based learning, to reduce their likelihood of long-term benefit dependence and to improve long-term outcomes for them and their children.

The Ministry of Social Development has refocused many of its employment assistance programmes to better support the investment approach. Referred to as "Job Streams", this involved simplifying funding into three key programmes which were considered to provide the best return and reduce the long-term cost of welfare: *i)* Flexi-Wage, a wage subsidy of up to NZD 21 060 per annum for people considered to be at highest risk of long-term benefit dependency; *ii)* Skills for Industry, short job-focused training; and *iii)* First Step Apprenticeships, up to NZD 10 000 per person for apprenticeships and other trades training, to assist with employers' training costs and other types of support such as pastoral care.

Coaching and mentoring services complement youth training programmes, insofar as many problems are also attitudinal. Student identification numbers have been assigned, allowing the education system to co-operate across the country and with social services in finding those of whom the school system has lost track following family moves. Training,

Box 2.4. **Youth activation approaches**

The Youth Services

Youth Services (YS) is a new, central government funded, community-based approach to fighting failure among 16 to 18 year-olds, the first component of the government's welfare reform (see Assessment and Recommendations). The Ministry of Social Development (MSD) assigns a provider, or typically a range of providers including NGOs, private sector and iwi (tribes) with strong links to the community, to all at-risk NEET youth receiving public financial support. MSD may also identify clients, based on information provided by schools and student tracking numbers, or the provider may find them. The following conditions are imposed on beneficiaries and on the providers charged with service delivery:

- A youth payment is available to youth aged 16-17 with no dependents. Recipients must participate in education, training or work-based learning, and complete a budgeting course. Those pursuing studies may additionally receive a student loan and a grant to cover living expenses.
- There is also a young parent payment available to parents aged 16-18. Recipients face the same obligations as the above once their youngest child reaches the age of one and are additionally required to complete a parenting course and ensure regular medical check-ups for their children. Those pursuing education, training or work-based learning with children under five may receive a Guaranteed Childcare Assistance Payment to cover the cost of childcare.
- Providers are engaged on outcome-based contracts. Funding will be renewed on condition of youth completion of their training programmes and of subsequent sustained employment. Payment levels are directly proportional to the level of "risk assessment" (carried out by MSD) that is attached to the client based on his/her profile. These risk ratings can be reviewed at the request of providers.

Whilst the results of evaluations are not yet available, early indications show that young people engaging with the service are seeing benefits from the wrap-around services provided. Discussions with several providers suggest that YS is proving successful for addressing problems of youth at risk who are still in school. For NEET youth, however, more flexibility in the funding conditions might be desirable, as each case is unique and risk assessments of youth developed by central government theoretical modelling may often be less accurate than provider judgements.

Local initiatives

Successful local experiments have arisen spontaneously through the vision of local leaders. Boven et al. (2011) cites the case of Otorohanga, where in 2004 businesses, frustrated with the outmigration of local youth in search of jobs and their own inability to fill good trades job and apprenticeship offers, launched a suite of projects, with strong support of the mayor, to make young people more attractive to local businesses and vice versa. By end-2006, the city had radically reduced youth NEET and unemployment, juvenile delinquency plummeted, businesses cancelled plans to move elsewhere, and the local economy revived. Over the last six years, the full cost of the youth programmes (NZD 70 000) was less *pro rata* than the local council's pre-2005 annual budget (NZD 15 000) to clean up (now non-existent) graffiti and other petty vandalism. Such initiatives are deserving of closer analysis, with their possible dissemination nation-wide.

counselling and job-placement services are contracted out to private providers and NGOs under a tendering process, with follow-up monitoring. The hope is to enforce greater

efficiency of provision, though getting incentives right for contracted private providers and correctly evaluating their performance is an ongoing challenge (Dormer, 2011). Tendering may create competition among providers, whereas co-operation may be needed for an effective response.

A major challenge for youth activation policies is to properly evaluate them. The international academic jury on ALMPs is still out (Card et al., 2010). Doubts about their efficiency – in particular whether they displace jobs and skills away from untargeted youth and provide long-run benefits exceeding the cost of services and support – have increased interest among OECD countries in "upstream" interventions, focused on formal education, with proven benefits for prospective earnings and employment, and for society. The relevant education policies include expanded pre-school programmes, support for higher attainment in general education and vocationally oriented reform in secondary schooling (Ryan, 2001).

Box 2.5. **Recommendations for improving youth labour market policies**

- To tackle high youth unemployment, consider: *i)* reinstating the youth minimum wage for 16-19 year-olds and *ii)* extending the 90-day trial period further, say up to six months, for employment contracts.
- Carefully evaluate youth outcomes under the Youth Services benefit, ideally with a two-year window of follow-up, and terminate ineffective policies and/or providers.
- Seek community-based initiatives to reduce youth NEET, and apply successful lessons nationally, while providing expanded funding for training and apprenticeships in high-unemployment areas.

Challenges facing the education system

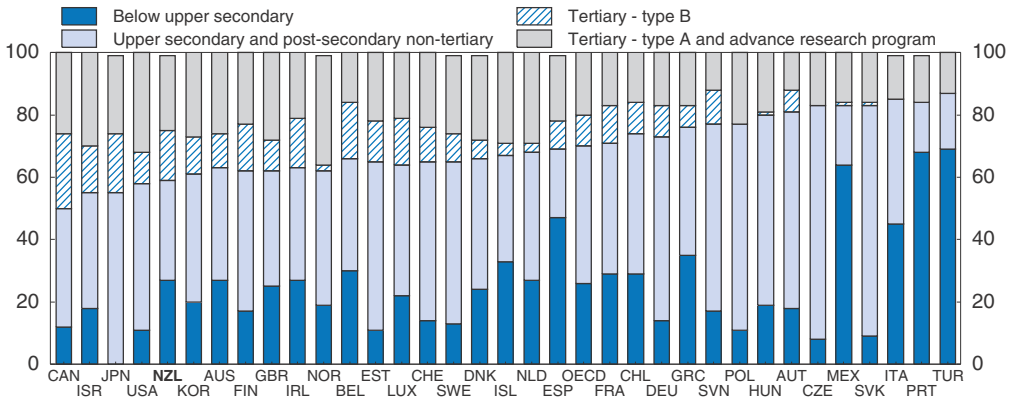
The quality of youth transitions depends critically on preparatory education. The preceding discussion of youth transition and labour-market issues has highlighted two key challenges for education: *i)* reducing school drop-out rates and shrinking the long tail of underachievers to address the dual problem of low skills and intergenerational poverty; and *ii)* ensuring greater coherence between educational and labour-market institutions to address the structural skills shortage and associated low-productivity problem.

Performance of the system

New Zealand is a highly educated nation. Tertiary attainment rates among the adult working-age population are fifth highest in the OECD, just after the United States (Figure 2.11), and have increased through time, as successive cohorts participate at higher rates. However, this progression has been slower than in the OECD on average, as the tertiary attainment gap between the youngest (aged 25-34) and second youngest cohorts (aged 35-44) for women is only about half as large as in the average OECD country (OECD, 2012, Chart A1.5). This reflects: *i)* the large number of graduate immigrants; and *ii)* the fact that the enrolment expansion of 1997-2005 was very heavily skewed toward older students (40% of that growth was among the over-40s). University attainment rates may be catching up faster, as the rather high proportion of vocational-type tertiary attainment is heavily influenced by the education choices of the older cohorts: younger ones have tended to see greater value in a university degree.

Figure 2.11. **Educational attainment of 25-64 year-olds**

Percentages, 2010



Source: OECD (2012), *Education at a Glance*, Table A1.4.

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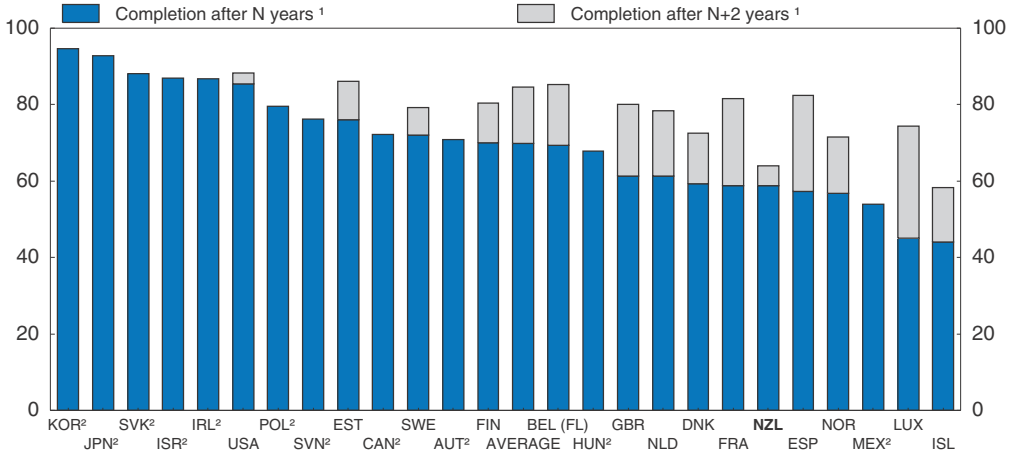
At the other end of the spectrum, the proportion of those who failed to complete even a high-school diploma is also high, at almost 30%. Upper secondary-school non-completion rates within two years of normal graduation age, at close to 40%, are exceeded by only a few other OECD countries (Figure 2.12). Although many non-completing school leavers eventually find their way back into education and gain their qualifications, the window of opportunity between ages 15 and 20 has been lost (OECD, 2008a). Moreover, some of the trends have been adverse. Retention rates measured six months beyond the school-leaving age were falling between the end of the Asian crisis in 1998 and the peak of the last business cycle in 2006, most notably for Maori students, and have slightly risen since, suggesting that buoyant labour markets during this period may have diminished the incentive to stay in school for students whose attachment may already have been low.

Figure 2.12. **Successful completion of upper secondary programmes**



Note: Upper secondary school completion is defined as attainment of ISCED level 3.
1. N is the theoretical duration of the programmes.
2. N + 2 information missing.

Source: OECD (2012), *Education at a Glance*, Chart A2.4.

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Maori and Pasifika show significantly higher rates of non-qualification than the national average (Table 2.7), though they have come down more sharply in recent years. According to the Ministry of Education almost one in five NZ students leaves secondary school without formal qualifications (NZ definition; see Bibbee, 2013). For Pasifika students it is one in four and for Maori one in three. In addition, more than 80% of Maori and 70% of Pasifika tertiary study is at sub-degree level. Over the past two decades, tertiary participation rates, in particular for university studies, have increased more rapidly for Maori and Pasifika than for Pakeha, albeit from a lower base (Table 2.8). Female tertiary attainment rates have also been converging to those of males, though women already surpass men in university attainment. On the other side of the divide, ethnic Asians show nearly double the rates of university education of Pakeha, and conversely for VET. Just as for upper secondary school, however, rates of tertiary non-completion are among the highest in the OECD (Figure 2.13), and higher still for Maori and Pasifika. A driver of this result is high participation in tertiary study by part time, adult second-chance learners, due to New Zealand's open-access approach to tertiary education, and Maori and Pasifika tertiary students, in turn, are more likely to engage in tertiary education as part time, older learners (although advanced level 4 certificate programmes, which are likely to include many of these learners, are excluded from the data presented in Figure 2.13).

Table 2.7. **Distribution of New Zealanders aged 15 and over by highest qualification and ethnic group**

2006, per cent

Gender	Ethnic group[1]	No qualification	School qualification	Level 1-6 post-school qualifications	Bachelors degree or higher	Total group
Male	Pakeha	23.5	29.6	27.0	14.1	100
	Maori	38.5	26.7	18.3	4.9	100
	Asian	10.5	40.1	15.2	27.6	100
	Pasifika	33.4	35.6	13.2	4.2	100
	Total males	22.8	29.2	24.0	13.7	100
Female	Pakeha	22.9	34.4	21.1	15.1	100
	Maori	33.0	30.6	19.0	7.5	100
	Asian	12.3	40.2	13.9	26.9	100
	Pasifika	27.9	38.5	14.8	5.6	100
	Total females	22.1	33.4	19.4	14.6	100

1. Ethnic group includes all of the people who stated an ethnic group, whether as their only ethnic group or as one of several ethnic groups. Where a person reported more than one ethnic group, they have been counted in each applicable group.

Source: Education COUNTS.

PISA results for NZ 15 year-olds in 2009 were characterised by high means but high dispersion as well (Figure 2.14). New Zealand ranked among the top 10 OECD countries and among the top 20 worldwide in reading, mathematics and science scores. However, in reading literacy, the major focus of that PISA round, among the 11 best performers, New Zealand had a very wide distribution of scores (Panel A). New Zealand, Australia and the Netherlands showed the longest "tails" of poor performers (percentage of students with reading level 1 or lower), though, apart from Shanghai, China (a high-end outlier), New Zealand also showed the longest "nose" (those at levels 5 and 6). While Pakeha and Asians were more likely to be at the higher end, Maori and Pasifika were overrepresented at the low end. Girls significantly outscored boys in every country, but the NZ gap was

Table 2.8. **Tertiary participation rates by ethnicity, gender and qualification level for 18-24 year-olds**

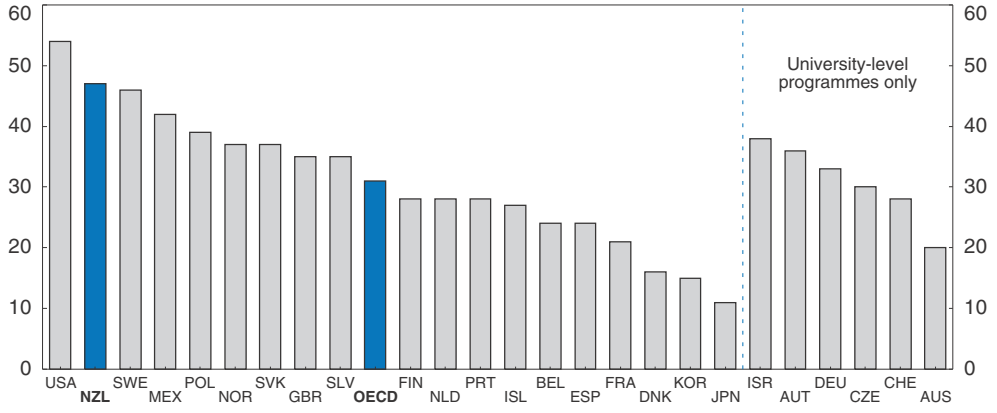
Percentage of the ethnic/gender population in the age group

	Certificates 4		Diplomas 5-7		Bachelors' degrees		All degrees	
	2004	2011	2004	2011	2004	2011	2004	2011
Ethnicity								
European	4.9	4.5	4.7	4.6	18.3	20.3	36.8	37.4
Maori	5.4	6.6	4.0	4.0	8.8	10.4	33.3	32.0
Pasifika	5.6	7.7	4.2	5.2	10.1	12.8	30.6	34.9
Asian	1.8	2.2	2.6	2.9	16.0	23.4	25.5	34.5
Sex								
Females	4.3	4.5	4.9	5.0	20.0	23.1	39.3	41.0
Males	5.1	5.2	4.1	4.1	14.2	15.2	32.9	33.1

Source: Education COUNTS and Statistics New Zealand.

Figure 2.13. **Proportion of students who enter tertiary education without graduating**

2008, percentage



Source: OECD (2010), *Education at a Glance*, Chart A4.1.

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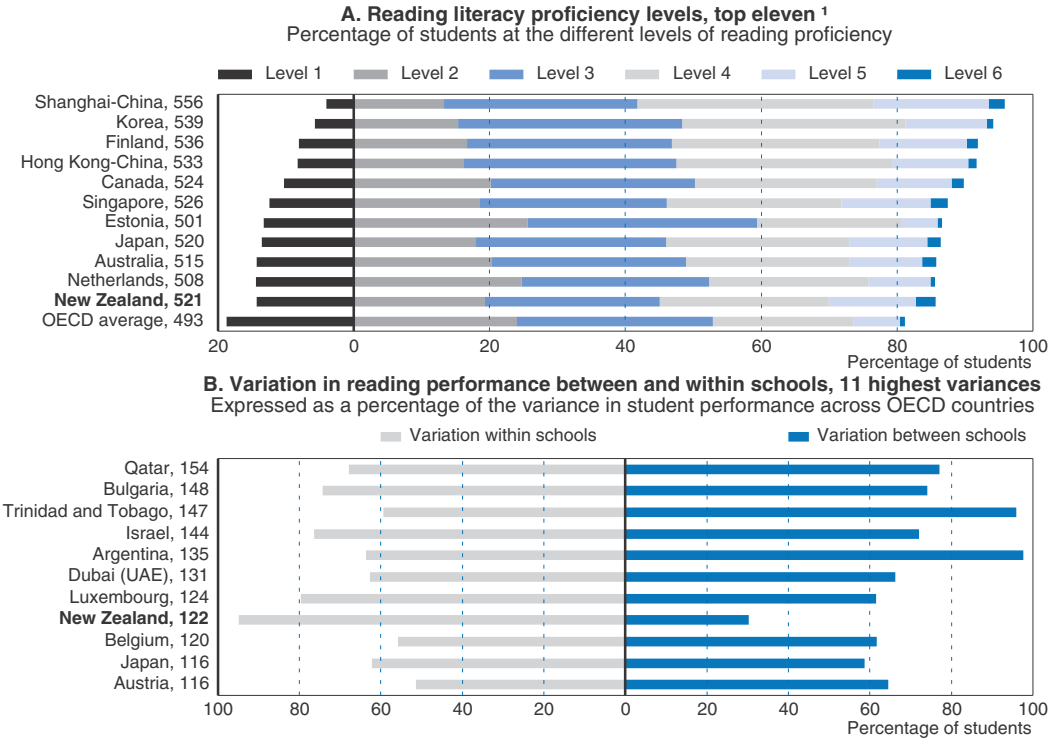
above the OECD average. Variability was high within schools (indeed the highest in the OECD), rather than between schools (Panel B). This indicates that greater efforts are necessary to adapt education to the needs of highly diverse learners within the education system (Nusche et al., 2011).

Inequality in educational outcomes can be seen in other ways. Students participating in tertiary education are themselves much more likely to be children of highly educated parents in New Zealand than in any other OECD country (Figure 2.15, Panel A). This might be attributable to a "saturation" effect – namely, the already high population share of tertiary attainments leaving little room for further upward mobility – though New Zealand's tertiary share does not seem quite high enough for this channel to operate. The PISA "gradient" – the sensitivity of the mean PISA score to a change in the PISA index of student socio-economic background – is even less susceptible to this argument, and New Zealand's is the second highest (OECD, 2012b), though falling to perhaps fifth highest if adjusting for country differences in income distribution (Panel B). These results seem to mirror the dichotomy

Figure 2.14. **PISA results for New Zealand are characterised by high means but high dispersion as well**



Note: The data near the country name are the reading score for Panel A and the total variance as a proportion of the OECD variance for Panel B.

1. Countries are ranked in descending order of the percentage of students at levels 2, 3, 4, 5 and 6.

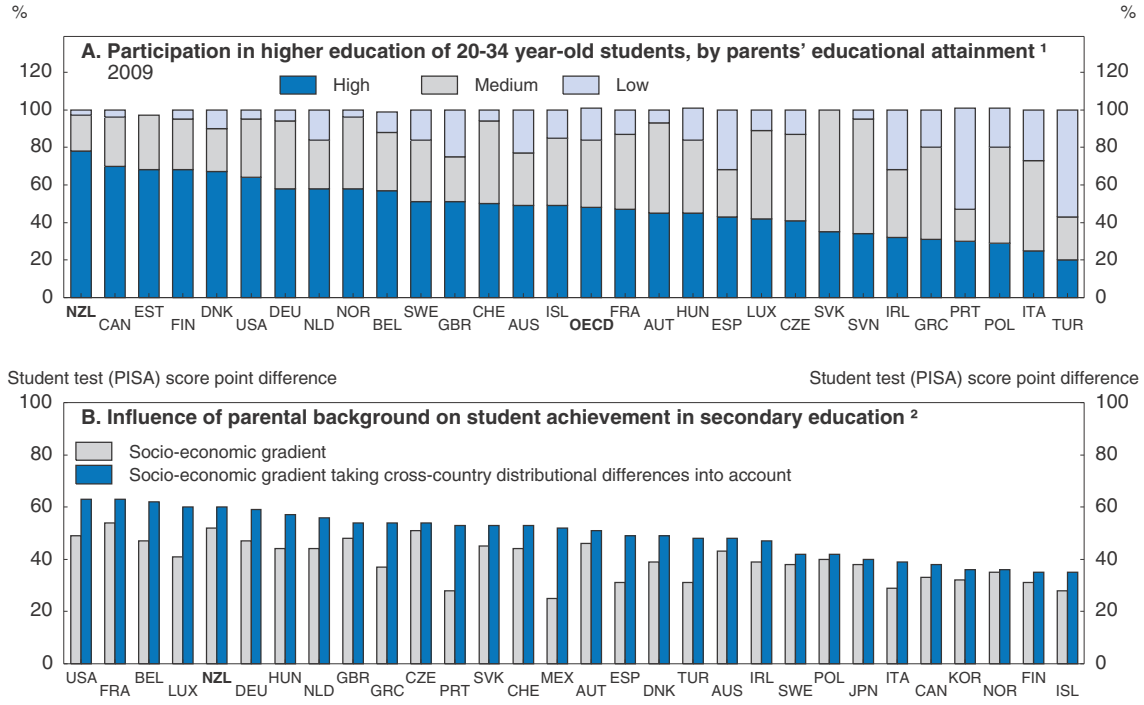
Source: OECD (2010), *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science* (Volume 1) and *Overcoming Social Background* (Volume II), OECD Publishing.

StatLink *Note:* To download the data corresponding to this graph, refer to *Figure 28.*

observed for attainment rates, i.e. both high numbers of school drop-outs and of tertiary-qualification completers.

The International Education Association has published a set of standardised international test results for reading (PIRLS) for 4th graders, and for mathematics and science (TIMSS) for 4th and 8th graders. PIRLS (IEA, 2012) shows that for 2011, 14% of New Zealand's students reached the "advanced" international benchmark for reading achievement, the 10th highest out of 45 countries, but the percentage of NZ students reaching the "high" benchmark was only slightly better than the median (there were two more benchmarks, intermediate and low). Mean reading scores were stable since the last assessment in 2007. Scores in mathematics and science were both at the median for "advanced" attainment and below median for "high", and both subjects showed reduced scores since the 2007 assessment (Figure 2.16). PISA tests math and science *literacy*, rather than subject knowledge *per se*, as does TIMSS (Loveless, 2013). Together, these international scoreboards suggest that good performance needs to extend to broader groups of students and more attention needs to be paid to numeracy skills across the board.

Figure 2.15. **Education and parental background**



Note: The number of students attending higher education are under-reported for Australia, Canada, New Zealand and the United States as they include only those having attained ISCED 5A, while the other countries include students who attained ISCED 5A and/or 5B. Therefore, the omission of data on 5B qualifications may understate intergenerational mobility in these countries.

1. The participation of 20-34 year-olds in higher education by parents' educational background is captured by the distribution (proportion) of parents' educational attainment, and the corresponding odds (high, medium or low) of being in higher education by educational background.
2. The socio-economic gradient represents the change in PISA science score due to an improvement of one international standard deviation in the PISA index of student socio-economic background. The socio-economic gradient taking cross-country distributional differences into account is the change in PISA science score due to an improvement of one country-specific, inter-quartile change in the PISA index of student socio-economic background. Note that science literacy was the focus of PISA 2006, upon which these results are based. For details, see Causa and Chapuis (2009).

Source: OECD (2012), *Education at a Glance*, Table A6.1 and OECD (2010), *Economic Policy Reforms: Going for Growth*, Figure 5.3.

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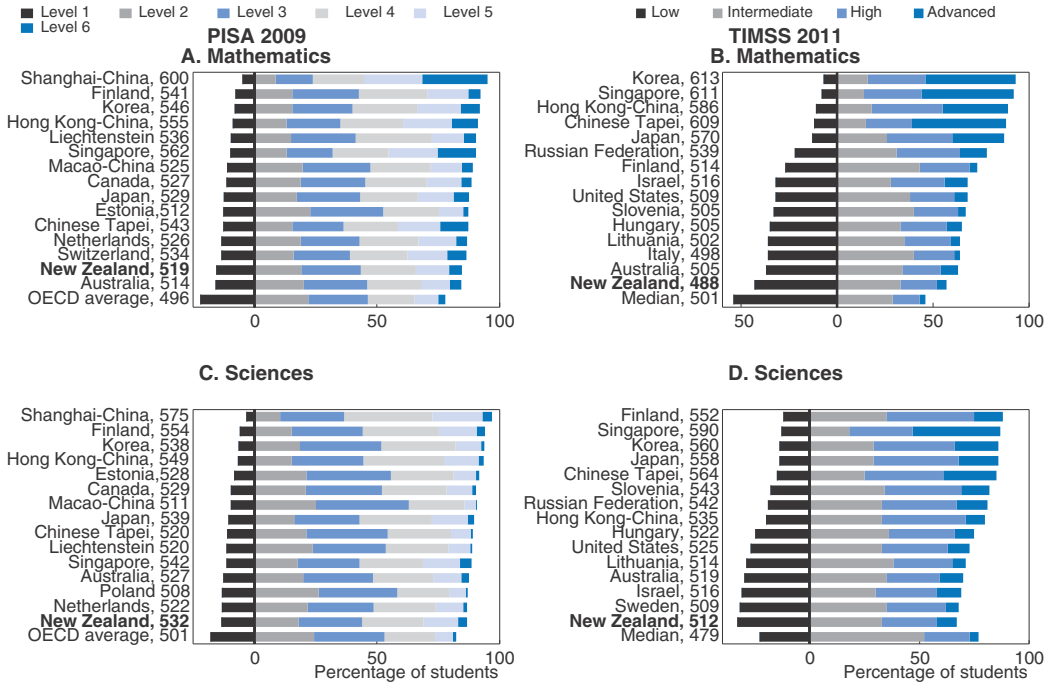
Pre-school: Laying a strong foundation

A growing body of research recognises the importance of very early educational experiences to children's future achievement. Early childhood education (ECE) programmes, in particular, help to create a strong foundation for lifelong learning. PISA results appear to corroborate these claims. They suggest that ECE participation is strongly associated with reading performance at age 15, even after accounting for students' socio-economic backgrounds, but only in countries where policies have sought to improve ECE quality. Disadvantaged students have less access to pre-primary education than others in almost every country, particularly those in which pre-primary education is not widespread (OECD, 2011).

ECE has therefore been a focus of reform, though a high teacher-pupil ratio in ECE also means that it is expensive. The previous government instituted 20 hours per week (6 hours per day maximum) universal free, fully subsidised provision for children aged 3-5, It also established differentiated funding for centres based on the share of qualified teachers, creating an incentive to employ more qualified staff. The policy apparently did not impact positively on enrolments but mainly increased the intensity of participation amongst those

Figure 2.16. **New Zealand's PISA and TIMSS results are characterised by high means but high dispersion too**[1]

Percentage of students at the different levels of mathematics or science proficiency; top fifteen[2]



Note: The data near the country name is the mean score in mathematics or science.

1. For PISA data (covering test results for a sample of 15-year-olds), countries are ranked in descending order of the percentage of students at levels 2, 3, 4, 5 and 6. Level 1 includes below level 1. For TIMSS data, countries are ranked in descending order of the percentage of students at benchmarks advanced, high and intermediate at the 8th grade level (13-year-olds). Low benchmark includes students who have not attained low benchmark (400 score).
2. For TIMSS data, England has been suppressed from the top fifteen because it does not entirely satisfy the guidelines for sample participation rates.

Source: International Association for the Evaluation of Educational Achievement (IEA) (2012), *TIMSS 2011 International Results in Mathematics and TIMSS 2011 International Results in Science;* OECD (2010), *PISA 2009 Results: What Students Know and Can Do – Student Performance in Reading, Mathematics and Science* (volume I) and *Overcoming Social Background* (volume II).

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already attending. It further led to a surge in the numbers of teachers completing ECE qualifications and a large cohort of relatively young and inexperienced ECE teachers, along with a sharp rise in the teacher-pupil ratio.

The current situation is that the wealthier, educated households have taken most advantage of state-subsidised ECE provision, rather than those that need it most, i.e. low socio-economic and ethnic groups (Table 2.9). Many of the children attending ECE would probably have enrolled in ECE even without the subsidy. Childcare subsidies are also available under the Working for Families tax credit, and, though they are means-tested, the upper income threshold for eligibility is high (NZD 99 000 per year). The government's objective is that by 2016, 98% of children starting school will have participated in quality ECE (against a current ECE participation rate for children starting school of 95%). Achieving this target will require increased participation by those who are currently under-represented, particularly Maori and Pasifika children. The government has established participation initiatives in communities with low ECE take-up, including Maori, introducing families to ECE via informal playgroups, contracting with NGOs to engage with

Table 2.9. **Prior participation in early childhood education (ECE) of children starting school by ethnic group**

Year ending March 2013

	Percentage of children who attended ECE	Total children starting school
Sole European/Pakeha	98.5	32 829
Sole Maori	90.6	10 432
Sole Pasifika	85.9	5 208
Sole Asian	96.9	5 046
Mixed ethnicity[1]	94.9	8 574
Ethnic total	95.5	62 444

1. Weighted average of European/Maori, European/Pasifika, European/Asian, Maori/Asian, Pasifika/Asian.

Source: Ministry of Education, Education COUNTS.

priority families, and the establishment of intensive community participation projects and home-based care initiatives.

The NZ "investment approach" to social spending underlines the importance of early intervention. It also suggests that, in a context of constrained budgets, ECE subsidies should be targeted on groups where the future social and labour-market payoff is highest. Some refocusing of childcare benefits on poorer children might thus be warranted. As the imbalance in participation partly represents the lack of physical capacity in poorer areas, it will be important to build up such capacity, for example by locating ECE centres in primary schools. Parental engagement is also critical on the demand side. Some home-instruction programmes have been shown to improve parental demand for ECE and give children of minority backgrounds important advantages in the transition to school (BarHava et al., 1999; Fergusson et al., 2005). Some studies suggest that the advantages of ECE can dissipate if not reinforced by high quality schooling (Heckman and Masterov, 2007). This would suggest that a balanced and sustained approach to investing in quality and engaging schoolchildren throughout the years of schooling is required.

Schooling: Maintaining engagement

The NZ schooling system has been considered to be at the OECD vanguard. Its teaching philosophy is at once respectful of learners' diversity and comprehensive, to give all children the same chances without separating them into rigid vocational and academic tracks. The 1989 school reform decentralised a significant amount of decision-making (appointment and management of staff, allocation of resources, curriculum implementation, pedagogy, assessment, etc.) to the individual school level. Parents were given a strong say in school governance by being eligible to serve on school boards. The use of tests to monitor quality is downplayed in favour of a system of internal assessments of pupils by teachers, teachers by school leaders and principals by Boards of Trustees. Accountability is upheld through a sophisticated and internationally recognised system of external school reviews. The Education Review Office (ERO) evaluates schools at a frequency inversely proportional to past school performance.

Thus, schools have been given freedom to teach and made accountable to parents through local boards of trustees, whose local knowledge presumably make them the best judges of teacher quality (Adams, 2009). Indeed, the introduction of a high degree of school autonomy that fundamentally overhauled the NZ school system more than two decades

ago followed recognition that the heavily centralised and inefficient system at the time had failed ethnic minorities and other marginal groups (the 1988 Picot report). The current system has the added benefits of flexibility and freedom from "teaching to the test" and frequent feedback from teachers and students' evaluation of their own learning, which international evidence has found to be important for cognitive development. Overall performance has improved, including among minorities.

However, teacher wage setting has remained centralised. Intuitively, this would seem to break a critical link between accountability and autonomy, restricting school leaders' freedom to pay more to attract and keep good teachers, or more broadly to allocate school resources among competing uses in line with student needs. OECD empirical work has found that student attainment is higher when schools have autonomy over teacher salaries and pay progression (Sutherland et al., 2009). PISA work further suggests that many well performing education systems have moved from bureaucratic "command and control" towards school systems where considerable discretion is given to school heads and faculties in how resources are allocated, a factor which is shown to be closely related to school performance when combined with effective accountability systems; school autonomy in defining and elaborating curricula and assessments also relates positively to system performance (OECD, 2010a, pp. 4 and 41).

Parental choice needed to strengthen school oversight is available – parents may send their children to out-of-zone schools and more school-performance information is being made public to inform this choice (Bibbee, 2013). However, capital expenditures remain entirely under the control of the Ministry of Education (purportedly to take into account wider school network implications of some schools expanding at the expense of others), undercutting the ability of high-performance schools to expand and weakening the pressure on failing schools to improve. The government could increase benefits by giving each school a block grant, covering both staffing needs and the cost of buildings and land, based on student enrolments, along with mechanisms for recognising geographic, socio-economic and size differences (Adams, 2009; Fazekas, 2012). Choice and competitive efficiency is also limited by the lack of alternatives to the state school system. Indeed, a larger share of private government-dependent schools has been shown to enhance system performance in OECD countries (Sutherland et al., 2009). The government is planning to introduce a few charter schools in mid-2013 on a trial basis. They will be free of the national curriculum and collective pay agreements but will have an obligation to serve underprivileged children. This proposal has met heavy resistance from the teachers' unions, mirroring the debates elsewhere in the OECD. It will be important to evaluate the results of the pilot and carefully assess the value of charter schools.

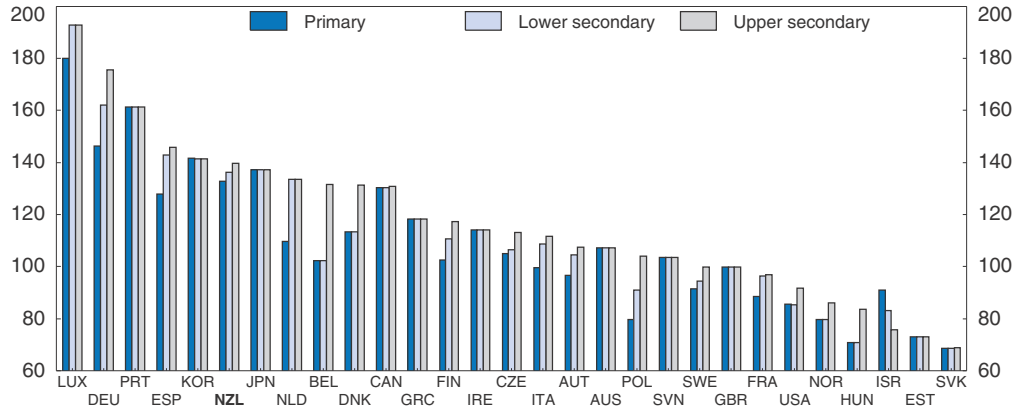
The devolved system has resulted in excessive fragmentation and sometimes poor capacity in school governance. This problem seems particularly acute at the primary level: there are too many small-scale schools in often depopulating rural areas, with too much duplication in administration and policy implementation, and isolated teachers with few external supports. School management talent is spread too thinly, and the administrative burden on individual principals often prevents adequate focus on learning goals. Educational outcomes also suffer in small-scale schools (Sutherland et al., 2009). In New Zealand, however, low-decile schools tend to be smaller, making it difficult to determine whether it is school size or some other factors (e.g. socio-economic status) that affect student achievement.

Teaching quality has also been called into question by the long "tail" of underperformers (unrealised human potential). Relative teacher pay is among the highest in the OECD (Figure 2.17), which (among other factors such as status and initial teacher training) should be attracting high quality people into the profession. However, incentives to in-work professional development may be weaker. There is a national system for teacher registration against national standards, enforced by a professional body (the NZ Teachers' Council), yet teachers' unions are also represented on the NZTC. Teacher pay progression is based on seniority, rather than performance. Movements up the salary scale occur annually based on the school principal's attestation of satisfactory performance, so that teachers reach their maximum pay grade relatively early in their careers, with subsequent pay increases achieved only through negotiated changes to the collective agreement, promotion, or taking on additional roles and responsibilities that attract additional allowances. Assessment practices also suggest scope for doing better. Internal school assessments of teachers and student progress are performed well in a mechanical sense but are not always used by teachers to adapt pedagogy and curricula to meet the needs of poor performers. Failing students and their parents often do not know they are underperforming until it is too late to correct problems.

The government has introduced national standards in primary education. Their aim is to help schools and parents to better understand children's learning needs by providing information about their progress and achievement against clear learning goals. Schools and teachers can then make more informed decisions about curriculum, pedagogy, resource allocation, etc. The system is being implemented despite initial resistance to the sharing of school data. However, it is still based on within-school assessments of whether the standards are being achieved. The authorities are addressing this issue by introducing a tool to assist teachers to moderate and ensure consistency of their judgements about whether students have achieved the standards. Furthermore, ERO has updated its assessment process to engage more collaboratively with teachers, rather than at arms' length as formerly, thus helping to ensure teachers' "buy into" ERO recommendations. This promising development follows recommendations by the OECD Review to strengthen the quality and impact of assessments (Nusche et al., 2012).

The government has made improving the quality of teaching one of its top priorities in education policy, though it has backed down from a proposal to fund this by increasing class size, following opposition from teachers and parents, even though class size is only weakly related to outcomes, in particular in secondary education. The chief remaining means of boosting teacher quality would be to: *i)* further raise the rigour of teacher training and offer attractive terms of employment including greater pay differentiation, e.g. for serving in deprived student areas; *ii)* strengthen the teacher appraisal and the performance-management process, backed by boosting school leaders' capacity to carry out the process; *iii)* establish a career structure, and link teacher appraisals to career progression (Nusche et al., 2012); and *iv)* provide adequate exposure to professional collaborations and development. Rationalising school administration and policy by amalgamating schools with excess capacity (especially at the primary level), and providing incentives and opportunities for schools to cluster and establish closer formal and informal arrangements, would increase opportunities for networking and cross-fertilisation of ideas among educators, contributing to improved educational outcomes. It could also make schools more accountable by increasing competition for a more limited number of school board and school leader positions.

Figure 2.17. **Teachers' salaries as per cent of average wages, 2010**



Source: Statistics New Zealand; OECD *Database*; OECD (2012), *Education at a Glance*.

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Preparing the transition in secondary

At the secondary level, the introduction of National Certificates of Educational Achievement (NCEAs) about a decade ago, with formal quality assurance by the NZ Qualifications Authority, has helped to counterbalance the potential weaknesses of subjective teacher evaluations as performance indicators. The various NCEA levels achieved by students therefore result in highly credible and standardised certifications. In addition, secondary schools are typically much larger than primary schools, allowing for economies of scale in management and more experimentation with teaching and curricula.

Nonetheless, PISA reveals that New Zealand leads the OECD in grouping pupils by ability (mainly at secondary level), which OECD research has found diminishes educational efficiency (Sutherland et al., 2009). The high incidence of ability grouping in NZ secondary schools may be explained, in part, by the comprehensive nature of the system and by the fact that New Zealand has a low incidence of grade repetition. These factors result in a wide heterogeneity of ability in each year level in NZ schools, which they attempt to manage via ability grouping, both across and within classrooms. A recent study finds that sorting homogeneously by previous performance in fact improves students' math and reading scores, for both low and high achieving students (Collins and Gan, 2013).

The introduction of NCEAs recognises a wider range of learner skills and competencies, and enables students to work towards qualifications at their own pace, thereby supporting less academically inclined learners. An emphasis on foundation-level literacy and numeracy skills seems entirely appropriate for a school-level qualification. However, with three levels of formal school qualification (Bibbee, 2013), the assessment burden on some students may have become excessive (Hipkins, 2007). This compounds the alienation of poor performers who have already been let down by primary schooling and who may be more likely to thrive in learning environments of a more practical and work-related nature.

Successive governments and individual secondary schools have tried to address the needs of such students through the introduction of vocational education and training (VET), notably Gateway, which enables upper-secondary students to undertake structured workplace learning while still in school. Apart from a few successes, such courses have suffered from low prestige. Many students with low motivation and engagement either

drop out of school shortly after their 16th birthdays or, if they manage to stay the course, may finish secondary schooling at age 18 without even having earned an NCEA level 2, considered to be the minimal requirement for entry-level jobs. This also reflects the fact that students are free to achieve NCEA levels at their own pace through a variety of courses, particularly for non-academic-track students, and greater clarity and guidance is needed to navigate the plethora of choice that is being made available under the banner of reform.

Another problem has been that the NCEAs, even though they are standardised across the country and thus support job mobility and labour-market efficiency, still may convey insufficient information to tertiary institutions or employers. Surveys of students and parents have previously suggested that there is little incentive to work to pass the (pass/fail) NCEA exams, and that the NCEAs allow students to opt for "easy" units rather than those that are more challenging and to put too much emphasis on internal assessments, causing students to strategically minimise work effort so as to leave room for improvement under the next assessment round (Wylie et al., 2008; Meyer et al., 2006). A number of changes have been implemented in response to these criticisms. First, NCEA qualifications (and the individual courses that contribute to them) now carry three grades (achieved, merit or excellence) to better differentiate performance. Second, the new Vocational Pathways programme brings together the standards and skills recommended by businesses in five broad sectors and links them to study and employment possibilities.

Competent Learners (a longitudinal study tracking a group of children in the Wellington area from ages 5 through 20) found that students at most risk of dropping out gave signs of boredom and restlessness, poor school attendance and risky behaviours by age 14, making 9th and 10th grades a pivotal period for addressing youth issues (though males were also "drawn" by attractive job-market opportunities for drop-outs, at least until recently). This suggests areas needing more attention by educators. International evidence suggests that these include a strong emphasis on early identification and interventions to address specific learning and behavioural issues, coupled with mentoring and individualised support. Work-relevant learning and extracurricular activities such as music, sports and youth associations may also help to engage disaffected youth and build both cognitive and non-cognitive skills. It will be important to recruit minority students into such activities.

Every effort should be made to keep youth in mainstream education and well integrated with successful learners. Consideration should be given to increasing the age of compulsory schooling further (OECD, 2008a; Box 2.6). The government has started to curtail schools' incentives to allow or encourage student to drop out (especially right after funding is renewed), notably by tying funding to student rolls at quarterly (rather than annual) intervals and tightening requirements around the granting of early leaving exemptions.

The transition to tertiary education

The government is investing heavily to create multiple pathways for young people to attain foundation-level qualifications (Joyce and Parata, 2012). It is recognised that the approach of exclusively comprehensive, implicitly academic-track education in upper-secondary schooling had ill served students with different interests and needs. The government has accordingly set two high-level educational goals: *i)* to raise the proportion of 18 year-olds with an NCEA level 2 from 72% currently to 85% by 2017; and *ii)* to increase the proportion of 25-34 year-olds with qualifications at level 4 or above on the New Zealand Qualifications Framework (equivalent to a two-year polytechnic diploma or higher) from

Box 2.6. **Raising the school-leaving age: International experience**

New Zealand is among the minority of advanced OECD countries with a minimum school-leaving age of 16. Most countries in Europe, most recently the United Kingdom, and a number of US states and Canadian provinces have raised their compulsory schooling age to 18; Australia has recently raised its to 17. The wisdom of such a move receives considerable support from research. Oreopoulos (2007), for example, finds that 20th century increases in the school leaving age (from 14 to 15 to 16) in the United States, the United Kingdom and Canada raised lifetime wealth by at least 15% for each extra year of compulsory schooling, even accounting for foregone income due to delayed work entry. Non-pecuniary gains such as higher life expectancy and life satisfaction, and reduced risks of unemployment, were large as well. Hence, the opportunity costs of dropping out are substantial. Teenagers may not act rationally in the face of such information, given myopia in adolescent psychology and incentives ruled by peer pressure. NZ research has found that a factor important for successful school leaving for boys (who take longer to reach maturity than girls) was merely staying at school until the end of Year 13 (MoE, 2011). A rule that removes the need for willpower to stay in school thus increases welfare. Opponents of longer compulsory schooling argue that forcing unmotivated youth to stay in school is worse than their dropping out. Teachers tend to be opposed because they fear burn out from having to continue to deal with difficult and disruptive youth. Therefore, longer compulsory schooling must be accompanied by policies to make school relevant for those who would otherwise have left.

The UK reform may be particularly relevant for New Zealand. There, the obligation is to stay in learning rather than school *per se* until age 18 or the attainment of minimal qualifications, whichever comes first. Youths can fulfil the obligation in a variety of ways, including working full time provided they attend training either with the employer or outside (OECD, 2008b). Competition among providers is encouraged by publishing performance information and allowing students a choice of provider. The obligation is being slowly phased in (coming fully into effect only in 2015), and thus it is not possible to evaluate its success in keeping youth in learning. However, it is likely to be more promising than keeping youth who want to leave school in a classroom. New Zealand's recent reforms providing a variety of pathways for completion of foundation-level qualifications (secondary studies) could serve as a complement to such an obligation, were it to be implemented.

52% currently to 55% over the same time span (see Chapter 1 for estimated long-run growth impacts of these measures). The latter goal is more ambitious than it appears, because without action the ratio would decline due to cohort effects. There is also a supporting goal to increase attainment at level 4 and above among Maori and Pacific Islanders (TEC, 2012).

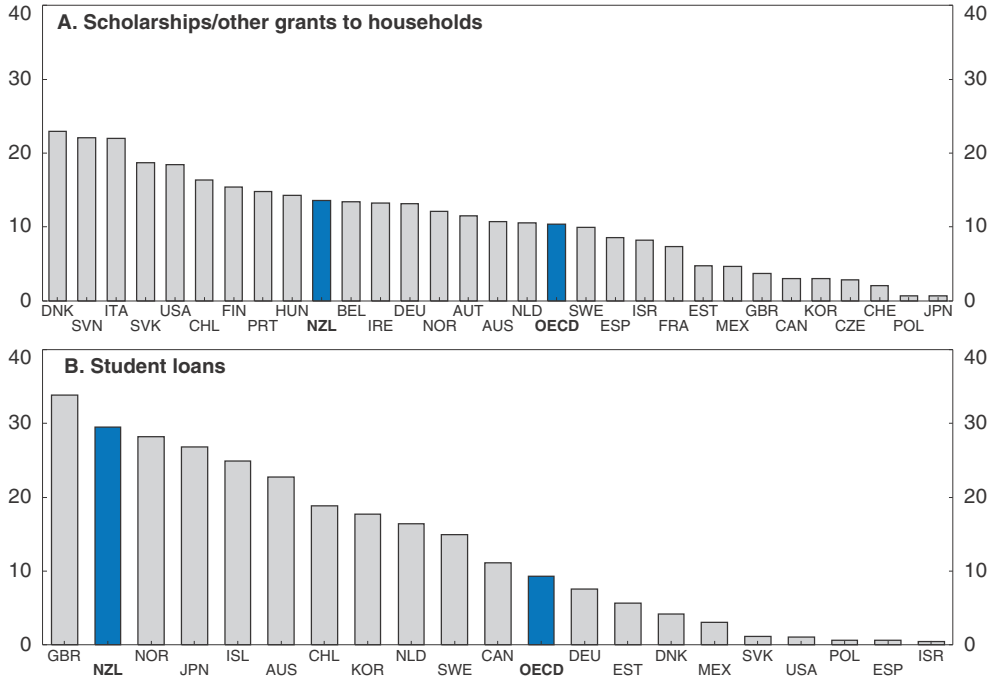
A key tool to achieve these targets is the Youth Guarantee (YG) of fees-free tertiary education for the achievement of NCEA levels 1 to 3 by 16-17 year-olds, especially for those who are at risk or have already dropped out of school. The programme is being rolled out progressively. The number of Youth Guarantee places was substantially increased in Budget 2012 and is on track to increase to 10 345 places by 2015, given anecdotal evidence of some unfilled YG places. YG is due to be evaluated towards the end of 2013, and better information will then be available about whether supply is meeting demand. Students may achieve these qualifications within either a secondary or tertiary education setting, or a combination. VET typically forms a major part of such programmes and is often provided by Institutes of Technology and Polytechnics (ITPs), which have a strong comparative advantage in VET with a richness of content unavailable at secondary level.

A number of tertiary Trade Academies have been set up under the guarantee as partnerships between tertiary providers and secondary schools to enable 16 and 17 year-olds to undertake trade-related tertiary study while still enrolled in school. While it is preferable for students to earn their NCEA levels 1 and 2 while still in secondary school – as this is the least-cost and hence most sustainable solution – the Trade Academies have yet to be evaluated, though early anecdotal evidence is positive. An obstacle to expansion of the academies is resistance by high-school principals who fear lower funding from the loss of students to part- or full-time tertiary study, suggesting the need for clearer funding guidelines (ERO, 2011).

Quality in tertiary education is variable. The earlier enrolments basis for public funding is deemed to have dragged down quality because tertiary educational organisations were mainly motivated to keep student head count high in pursuit of subsidies. Many courses were driven by demand from students, which in some cases did not reflect the skill requirements of employers – although the increase in earnings and employment rates with qualification levels suggests that most skills produced are indeed of value to employers. Some students were needlessly kept in drawn out training, particularly by some of the Private Training Establishments (PTEs) for foundation training programmes for beneficiaries and some industry training. The Tertiary Education Commission (TEC) now makes a small (5%) portion of funding contingent on completion rates, and is planning to expand this share. The TEC now publishes completion rate data by institution, while the Government has increased the publication of job placement and post-study earnings rates. These steps have led to improved performance by providers.

Figure 2.18. **Public subsidies to private entities for tertiary education**

2009, percentage of total public expenditure on tertiary education



Source: OECD (2012), *Education at a Glance*, Chart B5.3.

StatLink http://dx.doi.org/10.1787/888932834283

Cost sharing with students is considered to be justified by the greater ratio of private to public returns in tertiary as opposed to lower levels of education (although student groups feel tertiary education ought to be a right, not a privilege). Student loans for tertiary education are very generous and income-contingent, along with grants enabling wide access (Figure 2.18). Their interest-free component nearly doubles their long-run cost to government, while lowering the cost to students (Ulrich et al., 2012). While the government has attempted to recoup some of these costs by requiring debtors working abroad to pay interest, this may create perverse incentives, and non-payment is already a serious problem. The size of loans has increased as tertiary institutions raised their (regulated) tuition fees, so that affordability has been stable (Ulrich et al., 2012), though access may be an issue for debt-averse students from poor families. The equity burden of taxpayer-funded assistance going to mainly middle-class students may also be problematic. However, financial barriers may be minor hurdles to tertiary access by the disadvantaged. Canadian research has found that parental aspirations may be much more important, although they are correlated with socio-economic status (Finnie et al., 2010).

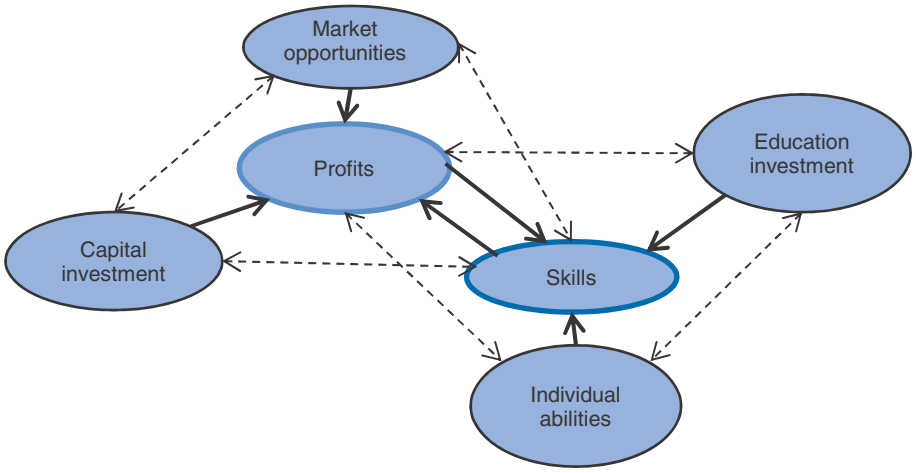
Box 2.7. **Recommendations for improving education policy**

- Ensure greater ECE participation by children from disadvantaged backgrounds by a more targeted approach, such as home instruction programmes to boost parental demand, and by refocusing child-care subsidies on low-income groups to encourage suppliers to enter into areas of low provision.
- Foster teaching quality by improving content of teacher training and professional development, especially regarding diverse student needs, bolstering capacity of school leaders via training and selective hiring; and tying salaries and career paths to good performance rather than merely seniority.
- Improve standards, appraisal and accountability in the schooling system by:
  - providing incentives and opportunities to amalgamate and cluster fragmented school networks, to achieve economies of scale in administration, thus freeing up principals to focus on learning goals, and expose teachers and pupils to beneficial network effects;
  - continuing to strengthen external checks on school self-review and internal assessment processes (peer-to-peer moderation, Education Review Office review, publication of school information and national benchmarking), thereby reinforcing their twin foundations of responsibility and trust;
  - providing block grants for a greater share of school costs, including staffing needs and operating costs, based on student enrolments and socio-economic challenges, to give schools flexibility to allocate resources and respond to parental demands for high-quality teaching;
  - carefully promoting quality-inducing school competition and innovation, keeping in check any tendency toward school segregation by a strong social-service obligation in exchange for government support, with objective evaluation of pilot projects in this sphere.
- Reduce drop-out rates by raising learning obligations to age 18; improve relevance of curricula and school activities for failing students; keep students in mainstream education and in well-integrated classrooms.

Matching skills to jobs

According to the Dalziel (2012) model of the "skills ecosystem", skill shortages could be seen as a co-ordination failure between business investment decisions and youths' education decisions (Figure 2.19). The long lead times in education make such co-ordination difficult. These two decisions are typically intermediated by market signals, notably returns to education, and by co-ordination. To bridge this gap, students must be helped and even trained to choose the fields and levels of qualifications that are not only compatible with their interests and abilities but also likely to be needed in the labour market by the time they graduate.

Figure 2.19. **The skills ecosystem**



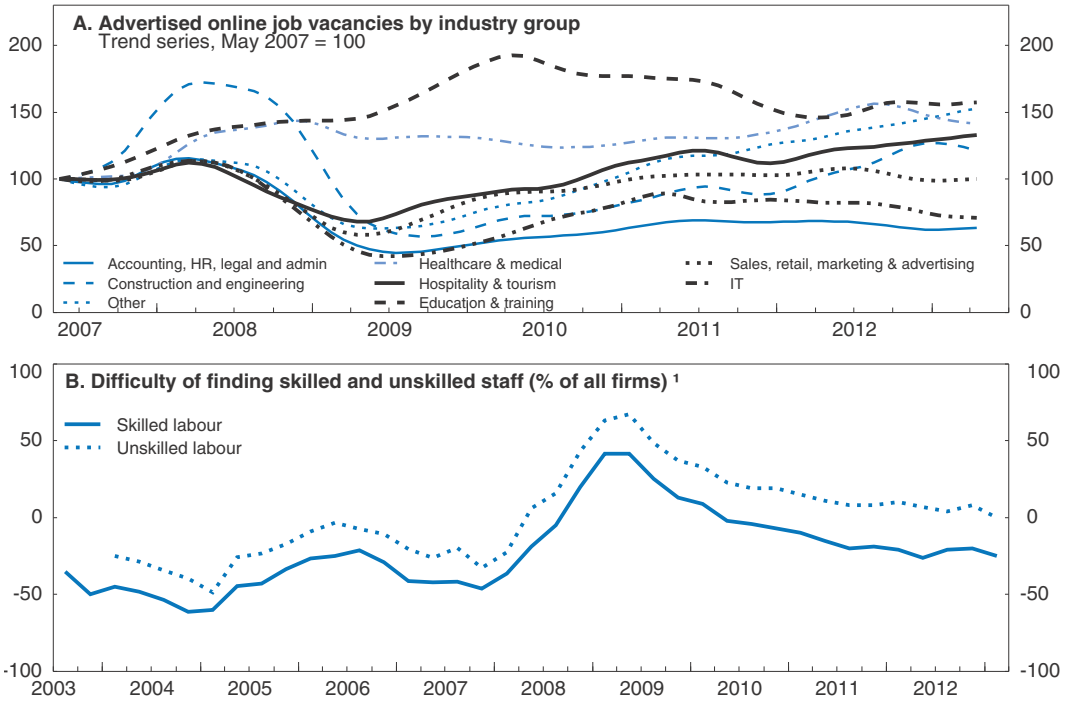
Source: Dalziel (2012), *Toward a New Zealand System of Skill Ecosystems*.

Unsatisfied demand for skills

Business surveys point to an undersupply of the skills required for firms' production and innovation needs. Three areas of significant mismatch/undersupply were reported in 2009 by the Ministry of Education: ICT, engineering and construction (Earle, 2009). Since then, demand has continued to grow in construction and engineering (Figure 2.20, Panel A). Shortages in construction may be exacerbated by the Canterbury rebuilding and, more imminently, by the strength of housing investment, stronger requirements for earthquake-proofing and leaky-home recovery across the country. Surveys of employers indicate greater difficulty in recruiting skilled workers in general (ease of finding unskilled workers has also fallen), despite persisting high unemployment (Panel B). This seems to indicate that the skills of the unemployed, or of employed workers changing jobs, provide an ill match for the skills that employers need.

As NZ qualifications are generally high and a reasonable proxy for skills (Box 2.8), the real issue may be that matching efficiency in the market has declined. Since the crisis, workers have not been changing jobs as readily (Fabling and Maré, 2012). The Canterbury earthquakes rapidly changed skills supply and demand patterns in that region, while net worker inflows to the country became smaller and on average less experienced (Craigie et al., 2012). Less efficient matching is also not unexpected following major recessions, when employers tend to shift their demand for skills in search of productivity gains

Figure 2.20. **Indicators of skill needs**



1. Negative figures mean employers finding it difficult exceed those who say it is easy.
Source: Department of Labour; NZIER, *Quarterly Survey of Business Opinion*; and *OECD Economic Outlook 93 Database*.
StatLink http://dx.doi.org/10.1787/888932834302

(Jaimovich and Siu, 2012). Employers also complain of deficient "soft" skills (discipline, courteousness, interaction, etc.) afflicting all worker segments. Such non-cognitive skills now play as important a role in school and work success as their more easily measurable counterparts (Heckman and Krueger, 2004).

Businesses unable to find the skills they need on the market can choose to train existing or new employees (see below). They have also been lobbying government to fund more formal training places, academic engineering and IT degree programmes and the like, and to open the gates wider to skilled immigration. Industries in structural decline also complain because they cannot attract workers into low-wage positions with few obvious career prospects (OECD, 2010b).

Strategic planning and co-ordination

The 2008-12 NZ Skills Strategy was a tripartite agreement between industry, labour and government to boost skills and productivity. Rasmussen et al. (2012) argue that weakening of unions by the 1991 ECA and consequent lack of an equal negotiating partner for business has undermined such collaborative efforts. Even if that is unclear, wider collaboration by business, employees and government in worker training and skills development is desirable. The current skills strategy (NZ Government, 2012) adopts many of the same targets as its predecessor, but as part of the Business Growth Agenda, it is a collaborative government-wide effort. It actively engages education policy makers in the wider policy of development and should be seized upon as a chance to build bridges between education and business.

Box 2.8. **Are qualifications a good proxy for skills?**

Research based on the 2006 OECD Adult Literacy and Life Skills Survey (ALL) (Statistics Canada and OECD, 2011) appears to support the validity of formal qualifications as a reasonable proxy for skills in New Zealand, apart from those of immigrants, who make up a significant proportion of the NZ workforce (Smyth and Lane, 2009). There are comparatively few people with low qualifications but high literacy and numeracy skills, whereas 20-25% of degree-holders show low literacy and numeracy skills, particularly among those for whom English is not their native language. This suggests that the measured lower skills level could reflect a language barrier, rather than weak intrinsic skills, though the quality of degrees earned abroad may differ from those at home, as some employers have attested (Baron and McLaren, 2006).

NZ immigrants are more likely than the native born to have degrees: in 2006, 26% of the working-age population was foreign-born, and 38% of recent migrants had a university degree compared with only 17% of the New Zealand–born (Maré and Stillman, 2009), yet the presence of immigrants in a region appears to have the effect of lowering wages in low-skill occupations, not in those requiring a degree (Maani, 2009). This indicates that degree-holding immigrants tend to start out in lower-skilled occupations, or in occupations for which they are over-qualified compared with New Zealanders in the same roles, at least in their first 5 to 10 years (Hodgson and Poot, 2010). This result may reflect the preference given to highly qualified immigrants in recent years and the inability of the economy to absorb them efficiently, or of a market failure to convey the correct information about their true skill levels to employers. Other research has found that the emigration of degree-qualified New Zealanders is almost exactly balanced by immigration of degree-qualified people (Dumont and Lemaitre, 2005). However, balance in the exchange of qualifications does not imply balance in the exchange of skills – New Zealand thus appears to suffer from a modest net "brain drain".

The ALL survey showed New Zealand to have fairly similar rates of literacy skills deficits and surpluses in relation to job requirements, implying reasonably good matching overall. This is to be distinguished from the efficiency of labour market matching of worker *formal* qualifications to their job requirements, where New Zealand demonstrates significantly higher rates of underqualification than of overqualification, suggesting limited reserves of higher skills (Quintini, 2012). The ALL study also finds that around 40% of NZ employees have literacy and numeracy skills below a level needed to master the increasingly difficult texts and tasks that characterise a knowledge economy (Earle, 2011), corroborating the skills shortage suggested by weak productivity and qualifications mismatches.

The Department of Labour (now part of the Ministry of Business, Innovation and Employment, or MBIE) produces 10-year projections of New Zealand's skills needs, based on estimated trends in industry-level demands, and inflows into and outflows from skill categories including retirements, migration and graduation. This is meant as a rough guide to educators, students, employers and policymakers about emerging and most probable areas of need, although the range of uncertainty around such estimates is high. The latest projections indicate that demand will be strongest for "skilled vocational and intermediate vocational", which are projected to grow at 5% per year over the decade 2009-19 (Table 2.10). By contrast, the demand for bachelors' degrees is set to grow at 2% per annum. This reflects: *i)* on the supply side, adverse cohort effects on VET attainment plus a net migration outflow of VET skills, against a strong migration inflow of university degrees;

and *ii)* on the demand side, increasing displacement of unskilled jobs by mechanisation or outsourcing and greater emphasis on knowledge-based and higher value added production, increasing the premium on higher-level skills.

Table 2.10. **Occupational demand projections grouped by qualifications, 2010-20**
Annual percentage growth

2010-20 (annual % changes)	No qualifications	School qualifications	Basic vocational	Skilled vocational	Intermediate vocational	Degrees and advanced vocational	**Total**
Managers	-5.9	-2.0	3.1	7.2	8.1	2.9	**2.3**
Professionals	-1.8	-5.0	-0.2	6.3	7.7	1.1	**1.5**
Technicians and associate professionals	-1.8	-4.3	-2.0	5.9	6.3	2.7	**1.7**
Clerks	-2.4	-2.8	0.9	7.2	4.5	3.1	**0.4**
Service and sales workers	-0.3	-1.1	0.9	5.2	4.5	4.1	**1.4**
Agriculture and fisheries workers	-2.1	-2.7	1.4	5.0	5.2	2.8	**0.4**
Trades workers	-3.0	-5.2	-0.9	4.3	-11.0	3.5	**1.1**
Plant and machine operators	0.2	-1.7	3.9	7.4	3.4	2.8	**1.7**
Elementary occupations	-0.8	-0.5	3.5	7.0	3.9	4.1	**1.2**
Total	**-1.5**	**-2.5**	**1.3**	**5.1**	**5.0**	**2.1**	**1.4**

Source: Department of Labour (2012).

NZ Treasury projections suggest less excess demand for VET skills, based mainly on an assumed lower net outflow of such skills. However, there is a risk that skills needs could be even greater. One key risk for New Zealand is that global competition for degree-level qualifications, combined with population ageing in many countries outside the OECD, could choke off some of the anticipated gross inflow of highly skilled immigrants and accelerate the outflow of highly skilled residents, raising the need in particular for university degrees.

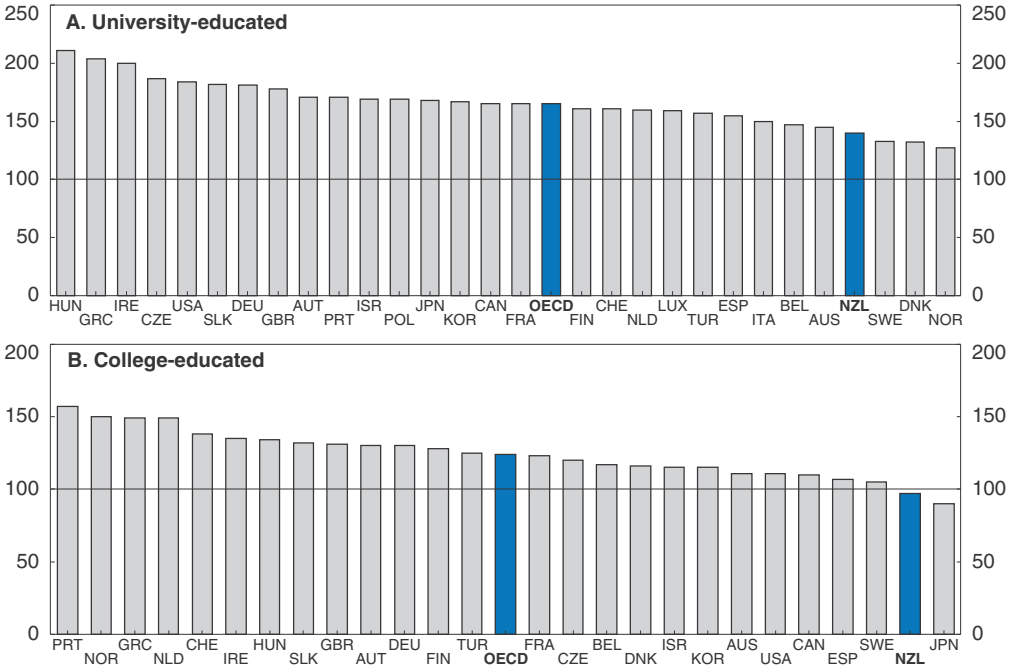
The ITOs were set up partly with the intention of filling the role of "skills leaders", but they have failed to do so, citing a lack of funding for this purpose. The government's recently completed industry training review has called for the skills leadership role to be assigned to industrial sectors that may agree for their ITO to assume this role (see further below). This should improve incentives for industry and government to work together in providing market-relevant skills planning and education funding.

Responding to market signals

The returns to education depend on its costs in terms of fees and foregone earnings during study, against expected future earnings associated with having a formal qualification. Along with their open-ended nature (covering living costs as well as tuition) and ensuring their repayment is income-contingent (which the OECD always recommends), student loans could undermine the incentive for students to make the most of their tertiary studies. Indeed, earnings of tertiary-degree holders relative to those with an upper-secondary diploma are among the lowest in the OECD, especially for non-university (Type B) education, which, on average, offers reduced earnings (Figure 2.21). Although perhaps half of the gap may be explained by measurement error (Box 2.9), this also suggests a need for greater attention to the value for money provided by the student-loan scheme and public funding incentives more generally.

Figure 2.21. **Relative earnings of 25-64 year-olds with tertiary education, 2010**[1]

Upper secondary and post-secondary non-tertiary education = 100



Source: OECD (2012), *Education at a Glance*, Table A8.1.

StatLink http://dx.doi.org/10.1787/888932834321

Low measured average returns to tertiary education for New Zealand could reflect the country's low productivity, given that workers in competitive markets earn their marginal product (Box 2.9). Some causal factors common to both low productivity and low returns are: relative lack of large firms (more likely to pay "efficiency wages" and further train highly qualified workers), natural resource endowments (leading to low innovation intensity, hence lower demand for skills), and financial underdevelopment (contributing to low capital intensity and small firm size). But since skills are the building blocks of innovation, inadequate human capital investments may in some sense *precede* low productivity.

Box 2.9. **Market returns to education**

New Zealand stands out by its very low measured private (market) returns to tertiary education in international comparison. Average earnings of tertiary graduates, relative to those with only upper-secondary education, are near the bottom among OECD countries for university (Type A) and, especially, college (Type B) qualifications (Figure 2.21). Though average returns to university are even lower in high-income Sweden, Denmark and Norway, the Nordics are known for their compressed wage structures in general. New Zealand's minimum wage relative to its average wage is highest in the OECD at just under 60%, also resulting in a compressed wage structure. A more sophisticated comparison based on the OECD's calculated net present value, taking into account the direct and opportunity costs of study and earnings net of unemployment risk, taxes and transfers, puts New Zealand at the very bottom of the tertiary return rankings (Figure 2.22). However, Zuccollo et al. (2013) estimate that up to half of the gap in tertiary returns with

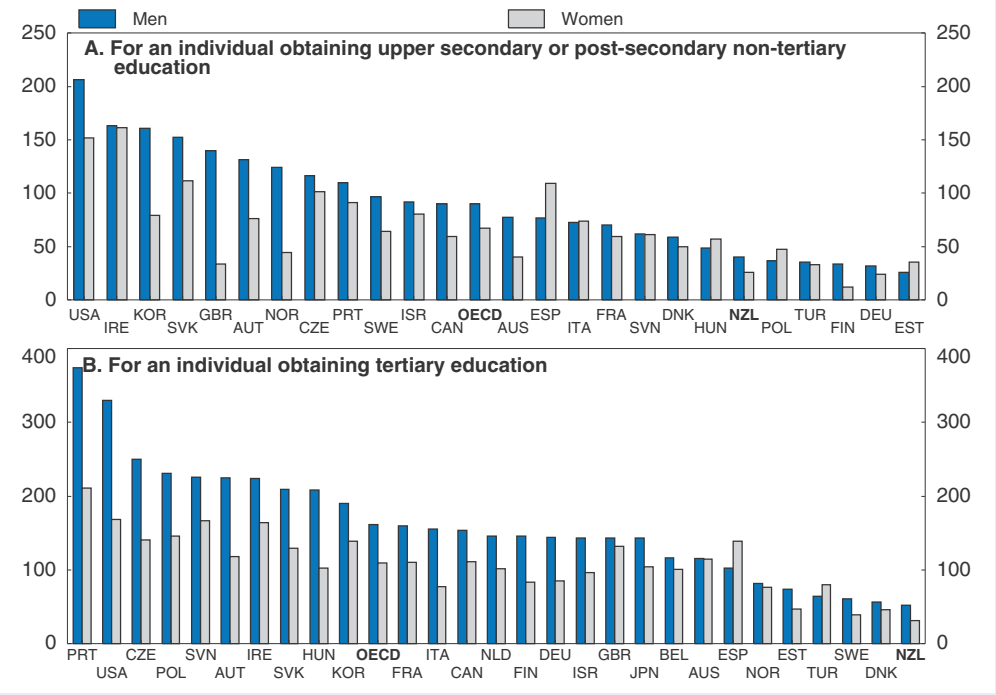
Box 2.9. **Market returns to education** *(cont.)*

respect to the OECD average can be attributed to structural and measurement differences, notably: *i)* exaggerated secondary returns (the baseline for tertiary returns) due to the large stock of tertiary VET non-completers, and *ii)* a large qualified immigrant inflow with a large gap between their qualifications and skills due to various barriers (see Box 2.8), potentially also depressing wages of native holders of lower tertiary qualifications, against a large exit of young high-skilled New Zealanders, notably to Australia, where they can earn significantly more than their NZ wage for the same skill (notably in the construction sector). But while returns may be low, they are far from zero and still provide an incentive to pursue higher education. There is also evidence that the NZ labour market pays a high premium to young NZ holders of NZ degrees; see Scott (2009) and Mahoney et al. (2013).

It is sometimes asserted that NZ businesses are unwilling to pay a sufficient premium for the skills they seek. However, firms reporting the greatest skill vacancies are those who pay the most, suggesting that willingness to pay is not the problem (Mok et al., 2012). In any market there will always be unsatisfied demand by those who could not pay the equilibrating price. This is likely to include firms whose productivity is too low to pay for the skills they require, a fundamental problem that may reflect a dearth of market opportunities promising future profits and/or a lack of managerial ability to make the best use of available skills to exploit them. Financial-market failures may also play a role, for example in the form of excessively collateral-based lending or lack of venture capital. Hence, an inability rather than unwillingness to pay is likely to be the more serious problem.

Figure 2.22. **Market returns to education are comparatively low**

2008,[1] thousand USD converted using PPPs for GDP



1. Or latest available year.

Source: OECD (2012), *Education at a Glance*, Tables A9.1 and A9.3.

StatLink *Note: To download the data corresponding to this graph, refer to Figure 27.*

Since New Zealand has high education spending for its level of GDP and high tertiary attainment rates, the quality and relevance of its tertiary education must be scrutinised. Low market returns could be an indicator of over-education for the actual needs of the labour market, accelerating already diminishing returns as more marginal students are subsidised into entering tertiary education, alongside inadequate skill supplies for the needs of some sectors of the economy. Alternatively, there could be resource misallocation within education due to wrong fields of study or poor quality of instruction. Equity issues also emerge. To raise national welfare, some resources should be redirected at reducing high-school dropping out. This is indeed a significant area of investment in New Zealand, though such resources could perhaps be better focused in line with the above recommendations (Box 2.7). Merit-based scholarships could be provided to Maori and Pasifika in areas deemed to be undersupplied relative to economic needs.

Figure 2.23 shows the most popular fields of study, at both ITP/PTE and university levels, to be society and culture and commerce, where however abandonment rates are also very high (around 40%). This suggests some mismatch with labour-market needs, along with quality problems among private tertiary providers in these fields (OECD, 2008a). In the six years up to 2011, growing interest in health and food & hospitality studies appeared to provide a better match to observed areas of growth in job vacancies (Figure 2.20). Growth of interest in natural sciences and engineering, building trades and IT, the areas of critical business need noted above, remains small, or even negative, apart perhaps from university level engineering. This seems inconsistent with high PISA scores for math and science (admittedly more so when using the TIMSS results), and reasonable market signals in these fields (Mahoney et al., 2013). The government is increasing funding for engineering places at universities, but the danger is that they will lower their entry standards for these difficult subjects (Hill, 2012). A problem is that the most popular subjects are also less costly for the providers, who receive block grants. Thus, although the government provides differentiated funding for different types and levels of programmes (e.g. arts programmes are given lower levels of funding than sciences), tertiary providers still cross-subsidise across the programmes they offer. A key mechanism for steering the education system is the investment plans that are negotiated between the TEC and individual providers, which include *inter alia* the type of programmes to be undertaken by a TEO and the number of places to be funded by government.

VET and workplace learning

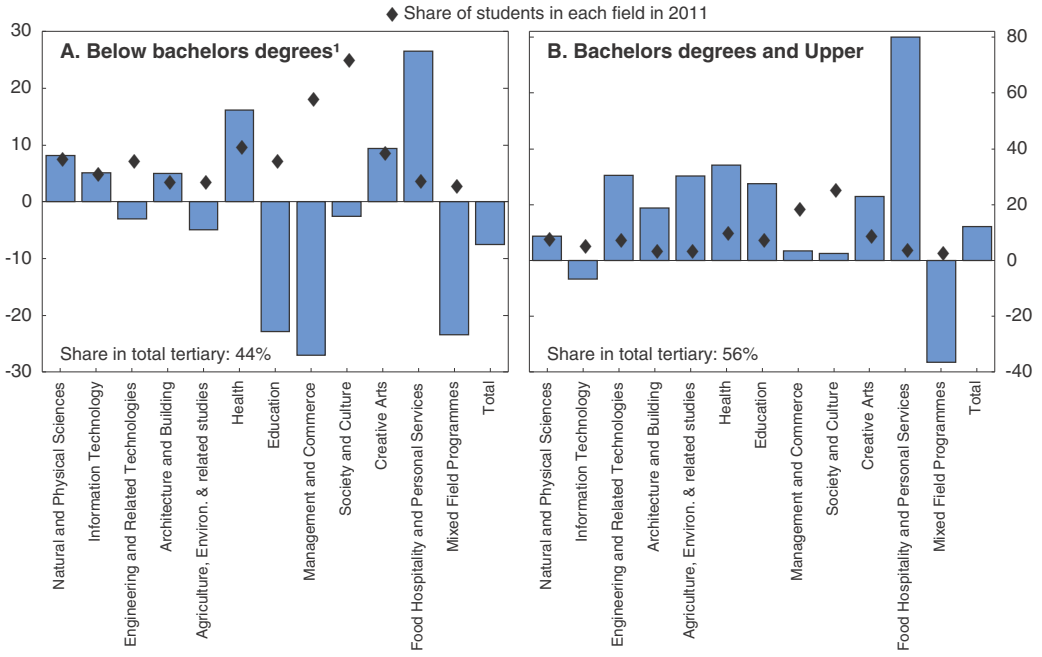
VET and workplace learning, by their applied nature, have a central role to play in strengthening linkages between education and work. They could also help to motivate disengaged secondary students, preventing high drop-out rates. This may explain many OECD countries' newfound interest in this traditional learning pathway. New Zealand has introduced its own Gateway, STAR and Youth Guarantee programmes. Sufficient resources, both public and private, will need to be invested to make vocational learning more prestigious and effective. But VET is expensive, requiring training by industry specialists and access to changing high-tech equipment. Hence, it will be important to ensure that these programmes provide good value for money.

VET

There are some risks associated with an expansion of VET. In market-based VET systems like New Zealand's where there are few institutional mechanisms for transition

Figure 2.23. **Growth of equivalent full-time students enrolled by field of study**

2005 to 2011



1. Excluding tertiary programmes providing qualifications below NZQF level 4+.
Source: Education COUNTS Database.

StatLink http://dx.doi.org/10.1787/888932834340

(e.g. work placements), students may flounder about in several low-skill jobs before they find one consistent with their VET experience. This period of search may be dangerous for VET students insofar as their skills may become obsolete or else they do not make the transition into related employment (Grubb, 2006). Also, it may be in the interest of VET providers and employers together to exaggerate skills shortages (OECD, 2010b; Grubb, 2006), in which case increasing the size of the VET sector may be inappropriate. Government and academic researchers – as honest brokers – need to carefully evaluate the real extent of skills shortages, as the Department of Labour (within MBIE) and Treasury are attempting to do. These studies suggest that the vocational skills shortage is indeed real, though its magnitude may be debated.

Expanding VET as a means of re-engaging potential school drop-outs is important, but it should not obscure the need to improve all types of education to make them relevant, interesting and contextual, by means of high-quality teaching across the board. Students must also be able to move easily across academic and vocational tracks, in keeping with the ideals of comprehensive education. This would guard against skills lock-in, another risk of VET. It will likewise be important to fully integrate generic skills training into VET itself. Research shows that VET students learn foundation skills best within real-world contexts. The government has introduced measures to incorporate literacy and numeracy into all lower-level tertiary courses, with the expectation that all qualifications contribute to the development of generic skills and capability, while also developing specific skills required in a particular vocational area.

Industry training

New Zealand is very strong in industry training, both informal and formal (earning credits toward qualifications). Data for 2008 show that nearly one-third of NZ employees had received informal employer-funded education or training in the previous 12 months. As in other countries, however, such training tends to have a narrow focus and is not equally accessible: most courses were short (one to five days) and geared to firm-specific rather than generic skills; workers in large firms, those more highly educated and those between 25 and 64 were much more likely to receive training than younger workers, those in small firms and without qualifications (Barnes and Dixon, 2010).

The amount of business-funded skills training is suboptimal insofar as firms cannot fully capture the ensuing returns that may prove useful to other firms or to society. This provides an obvious role for government. It can provide subsidies to steer training in more socially and economically desirable directions – to support the unemployed, unskilled and young workers, generic skills formation, small firms, apprenticeships, etc. Since the establishment of the ITOs, which are charged with arranging and monitoring training, in 1992, and especially after 2000 when government funding was substantially increased, there has been a strong increase in the number of trainees and employers involved in formal industry training, though it has fallen slightly since the recession. One-quarter of firms now train formally. They have higher retention rates, while income returns to trainees are positive, depending on qualification level achieved, and markedly higher in some sectors (management, agriculture and environment, building and architecture, engineering and related technologies) than in others (society and culture) (Crichton, 2012).

The increased quantity generated by government subsidies may have come partly at the expense of quality, however: performance as measured by completion and attainment rates is poor, and some ITOs have cross-subsidised active trainees with continued funding from a large number of inactive trainees (MoE, 2013a). This may suggest inadequate public funding per head and/or poor accountability mechanisms for the recipients of public funding. In the past, one of the main problems of industry training had also been its capture by older workers. Currently around two-thirds of those involved in industry training are 25 years or older. Most other countries concentrate their government subsidies on young people, whereas New Zealand has open access to all learners. This was moderated in the early 2000s via the introduction of modern apprenticeships, but which was recently reversed (below).

Apprenticeships

Apprenticeships can be a particularly effective form of workplace learning. As typically three- or four-year programmes of closely supervised and regularly evaluated work experience, combined with theoretical learning, they require a strong commitment by employers, which could also serve as a signal of employer need for that particular type of skill (OECD, 2010b). They improve the school-to-work transition by putting potential employees and employers in contact with each other. This is especially true of youth apprenticeships, long and intensive training in technical skills that are hard to convey in conventional classroom settings (e.g. welding, glazing, plumbing, electrical and building trades), yet have value in the market. However, hosting an apprenticeship is costly to employers in terms of resources, time and management. A key issue is release of apprentices during work hours to attend courses, which imposes a cost/barrier.

Firms also face the risk of not being able to capture the returns to training that may prove useful to other firms. They will thus tend to under-provide training of all skills that have some generality (Mok et al., 2012). Past surveys of NZ business give evidence of "poaching" of apprentice trainees by rival firms, who merely needed to offer a small wage top-up over that being paid by the current employer, yet were able to reap the benefit of the latter's heavy costs of training (Baron and McLaren, 2006). More recent surveys, on the other hand, suggest that the main barrier to training in the last few years has been the economic downturn, with poaching apparently less of a concern among employers (MoE, 2013b).

The government recently announced industry training reforms that remove the modern apprenticeship and create a single apprenticeship programme for youth and adults under the "New Zealand apprenticeship", which: provides the same level of support, and subsidy, for all apprentices regardless of age; boosts apprenticeship funding, education content and status; sets clear performance criteria for ITOs in terms of completion and qualification attainment rates; and increases competition by allowing employers direct access to apprentices, and, in case of unsatisfactory performance by ITOs, diverting industry training funds directly to employers (Joyce, 2013). Average funding rates for apprenticeships will grow by 20%, with the government/business split going from 70%/30% to 80%/20%, which should encourage more apprenticeships and skills supply in line with the anticipated economic pick-up and Canterbury rebuilding needs. The new output-based conditionality and competitive incentives on the ITOs should simultaneously help to ensure good value for money. They should also implicitly favour younger apprentices, who tend to show better completion rates, without locking out promising older trainees. All together, these measures will work toward achieving the Better Public Service target of 55% of 25-34 year-olds holding a qualification level 4 or above by 2017.

The new strategy to boost employers' supply of quality apprenticeship places and improve completion rates by apprentices is welcome. Recent changes to Work and Income's employment assistance programmes (above) likewise go in this direction. Since the main problem is direct cost and the poaching externality, the solution is subsidies, either directly to wages or to "hosting costs". Nevertheless, more efforts may be needed to contain cost while enhancing quality and accountability. Some employers, for example in the building sector, have suggested funding the employer subsidy via a levy on building consents, helping also to attract small firms into the programme (Baron and McLaren, 2006). In any case the subsidy should remain modest; business should engage in cost sharing with government as a way of securing their interest and commitment (OECD, 2010b). Group training schemes to train apprentices before placing them with employers could reduce direct employer costs via scale economies. The electrical sector has piloted an innovative model, whereby ETCO, the large group training scheme operating in this sector, has assumed many of the functions of a host-employer, including sourcing, hiring and initial training of apprentices, who are then placed with host employers. It also handles administration and is highly popular with employers (Baron and McLaren, 2006). Similar schemes operate in the plumbing, engineering and building sectors.

Subsidies should always be balanced by a rigorous quality-assurance system (OECD, 2010b). Contract regulations are needed to protect the mutual interests of students and employers, namely to ensure that apprentices actually learn the skills needed for qualifications, rather than being exploited as subsidised workers, and to protect employers from prematurely losing the apprentice-trainees to competitors.

Career management

Students are the key actors in their own career management: they must learn not only substantive knowledge and lifelong learning skills, but also develop the ability to manage their careers by making wise and informed choices at critical junctures (Vaughan, 2011). The transition can begin as early as age 14, when early interests take form and students choose sets of courses, and can last for up to eight years for advanced vocational and bachelors' degrees, or even longer if education is interspersed with work or unemployment. With lifestyles and career paths becoming much more fluid than in the past, career choices will have to be made more frequently. The "Knowledge Economy" is predicated on a model of constant flux in knowledge and technology, making "learning to learn" a key survival skill to be taught early on and continually used. In New Zealand, a high proportion of non-university tertiary entrants are over 40, showing it is well advanced on the path of lifelong learning.

This also means that the function of career advisor or guidance counsellor is urgently in need of updating, particularly in secondary school. The post was traditionally assigned to teachers lacking professional training and connections4 to employers and tertiary providers. The new careers educator needs to be specialised and independent, avoiding any biases toward academic pathways. (S)he must be able to interpret the abundance of career information now available on the Internet, form relationships with employer groups and other careers professionals to gather information about skills needs and workplace learning opportunities. Careers advice is most effective when it is embedded in the curriculum as an integral part of students' secondary schooling, and the careers advisor will thus need to interact closely with teachers and students on an ongoing basis.

Guidelines and benchmarks have been developed by the Ministry of Education and Careers NZ (an independent agency of the Ministry, which also provides careers information directly via the internet), and secondary schools receive a staffing entitlement for careers advisors. These supports may still need be strengthened to ensure that careers advice is professional, independent and nationally consistent at both secondary and tertiary levels (Dalziel, 2012). In this respect, a review of careers information, advice, guidance and education (CIAGE) is due to be completed shortly (ERO, 2012). Reports are being published by sector indicating career options and employment outcomes (MBIE, 2013), helping students with study choices. The new Vocational Pathways programme (above) serves the same goals.

Box 2.10. **Recommendations for better business and education decision co-ordination**

- Increase tertiary-sector responsiveness to labour-market needs by formalising and/or encouraging linkages between employers and providers and directing funding to projected areas of skills shortage, including by better targeting of course offerings by providers and selective merit- and needs-based scholarships.
- Continue to make education more job-relevant by: *i*) provision of better information to students about labour market outcomes to enable them to make study choices via high quality and relevant professional careers education at secondary and tertiary levels; and *ii*) increasing transparency and accountability in the system about programme quality and outcomes (completion rates; employment outcomes).

Box 2.10. **Recommendations for better business and education decision co-ordination** *(cont.)*

- Continue to improve the quality of apprenticeships to offer straighter paths into jobs, signal business skills needs and provide strong incentives for apprenticeship completions. These should also facilitate participation by disadvantaged youth, provide strong training content that is not too focused on specific skills or sectors and provide contractual and other safeguards for apprentices and employers alike.
- Further strengthen capacities of Industry Training Organisations as intermediaries charged with apprenticeship programme administration and skills leadership, including by means of adequate flexibility in meeting performance targets. Encourage the expansion of pilot group training schemes to help contain funding costs. Study the merits of funding the employer subsidy, in whole or in part, via modest sector levies.

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