THE TREASURY
Kaitohutohu Kaupapa Rawa

Broadening Our Understanding of Living Standards: International Developments in Defining and Measuring Wellbeing and Treasury's New Policy Framework

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Paper for the New Zealand Association of Economists Conference

June 2011

Abstract

This paper discusses some international developments in defining and measuring wellbeing before describing Treasury's *Living Standards Framework* (the Framework). The Framework clarifies how Treasury understands its vision of "higher living standards for New Zealanders". Taking a capital stocks and flows approach, the Framework defines living standards broadly, recognising that both material and non-material factors matter, some of which are not captured by traditional economic measures alone.

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1 Introduction

Increasingly, governments and international organisations are broadening the way they define and measure the 'progress', wellbeing or living standards of a country. This paper describes some recent international developments in this area, and then outlines how the New Zealand Treasury is considering these issues in its policy advice, drawing from its recently published *Living Standards Framework*. The annex provides a snapshot of empirical evidence on New Zealand's performance across a range of economic and non-economic measures of living standards.

2 International Developments in Defining and Measuring Wellbeing

> *What is the highest of all goods achievable by actions?*
> *…both the general run of man and people of superior*
> *refinement say that it is happiness…*
> *but with regard to what happiness is, they differ.*
>
> [Aristotle, Nicomachean Ethics, Book 1, Chapter 4]

People have been thinking about what makes societies 'better off' and struggling with how to define and measure this for at least two millennia. For example, Aristotle, in his ethical treatises, grappled with how to attain eudaimonia, or happiness. He posited that eudaimonia comprises two key dimensions: moral life, which was necessary to attain happiness, and material life, which was necessary to meet basic needs. Today, governments and organisations around the world continue to grapple with this issue. This section describes three contemporary approaches.

Where is the Wealth of Nations? *Measuring Capital for the 21st Century*

In 2006, the World Bank published a series of estimates of wealth across 120 countries as at the year 2000. This 'millennium capital assessment' built on earlier Bank work including *Expanding the Measure of Wealth* (1997), which aimed to estimate levels of and changes in what classical economists would term the primary measures of production: land, labour and produced capital. The Bank emphasised the importance of measuring depreciation across the total portfolio of assets upon which development, and ultimately wellbeing, depends. In doing so, it drew from the theory of sustainable development, an approach to development that, as the World Commission on Environment and Development definition says, "meets the

needs of the present without compromising the ability of future generations to meet their own" (WCED, 1987)[1].

The capital approach used by the World Bank and more recently by the United Nations Economic Commission for Europe (2009) and in New Zealand, by Statistics New Zealand (2009a), has been described as "the most promising way forward" in measuring social welfare (Kulig et al., 2010, p.119). This is because it both broadens definitions of living standards by incorporating a range of factors beyond economic production, and provides a way to think about the longer term effects of contemporary efforts to improve living standards.

Commission on the Measurement of Economic Performance and Social Progress

The Commission on the Measurement of Economic Performance and Social Progress (the Commission) was established in 2008 at the request of the French government. Chaired by Joseph Stiglitz and including Amartya Sen, the Commission was tasked with identifying the limits of Gross Domestic Product (GDP) as an indicator of economic performance and social progress, to consider what additional information would be required to provide a better picture, and to recommend alternative measurement tools.

In inviting the Commission to identify the limits of and alternatives to GDP, the French government was expressing a widely-held concern that GDP, though a reliable measure of market production, has some significant drawbacks as a proxy for living standards and wellbeing. As the Commission recognised, this is an important issue because "what we measure affects what we do, and if our measurements are flawed, decisions may be distorted (Stiglitz et al, 2009, p. 7).

As the Commission noted, the drawbacks of GDP include that:

- its coverage of non-market activities is incomplete (many services produced in households and in the community do not enter measures of production);
- it includes activities which may be detrimental to living standards (such as traffic jams and natural disasters);
- as an aggregate measure, it does not recognise how income is distributed across society; and

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[1] Within sustainable development, two types of sustainability are often distinguished, weak and strong:

- Weak sustainability holds that stocks of natural capital are substitutable, meaning that their depreciation can be offset by increases in other types of capital.
- Strong sustainability, in contrast, argues that some aspects of natural capital, such as the atmosphere, are 'critical' in that they are non-substitutable. From a strong sustainability perspective, sustainability can only be achieved when stocks of critical natural capital do not depreciate, or at least do not drop below a specific level (Kulig et al., 2010). Strong sustainability emphasises the biophysical limits to growth, the "'critical threshold' in the availability of ecosystem services … beyond which non-linear patterns, irreversible changes and catastrophes may occur, with major environmental and economic consequences" (Farber, in Niccolucci et al., 2007, p. 668).

- as a flow measure, it provides limited information about what is happening to society's *stock* of wealth.

More fundamentally, the determinants of living standards are wider than economic wellbeing and include a variety of intangible factors, such as health, the environment, human relationships and freedom, none of which are captured by GDP alone.

The Commission made 12 recommendations about ways to improve the measurement of economic performance and social progress. These included to:

- Acknowledge the *multidimensional* nature of wellbeing which includes both material *conditions* (such as income, consumption and wealth, health, education, environment) and non-material *'capabilities*[2]*'* (such as freedom, political voice, social connections, and security) that provide opportunities for people to participate in society and live a fulfilling life. In addition, the Commission recommended that the material and non-material dimensions of wellbeing it identified need to be measured using both objective and subjective measures.
- Measure *non-market activities* alongside market ones, as these often constitute an important aspect of economic activity.
- Consider measures of *income, consumption and wealth* alongside production, as these measures are often more closely related to people's material living standards and can often diverge from production indicators. Like the World Bank, the Commission recommended using a capital approach, based on four key stocks: physical, natural, human and social capital. With regard to stocks of natural capital in particular, the Commission highlighted the importance of identifying and measuring levels of 'critical' natural capital – in essence, capital that is non-substitutable, such as a stable climate.
- Analyse the *distribution* of income, consumption, wealth and other material and non material measures of wellbeing, alongside the aggregate. This involves looking at the *individual* and *household levels*. The Commission noted that a comprehensive household level measure would also include in-kind services provided by the government, such as health care and educational services.

Better Life Index (OECD)

Acknowledging that GDP has "failed to capture many of the factors that influence people's lives, such as security, leisure, income distribution and a clean environment", the OECD (2011e, p. 1) has recently released the *Better Life Index* (2011f). The *Better Life Index* is an interactive, web-based tool that allows individuals to assess their own wellbeing against many of the material and non-material dimensions of wellbeing identified by the Commission on the Measurement of Economic Performance and Social Progress. In October, the OECD will follow the launch of its interactive tool with a report, entitled *How's Life*? which will describe progress towards these dimensions across OECD countries.

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[2] The concept of 'capabilities' was proposed by economist-philosopher Amartya Sen, though aspects of it can be traced back to, among others, Aristotle, Adam Smith, and Karl Marx (see Nussbaum 1988, 1992; Sen 1993, 1999).

As well as building on the work of the Commission, the OECD's Index draws from the extensive field of research into subjective wellbeing. This field focuses on using subjective rather than objective measure to gauge living standards and wellbeing at the individual level, and often aggregates findings to make comparisons across countries. Research into subjective wellbeing has found that though a large proportion of individual differences in life satisfaction can be attributed to genetic and personality factors[3], there are a range of situational variables that are consistently found to affect life satisfaction. Layard (2005) proposes the following 'big five' factors that impact on happiness in order of importance: family relationships, financial situation[4], work, community and friends, and health.

When comparing happiness across nations, broad societal factors become important. These include freedom (economic, political and personal), the rule of law, tolerance, security and equality (Veenhoven, 2000, 2006). Importantly, subjective measures of wellbeing are, in some circumstances, found to be a better predictor of life outcomes than objective measures. For example, Singh-Manoux et al. (2005) found that subjective socio-economic status is a better predictor of health status in middle-aged adults than objective measures of socio-economic status.

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[3] The classic evidence for the influence of genes come from studies of twins that were raised together and apart where the correlation of subjective wellbeing was almost 50 percent for identical twins versus less than 10 percent for non-identical twins (Tellegen et. al., 1988).

[4] Income displays an interesting, paradoxical, relationship to happiness. At a given point in time, individuals and nations with higher incomes report higher happiness. Yet for most countries happiness has increased little if at all over the last few decades while real incomes have risen dramatically (the Easterlin paradox). As is well documented in the literature, there are diminishing returns to life satisfaction with higher incomes. For example, while there has been a two to five fold increase in incomes for the United States and Japan, the average self-reported happiness has stayed constant (Easterlin, 1995). Common explanations for this divergence are the powerful effects of adaptation and social comparisons, a tendency for happiness to vary around a set point, and the omission of factors which have offset the beneficial effect of economic growth (Layard, 2005). The latest data does, however, give some indication of increasing happiness over time, but large increases in national income over time are correlated with only very small changes in subjective wellbeing.[4] Within wealthy nations, the differences in happiness between people are explained more by social relationships than by income (Layard, 2005).

3 Treasury's Living Standards Framework

Treasury's vision is to be "a world class Treasury working for higher living standards for New Zealanders" (Treasury, 2010a, p.i). While Treasury has not always explained clearly what it means by "living standards", its role as the government's advisor on economic, fiscal and regulatory issues has meant that it has tended to focus on material living standards (often proxied by income), and how these can be improved through better economic performance.

However, Treasury's role as a central government agency with oversight over all significant policy issues across the state sector has also meant that it acknowledges that living standards are broader than income alone, and are determined by a wide range of material and non-material factors. For example, in the past Treasury has noted that living standards:

- are "undoubtedly much more than income" (Treasury, 1999, p.1)
- include "people's participation in social networks, community life, political choices and civil society" (Treasury, 2001a, p.13).

In order to ensure the term living standards is understood and applied consistently across all Treasury advice, Treasury has developed a descriptive framework to help guide policy analysis. The *Living Standards Framework* (the Framework) draws on many of the ideas discussed in the previous section, as well as those in the theoretical literature on this topic.

The Framework acknowledges that income and economic production are important determinants of living standards, but recognises the drawbacks of relying on measures such as GDP alone. It draws on the economic concept of utility, which incorporates a broad range of material and non-material factors.[5] However, it recognises that utility is not the only value relevant to living standards, and includes individual rights, freedoms and capabilities (consistent with the views of Sen (1999), Nozick (1974) and others).[6] These factors are often positively related to utility and thus have an instrumental value, but they are also important for living standards in themselves. Similarly, while the Framework is primarily focused on end-states or outcomes it also attaches value to fair processes, such as the rule of law.

The overall level of living standards in New Zealand is important, however, Treasury also recognises that the living standards of each individual New Zealander are important. Therefore, Treasury looks not only at aggregate living standards but also at their distribution across the population. Doing so allows Treasury to provide empirically-based advice to

[5] This approach, which recognises a wide range of values which are important to individuals, is similar to the one described and used by the Australian Treasury (2004) in their Wellbeing Framework

[6] Nozick, in his most prominent work Anarchy, State and Utopia (1974), employs a thought experiment ("the experience machine") to argue that people would prefer to live a real life rather than a machine-induced experience of a wonderful life, and therefore ethical hedonism must be false. Sen also rejects the idea that utility is the only value. In his words, "we do not necessarily want to be happy slaves or delirious vassals" (1999, p.62).

governments to help them achieve their distributional priorities, and ensures policies are targeted to where they have the greatest impact on people's living standards.

The sustainability of living standards for both present and future generations is a key part of the Framework. This acknowledges Treasury's stewardship role of ensuring the next generation is endowed with "whatever it takes to achieve a standard of living at least as good as our own and to look after their next generation similarly" (Solow, 1992, p.15).

Finally, the Framework recognises that people's subjective assessment of their own standard of living is important, and it therefore draws on insights from the subjective wellbeing literature.

In summary, the Framework recognises the following five key elements:

- there is a broad range of **material and non-material determinants** of living standards (beyond income and GDP);
- **freedoms, rights and capabilities** are important for living standards;
- the **distribution of living standards** across different groups in society is an ethical concern for the public, and a political one for governments. It also has efficiency implications, into which empirically-based economic analysis can provide useful insights;
- the **sustainability of living standards** over time is central to ensuring that improvements in living standards are permanent, with dynamic analysis of policy needed to weigh up short and long-term costs and benefits; and
- measuring living standards directly using self-assessed **subjective measures of wellbeing** provides a useful cross-check of what is important for living standards.

The Framework describes a broad understanding of living standards, which is appropriate given Treasury's role at the centre of policy making in New Zealand. While broad, the Framework is not intended to be comprehensive or prescriptive, and there may be important values that are not included. Some have been excluded because they are not directly amenable to public policy (such as the weather), and others because they are not common concerns in policy issues that the Treasury deals with (for example, the intrinsic value of the environment as distinct from its instrumental and amenity benefits).

A capital stocks and flows approach

To allow the Treasury to incorporate a broad range of material and non-material factors, distributional concerns, and dynamic considerations, a 'capital stocks and flows' approach is used as the basis for the Framework. This approach borrows the concept of capital from economics – traditionally used to refer to assets that enable future flows of real income, such as building and machinery. The notion of an asset that can be built up for future use has subsequently been broadened to include natural (OECD, 2001) and human capital (Schultz, 1961; Becker, 1964). Recently, the importance of social capital has been recognised (Coleman, 1986; Kulig et al., 2010), and cultural aspects are sometimes included (Bourdieu, 1986; Dalziel et al., 2009).

The Framework comprises four types of capital that are integral to current and future living standards:

i financial and physical capital;

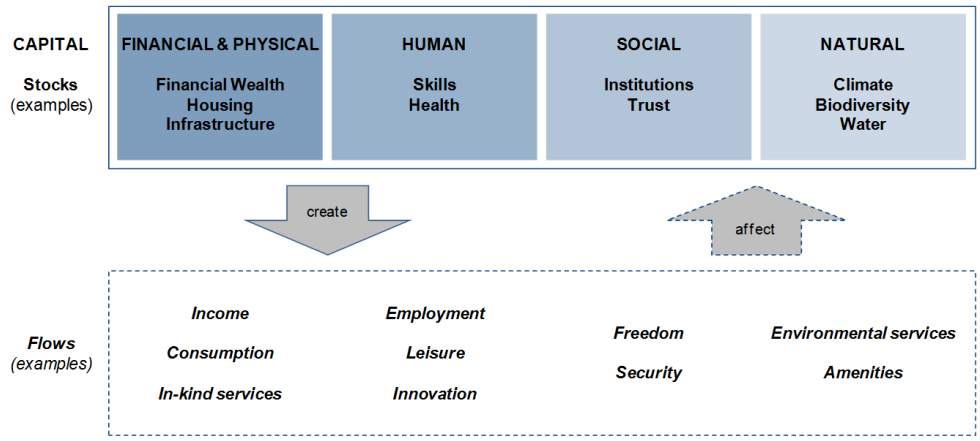
ii human capital;

iii social capital; and

iv natural capital.

These four capital stocks (cultural aspects are included in human, social and natural capital) make up the national wealth of New Zealand. As illustrated below, the Framework recognises that there are a range of different stocks within each of the four types of capital. These stocks create flows of goods and services that contribute to the living standards of New Zealanders. In using certain capital stocks and flows other forms of capital (and flows) may also be affected. These effects may be positive (increasing one form of capital may lead to flows of services that benefit other forms of capital) or negative (increasing one stock of capital may undermine others). The effects may also be distributed unevenly across current and future generations.

Figure 1 – Treasury's Living Standards Framework



The Framework is a complementary input to the policy process, rather than an analytical, prioritisation or decision-making tool in its own right. It can be used to illustrate the potential trade-offs and synergies that exist within public policy issues, as well as informing Ministers of distributional outcomes. For example, the government may wish to invest more in education to increase skills in the general population. This will come at a cost of either a reduction in financial wealth for the government (and possibly an associated increased level of debt) or a reduction in other in-kind services, which may disproportionally affect certain groups. The benefits of increasing skills are greater levels of employment and income that add to the financial wealth of both government (through taxes) and households. Greater income may also increase consumption, which may have an impact on other stocks of capital such as the health of the population and water quality.

Financial/physical capital

Physical capital includes fixed assets in production processes, which can be tangible (e.g., machinery, buildings, houses, roads) or intangible (e.g., computer software, intellectual property) (Statistics New Zealand, 2009). Financial capital includes equities, assets and

liabilities that have a degree of liquidity, such as bank deposits, debt, and government bonds (Statistics New Zealand, 2009).

The level of financial and physical capital (economic wealth) and associated income flow that an individual or household has are important determinants of their material standard of living, now and over time (Stiglitz et al., 2009). Supplemented by government-provided benefits (in cash and in kind), wealth and income determine an individual or household's ability to consume market-produced goods and services.

The stock of **financial wealth** – be it in the form of bank deposits, financial investments, or superannuation accounts – provides people with opportunities to consume and to invest, and the financial security to take risks. Wealth can be consumed by running down assets or increasing debt, or it can be invested to generate future income flows. Increased savings (obtained either by reducing consumption relative to income or by holding an asset that has increased in value) will also add to wealth, and will therefore allow higher future consumption. In contrast, increased debt levels represent higher consumption today and must be paid for by reduced consumption in the future. Further, high public and private (national) indebtedness may increase vulnerabilities to future credit shocks, which can undermine incomes and require costly government responses. Measures of wealth that include savings and debt levels are therefore "an important indicator of the sustainability of consumption" (Stiglitz et al., 2009, p.29).

The stock of physical assets such as **infrastructure and housing** is also an important component of an individual, household, or country's wealth. Well-functioning infrastructure, including roads, airports and telecommunications systems, helps enable economic growth and social cohesion (New Zealand Government, 2010). Adequate housing in particular is recognised as being an important contributor to other factors that underpin living standards, such as health (Howden-Chapman et al., 2007). Housing is also directly amenable to policy interventions, for example through "ownership and maintenance of public housing stock, the availability of housing benefits, and laws against local pollution" (OECD, 2009b, p.37). The importance of housing is reflected in the fact that it is included as a key indicator (in the form of adequacy of facilities and number of rooms per person) in a forthcoming OECD Compendium of Key Wellbeing Indicators (OECD, 2011d).

Income is a flow, generated from economic production, wages and investment. As income is generally expressed in monetary terms, it is discussed primarily in this section, although it is underpinned by human, social and natural capital. Income is critical for material living standards because of its direct link to consumption, as "a large portion of what matters to individuals and families has to be paid for" (Treasury, 1999, p.11).

Not having adequate income is a key characteristic of poverty and social exclusion (Sen, 1999). Economic participation also contributes to living standards in non-material ways, through the sense of identity and self-confidence it provides. In addition, the ability to participate in voluntary economic exchanges is widely seen as an important individual right (Treasury, 2001a).[7] While income has traditionally been measured on a per person basis,

[7] Sen (1999, p.6), for example, speaks about the right of people to free exchange: "To be *generically against* markets would be almost as odd as being generically against conversations between people".

recent literature emphasises the importance of measuring it at the household level (e.g., Stiglitz et al., 2009). This is because the income (and wealth) that an individual has available to them is typically a function of the household they live in. In practice, however, defining households in a meaningful way makes measurement at this level difficult.

The government provides a variety of income transfers (such as the unemployment benefit and New Zealand superannuation) and ***in-kind services*** (such as subsidised health care, educational services and the provision of infrastructure). These services (which add to an individual's income to produce what is referred to as final income) are often a substitute for, or a supplement to, household income, and will directly influence the level of consumption that the household can sustain (Stiglitz et al., 2009; OECD, 2010a-d; Treasury, 2010h).

The sustainability of income transfers and in-kind services is related to the fiscal position of the government. The same principle of sustainable consumption that applies at the household level also applies to the government and the economy as a whole (Stiglitz et al., 2009). The stock of physical assets the government owns and its balance of savings and debt determine the sustainability of the level of services the government provides (Treasury, 2001a, 2010c). As the government is ultimately owned by households, the wealth of households can be effectively augmented or reduced by the fiscal position of government.

Income measures should be considered alongside measures of ***consumption*** and wealth to provide a fuller picture of consumption possibilities. Income can differ over time without compromising a person's consumption possibilities as long as their longer-term income expectations (or permanent income) do not change (Friedman, 1957). While permanently low income levels are likely to have a significant negative effect on living standards, transitory short-term decreases in income are not. This is especially true if the person owns assets that can either be sold, or provide consumption benefits, such as housing. Consequently, for policy making purposes it is important to consider whether people's circumstances are transitory or permanent, and what the dynamic impacts of policy are likely to be on different groups.

Income is most commonly generated through employment. ***Employment*** affects living standards in two key ways. Firstly, it increases income, which leads directly to an increase in living standards for the individual, and also helps people improve their human capital and future earnings potential. Secondly, the additional living standards benefits from employment, over and above the impact of increased income, are significant. As noted in section two, the subjective wellbeing literature consistently finds that being in employment is one of the most important factors for an individual's happiness or life satisfaction, independent of the income that such employment provides (Jenkins, 2001; Layard, 2005; Veenhoven, 2007). Job quality varies and can affect the extent of benefits accordingly. But even low-wage, low-skill jobs are usually better for those in a position to work than no job at all.

Conversely, job loss and the resulting drop in income and experience of unemployment – particularly long-term unemployment – have a detrimental effect on personal wellbeing beyond the loss of income (Treasury, 2001a; Layard, 2005; Treasury, 2010d). Where job losses are widespread in particular areas, whole communities can be disrupted both socially and economically. This occurred in the 1980s in New Zealand and is currently occurring in some communities in the aftermath of the recent recession.

Paid employment also has a number of benefits from a national perspective, such as raising economic output and income per capita, and improving the government's fiscal position by providing tax revenue and reducing the demand for income and in-kind transfers. As the population ages, it will become increasingly important to raise participation rates among people of working age and those past the current retirement age in order to maintain economic growth and the government's fiscal position (Treasury, 2001a).

Unpaid employment also produces many of the above benefits, to varying degrees. Much unpaid work involves the provision of services that would otherwise need to be paid for, such as household chores, cooking, cleaning and caring for children. These tasks are of substantial economic value, regardless of whether money changes hands or not. Unpaid work can also have significant wellbeing benefits. For example, volunteering in the community improves the wellbeing of the volunteer as well as those they are assisting, particularly when it involves engaging with other people.

While employment generates a raft of material and non-material benefits, it is not a case of more is always better. As jobs become more demanding and stressful the psychological benefits diminish and they may become harmful (Treasury, 2001a). There is also a trade-off between work – whether paid or unpaid – and the amount of ***leisure*** time people have. The subjective wellbeing literature indicates that the amount of leisure time people have and how they spend it is important for living standards (Layard, 2005; OECD, 2009a). Leisure time spent doing recreational activities, building social relationships and engaging in community activities is particularly beneficial for personal health and social cohesion (OECD, 2009a). The income-leisure trade-off is one area where the importance of productivity is apparent. Higher labour productivity allows for higher incomes with the same amount of work effort, or, conversely, more leisure for the same amount of income (Treasury, 2010c).

Human capital

Human capital is the stock of "knowledge, skills, competencies and attributes embodied in individuals" (OECD, 2001, p.18). It is a combination of a person's inherited characteristics and their education and experience. Human capital was originally used to refer to personal attributes that produce economic value. Behrman and Taubman (1982, p.474), for example, narrowly define human capital as "the stock of economically productive human capabilities". However, human capital can also be defined as the broader personal attributes and capabilities that contribute to a person's happiness and life satisfaction. For example, David & Lopez (2001) distinguish between human capital's tangible (e.g., health, physique, longevity) and intangible (e.g., cognitive and non-cognitive skills) aspects.

The economic importance of human capital – particularly in the sense of cognitive **skills**[8] – is widely recognised within labour economics and growth theory as one of the key factors underpinning economic production and the employability of individuals (Treasury, 2010e; Hanushek & Woessmann, 2008). Empirical studies confirm that measures of skill account for a significant part of the variance in labour market outcomes between individuals. For example, across developed countries, an extra year of education is associated with

[8] Human capital has traditionally been assessed using internationally comparable surveys such as the Adult Literacy and Life Skills Survey (ALL) and the Programme for International Student Assessment (PISA), or proxy indicators such as qualification or occupation (Hanushek & Woessmann 2008).

increased individual earnings of between 5% and 15% (Krueger & Lindahl, 2000). Moreover, recent OECD evidence (2010g) suggests that reducing the proportion of people without basic skills could add 0.4 percentage points to New Zealand's long run annual GDP growth rate.

Recent economic studies suggest that non-cognitive skills, such as personality and behavioural traits, which are not captured by the traditional cognitive measures of skill, also explain a significant proportion of the variance in individual outcomes (Bowles et al., 2001; Treasury, 2008). The economic literature refers to two main types of non-cognitive skills: i) self-regulatory skills, such as self-discipline and motivation; and ii) interpersonal skills such as communication, ability to work with others and empathy. Non-cognitive skills influence labour market outcomes, both directly and indirectly (through their impact on educational achievement).

Skills, cognitive and non-cognitive, are important for wider wellbeing and for avoiding dysfunction, independent of their effects on earnings and productivity. For example, higher levels of education are associated with higher social and political participation, less exclusion, higher trust and higher social cohesion (Putnam, 2000). Higher skill levels also support the positive exercise of freedom and choice by improving people's ability to make decisions that will benefit them in all areas of life. George Ainslie (2000), for example, discusses the implications of hyperbolic discounting, in which people not only prefer the present to the future, they do so with an extreme preference for more immediate payoffs relative to later payoffs. Ainslie's central idea is that humans have an innate tendency to prefer immediate to delayed rewards, and must use a range of strategies to manage this internal struggle in order to achieve goals with a future focus (such as reading, education, health, saving and positive social interaction). Strategies to manage the internal battle between present and future concerns are learned (although like other skills, different people have different aptitudes), and require effort. Recently published New Zealand research supports these ideas, showing that childhood self-control predicts adult physical health, substance dependence, personal finances and criminal offending, independent of other variables such as intelligence/cognitive skills and social class, and that self-control can be learned (Moffitt et al., 2011).

The flow of personal wellbeing and social benefits from human capital accrue both to the individual receiving the education and to the community in which they live (Treasury, 2001b; WGSSD, 2008). For example, higher levels of education are associated with lower levels of crime (Wolfe & Haveman, 2001). Investment in education also generates economic benefits for people other than the individual making the investment (positive externalities), which provides an economic justification for public investment in education (Sianesi & Van Reenen, 2003).

Skill levels are particularly important from a distributional perspective because of the high transmission of human capital from one generation to the next (Currie & Morretti, 2003). This transmission is sometimes described as a kind of embodied cultural capital that can be passively inherited from the family through the socialisation of culture and traditions (Bourdieu, 1986).

A society's knowledge and capability to use knowledge are critical for the flow of ***innovation*** and knowledge, which are important determinants of economic growth (Treasury, 2010i). The OECD (2005, p.7) argues that "in advanced industrial economies, innovation and

exploitation of scientific discoveries and new technology have been the principal source of long-run economic growth….In the future, the innovation performance of a country is likely to be even more crucial". Jokob Madsen (2010) found that growth in OECD countries from 1870-2006 has been largely caused by total factor productivity (TFP) growth. TFP growth has in turn been predominantly driven by research and development (R&D), knowledge spillovers, skills, and the interaction between skills and the distance to the technology frontier. For example, Madsen finds permanent positive economic growth effects from increases in R&D and human capital.

In addition to skills, a person's **health** is integral to their experience of life and ability to contribute to improving overall living standards. Health is an important element in most definitions of wellbeing at both the individual and societal level. Individuals' health underpins productivity, both now and in the future, and it is also a key contributor to their subjective wellbeing (Layard, 2005; OECD, 2010a-d; Holt, 2010; Enright and Scobie, 2010). For example, there is strong evidence that obtaining a job after a period of unemployment is likely to have positive effects on mental health (Jenkins, 2001). Health outcomes are in part determined by the self-regulatory skills described above which assist in balancing the short and long-term costs and benefits of diet and other lifestyle decisions (Heckman, 2008).

Measurements of health should take into account both morbidity – impairment of functioning, which is a measure of quality – and mortality, which is a measure of quantity (Stiglitz et al., 2009). Some measures, such as 'healthy life year expectations' or 'quality adjusted life years' try to combine these two elements (Ministry of Health and Statistics New Zealand, 2009).

Social capital

The World Bank (2006, p.xviii) defines social capital as "the degree of trust in a society and the ability of people to work together for common purposes". Other definitions include community characteristics, networks, norms, and institutions such as the rule of law and transparency of political processes (Statistics New Zealand, 2009). Like other types of capital, social capital can be accumulated over time and then drawn on for use in the future.

Treasury (2001a, p.6) has previously emphasised the importance of social capital for living standards: "when there are high levels of participation, interconnection and cohesion, there are correspondingly high levels of social capability; that is, a high level of the ability of various interests in society to co-operate towards common goals". Social capital is built on cooperation and trust at an institutional and interpersonal level, effective institutions and a strong sense of culture and social cohesion.

Effective public institutions underpin social capital, as they provide the framework within which the society and the economy function (Treasury, 2001a). Institutions have major affects the living standards of New Zealanders, both directly through opportunities for democratic participation and the protection of important individual freedoms and the rule of law, and indirectly through their impact on the functioning of society and the economy. The

governance and effectiveness of institutions affects how well people can use their other resources, such as their physical, financial and human capital.[9]

Trust is an important element of social capital, which is strengthened when communities have shared values, low levels of social dysfunction and confidence in public institutions. High levels of trust can be developed through bonding – strong ties that emphasise a shared identity within a group such as a whānau – or bridging – weaker ties that help foster broader community links and information channels between separate groups (Putnam, 2000). However, bonding social capital may detract from bridging social capital. This can happen when strong in-group ties are exclusive and discourage the participation of people outside the group (Treasury, 2001a).[10]

There are important interactions between the above elements that help create an economically prosperous and socially cohesive society. For example, a transparent system of government gains the trust of the population, which reinforces the responsibility of institutions to the public. Aspects of social capital also have benefits for the economy, particularly in terms of decreasing transaction costs and encouraging cooperative behaviour (Australian Bureau of Statistics, 2002). For example, transaction costs may be lowered if people know others will honour contracts and can trust people they do not know well (Putnam, 2000; Fukuyama, 1996).

Rights and freedoms are an integral part of social capital and are inherently connected to an individual's relationship to the state and society. Freedom (economic, political and personal) is one of the main factors explaining differences in life satisfaction across nations (Veenhoven, 2006). Effective public institutions and the rule of law serve to protect individual freedom, but protecting freedom may also require limitations on the state's interference in people's lives.

Some of the rights and freedoms that institutions should protect can be considered absolute and should not be traded off for another person's wellbeing. For example, the United Nation's Universal Declaration of Human Rights (United Nations, 1948), to which New Zealand is a signatory, sets out rights that are intended to be inalienable and indivisible. Other rights are relative, and need to be balanced against other factors that affect living standards. For example, institutions that enforce property rights facilitate well-informed and secure contracting, which is a crucial driver of economic growth (Treasury, 2001a). However, the right to one's property is not an absolute right. For example, the government taxes property to provide other benefits, although decisions to do so should consider the reduction in freedom that taxes and regulation create.

An important role of public institutions is to provide ***security*** from harm. Feeling safe and secure is necessary for people to realise their capabilities. There are a variety of external factors that put people's security at risk: crime, accidents, terrorism, bio-security hazards

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[9] For a more detailed summary of the various linkages between good governance and living standards see Treasury (2001a) pp.79-81.

[10] For a more detailed summary of the linkages between shared values and living standards see Treasury (2001a) pp.81-82.

and natural disasters (Stiglitz et al., 2009). These events have a disproportionate effect on people's lives and therefore require special attention. Public institutions such as the defence forces, police, courts, the prison system and civil defence, should strive to enhance community safety while respecting the rights of those they seek to protect. It is essential that these institutions have public support and confidence in order to work effectively.

Social capital exists within, and is shaped by, the cultural context. Cultural values and a sense of cultural identity, which are inherited from the previous generation and adapted by current members of the community, assist in building and transferring social capital. Cultural norms differ across groups within a society. For example, an analysis of social capital in a Māori society is likely to identify an important role for culture in establishing a sense of identity and belonging, along with other features such as the primary importance of extended family relationships (Statistics New Zealand, 2002). The extent to which cultural norms vary across society can influence the extent to which social capital is bonding or bridging. Strong bridging social capital is often more important in multicultural societies, as it helps build social cohesion across disparate groups.

Natural capital

Natural capital refers to the earth's natural resources and systems that support life. As such, it encompasses both non-renewable natural resources (such as land, coal, oil, gas and minerals) and conditionally-renewable resources (such as forests, fish and water) (Statistics New Zealand, 2009).

Natural capital provides a flow of ***environmental services.***[11] For example, the natural environment absorbs waste products, up to its absorptive capacity, which would otherwise cause pollution damage and endanger people's health (WGSSD, 2008). In addition, natural capital provides services that contribute to economic activity. This is especially true in New Zealand, where the primary sector (which includes agriculture, mining, forestry and fisheries) accounts directly for about 7% of New Zealand's GDP, while tourism, which trades off New Zealand's '100% Pure' image, accounts for another 10%. Furthermore, consumers in New Zealand and overseas are placing a higher value on environmentally-friendly production technologies and in some markets, environmental sustainability is becoming the price of entry for New Zealand's exports (Treasury, 2010g).

Natural capital also provides ***amenity value*** and contributes to New Zealand's cultural identity, with both the rural and urban environments being fundamental to people's lifestyles. In addition, natural capital has a high importance for Māori as tāngata whenua (people of the land), with local geographical features playing an important role in narratives of community origins. Treasury has a responsibility to recognise this cultural relationship in accordance with the principles of the Treaty of Waitangi.

In New Zealand, stocks of natural capital, in particular, the atmosphere, freshwater, soil, fish stocks and biodiversity, are of particular importance to living standards:

[11] The intrinsic value of the environment is also an important aspect of natural capital, but is not a central part of our Framework as is not a common concern in policy issues that the Treasury advises on.

- The earth's atmosphere makes life on earth possible. It also helps determine the **climate**, which in turn supports primary industries. Increasing concentrations of carbon dioxide and other greenhouse gases in the atmosphere are affecting the climate and leading to rising sea levels, changes in wind and rainfall patterns, and increases in temperatures, floods and droughts. These effects will significantly affect New Zealand's primary production sector (MFE, 2008).
- As well as being crucial to sustaining life, stocks of **freshwater** are a key input to many of New Zealand's industries. For example, 77% of the national water allocation is used on irrigation. New Zealanders are used to having an abundance of freshwater, and on average, use an estimated two to three times more water per person than the inhabitants of most other OECD countries (MFE, 2008).
- A significant amount of New Zealand's GDP depends on the top 15 centimetres of soil, making topsoil another important input to the primary sector. Since the mid-1980s, intensified land use in the agricultural sector has resulted in increasing amounts of nitrogen in the soil, which has negative effects on freshwater stocks (MFE, 2008).
- Amounting to nearly 3% of GDP, the fishing industry is another important part of New Zealand's economy. However, in 2008, approximately 29% of New Zealand's assessed fish stocks were below target levels, up from 15% in 2006 (Statistics New Zealand, 2009).
- **Biodiversity** – stocks of flora and fauna – helps sustain the ecosystems that support life and provides flows of services that contribute to economic production. Protecting biodiversity is a challenge. In spite of efforts to do so, between 2002 and 2005, more native species saw deterioration in their threat status than an improvement (Statistics New Zealand, 2009).

It is critical that governments efficiently allocate and properly account for the depreciation of stocks of natural capital, to ensure their sustainability *and* the sustainability of the flows of services and amenities they generate.

Distributional outcomes

Treasury's vision is higher living standards for New Zealanders. This implies a focus on both aggregate levels of living standards and also on their distribution across individuals and groups, both within and between generations.

When thinking about distributional outcomes, Treasury is mindful of distinguishing between normative and positive approaches. Normative approaches seek to identify what constitutes an equitable or fair distribution of resources across society. This is essentially a question of political economy and philosophy, the answer to which differs according to one's fundamental values and views of human nature. As such, there are many different theories of distributive equity. For example, utilitarians, while not prioritising distribution, do allow for the redistribution of resources to those who stand to gain the greatest marginal utility from them (unless the efficiency costs of doing so will reduce aggregate utility or welfare), whereas Rawlsians prioritise resources to the least advantaged in society. Libertarians argue that equity exists only where people are entitled to keep whatever they produce or gain from their talents, irrespective of distributional outcomes. Strict egalitarians view inequality of outcomes as a violation of equity, while resource egalitarians focus on equality of opportunity.

Where normative approaches ask what the distribution of living standards should be, positive approaches ask what the distribution is. They also consider whether there is evidence to suggest that a particular distribution poses social or economic problems and the effect different policy interventions may have on how living standards are distributed.

Treasury takes a positive approach to distribution as opposed to a normative, value-based one. This approach is appropriate to Treasury's policy advisory role, as it allows the organisation to provide advice on the distributional priorities of the government of the day, while maintaining an apolitical position that is grounded in empirical economic analysis. Treasury's advice on distribution has tended to emphasise the inefficiencies that result from having living standards distributed in ways that prevent some people from fully participating in the economy and society. This has led Treasury to advise targeting policy interventions towards those at the lower end of the income distribution, in particular those with long-term and multiple barriers to developing and using their human and social capital, for whom additional assistance will have the greatest marginal impact. Essentially, Treasury focuses on improving the social mobility of the long-term disadvantaged. However, Treasury also emphasises the efficiencies that can be gained from lowering tax rates to those with higher living standards.

More recently, Treasury has been investigating the possible relationship between relative rather than absolute income and wealth, and poor social and economic outcomes (see Wilkinson and Pickett, 2009). While empirical evidence of causation remains inconclusive, both historical and contemporary events demonstrate that societies in which the benefits of growth are captured by a minority can face considerable social, economic and political upheaval. This suggests that relative inequality, where combined with high absolute levels of poverty and a lack of political transparency and democracy, should be a concern.

Treasury believes that analysis of the distribution of living standards is fundamental to good policy advice. Understanding and analysing the distribution of wealth, income and other outcomes across society gives analysts a fuller picture of living standards than is gained from relying on aggregate measures alone. Such analysis ensures policy interventions are targeted to where they will have the greatest impact, and enables Treasury to advise on the most cost-effective way of achieving governments' distributional priorities.

Subjective wellbeing

Treasury's Framework is supplemented by insights from the subjective wellbeing literature. Subjective measures of wellbeing bring an additional layer to understanding living standards as they allow Treasury to assess how well someone is living from that individual's own perspective or experience.

Subjective measures of wellbeing have been used in the Framework primarily as a useful cross-check to ensure that the objective measures are the right ones. For example, the subjective wellbeing literature has reinforced the intuitive understanding that factors such as good health and employment are very important to people's lives. It has also given additional prominence to the importance of social connectedness, such as having strong relationships with family, friends and the community (Layard, 2005). Further, one of the reasons the distribution of living standards is important is that it affects how people feel about their lives. Finally, the subjective wellbeing literature reinforces the concept of diminishing marginal utility of income (Easterlin, 1995; Inglehart et al., 2008; Stevenson & Wolfers, 2008).

4 Conclusion

As the government's economic, fiscal and regulatory adviser and also a central agency, Treasury's work encompasses a wide range of policy issues that impact on the living standards of New Zealanders.

Economists acknowledge that material factors such as income are important to living standards. However, as the recent international developments in the area have recognised, there are numerous non-material factors that matter to standards of living, such as a clean environment, trust and political freedom.

This broad understanding of living standards is captured in Treasury's Living Standards Framework. The Framework draws on a vast theoretical literature and a range of contemporary developments from governments and organisations around the world to identify a broad range of factors that contribute to living standards. It brings these factors together in a 'capital stocks and flows' approach that includes four types of capital:

- **financial and physical capital**, which includes infrastructure, housing and wealth
- **human capital,** which includes health and skills
- **social capital**, which includes institutions and trust
- **natural capital**, which includes the stability of the climate, quality of water, as well as biodiversity

These capital assets generate a flow of goods and services (broadly conceived) which are consumed by people and enhance their living standards.

Using the Framework in policy advice

The Framework is intended to be used as an input to the policy process, rather than an analytical, prioritisation or decision-making tool in itself. Its main value is in the way it encourages a broad understanding of living standards.

When applied to policy advice, the Framework emphasises consideration of:

- *Levels*

  Considering aggregate levels of the factors in the Framework is important because it allows Treasury to compare New Zealand's living standards with those in other countries, and to track how they are changing over time. A snapshot of the levels of New Zealand's living standards is provided in Annex 1.

- *Distribution – now and into the future*

  As well as considering aggregate levels of the factors, it is important to be aware of their distribution among individuals and groups in society. This allows Treasury to provide empirically-based advice to help governments' achieve their distributional priorities. Annex 1 provides a snapshot of how living standards are distributed across individuals and groups in New Zealand.

- *Interactions*

  Finally, identification of interactions among factors in the Framework is important. Some of these interactions are mutually reinforcing synergies, for example, trust leads to voluntary exchanges and good economic outcomes that in turn reinforce the original trust. However, some interactions will require complex trade-offs. Natural capital, for example, can be consumed to build up physical and financial capital, but this may not be desirable where this results in reductions in non-substitutable stocks. Other trade-offs may occur between short and long term outcomes, between individual and societal outcomes, or between efficiency in increasing aggregate living standards and the equity of their distribution.

Decisions about acceptable levels of factors within the Framework, distributional outcomes, and trade-offs are ultimately political in nature and thus beyond the realm of policy advice. However, highlighting them will ensure Treasury's advice is robust and theoretically grounded and that governments decisions are well-informed. As such, the Framework will improve Treasury's ability to fulfil its core role as the government's lead advisor on economic, fiscal and regulatory issues, as well as its role as a central agency that has oversight over all significant policy areas.

Annex 1 – Indicators for Measuring Living Standards

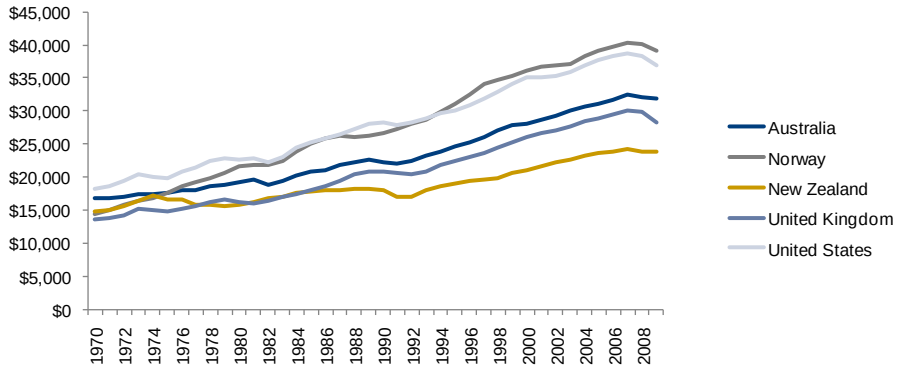
This Annex provides a snapshot of New Zealand's living standards, as outlined in the proceeding Framework. For each factor, a range of indicators have been selected to measure New Zealand's overall performance and to analyse how living standards are distributed across the population.

The indicators have been selected through consultation with other departments and through research of comparable international reports. Where possible, indicators have been chosen that allow a comparison with other OECD countries as well as a break-down across ethnicities, ages, household types, gender and income brackets.

Income

The negative gap between New Zealand's GDP per capita and many other OECD countries widened considerably between the 1970s and early 1990s, but has been broadly stable since, in proportional terms.

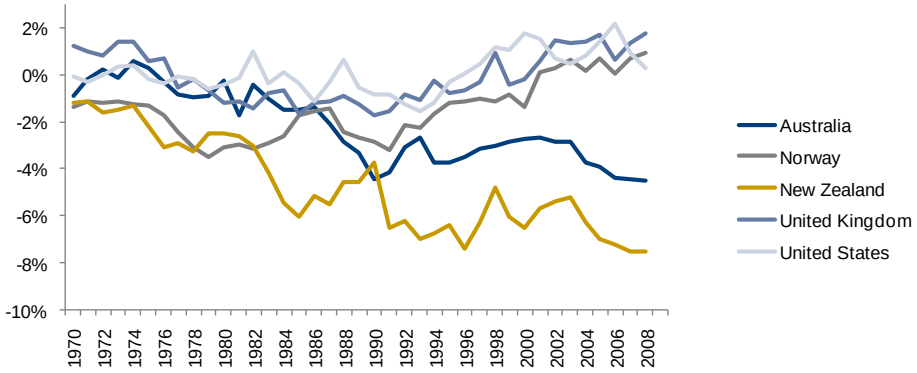
Figure 2 - GDP/capita US dollars, constant prices, PPPs (reference year 2000)



Source: OECD (2011a)

Figure 3 - GNI/capita less GDP/capita - US dollars, current prices, PPPs

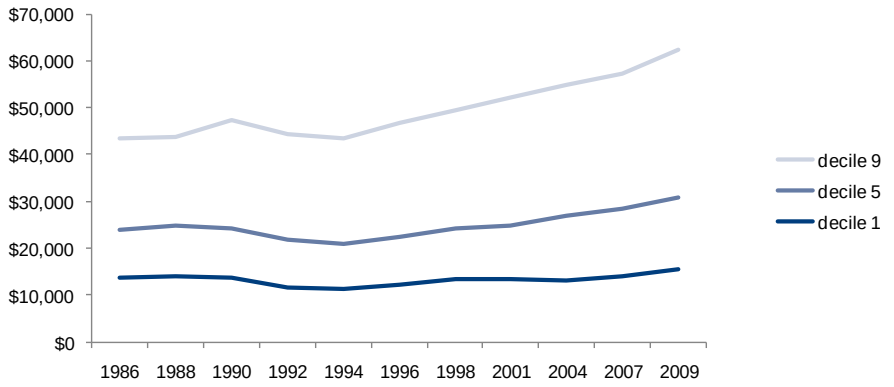
The gap between New Zealand's GDP and GNI (GNI = GDP + net international investment income) has been widening and is larger than that of most other OECD countries.



Source: OECD (2011a)

Household incomes have on average grown slowly over the last 15 years. However, incomes for the top decile have grown much faster.

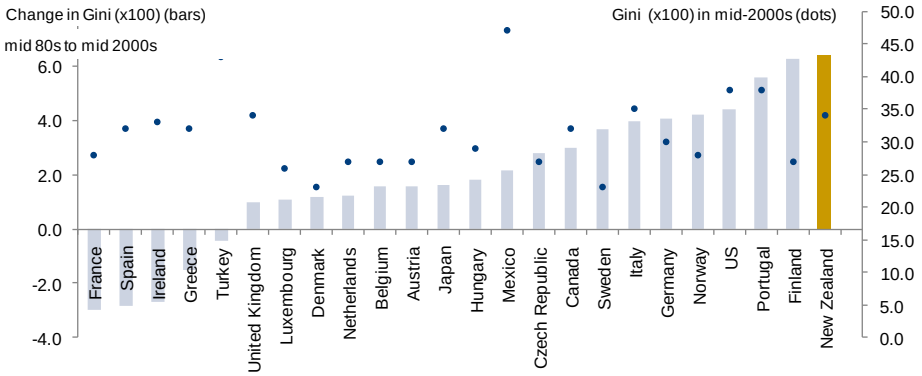
Figure 4 - Real household incomes - top of the income range for deciles 1,5,9 (2009 $NZ)



Source: MSD (2010a)

Figure 5 - Gini Coefficient

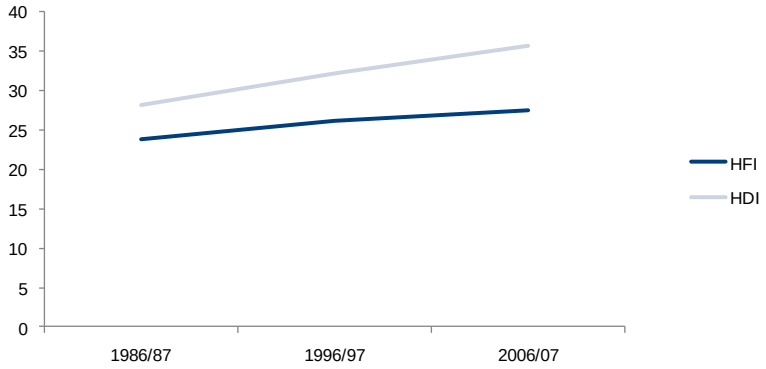
Income inequality in New Zealand increased faster between the mid 80s and mid 2000s than in any other OECD country. Inequality has stabilised recently and is about 7th highest in the OECD.



Source: OECD (2008) and Statistics New Zealand (2011a)

Figure 6 - NZ Gini - measured using household disposable (HDI) or household final income (HFI)

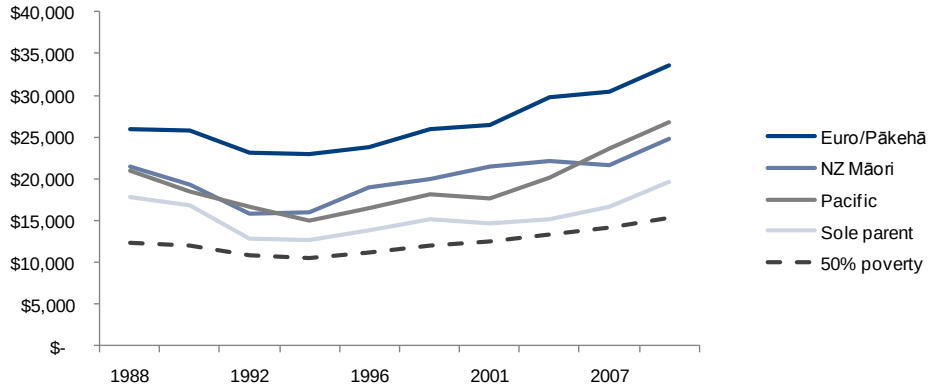
However, when other government assistance (e.g., health and education) is taken into account, both the increase and absolute level of inequality is less - as measured by HFI.



Source: The data is from Statistics New Zealand Household Expenditure Survey and administrative data. Disposable and final income calculations have been made by the Treasury (Aziz, O. & Gibbons, M. (2010)). Note that this study uses different equivalence scales to figure 6.

Some groups in New Zealand have relatively low incomes, and live closer to poverty.

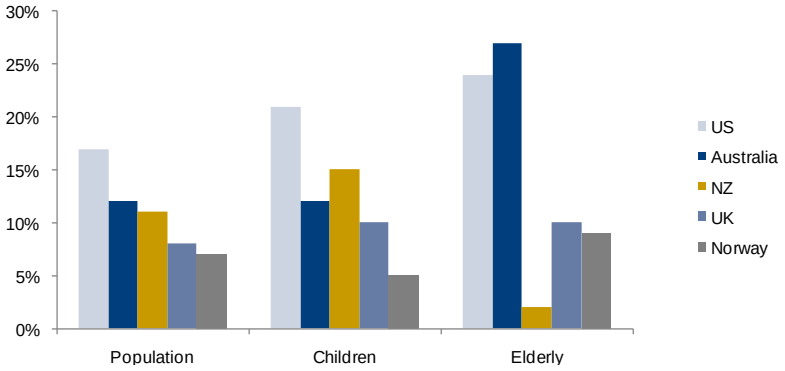
Figure 7 - Median incomes in New Zealand - relative to 50% poverty measure



Source: MSD (2010a)

Poverty in the population is around the OECD average, but there are high levels of child poverty and very low levels of elderly poverty.

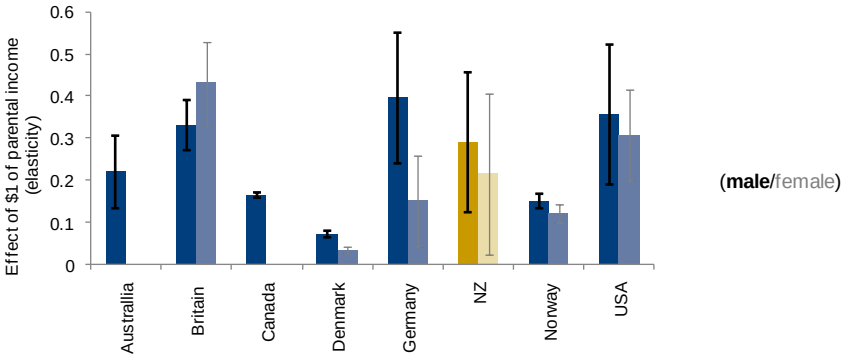
Figure 8 - Proportion living in poverty (below 50% of median income)



Source: MSD (2010a)

There is some evidence that the intergenerational transmission of income in New Zealand is not as large as it is in some OECD countries.

Figure 9 - Effect of $1 of parents' incomes on subsequent incomes of their grown-up children

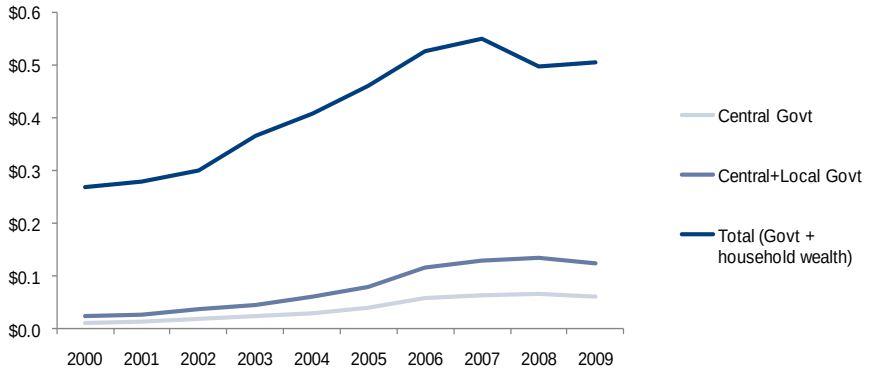


Source: Treasury (2010b)

Wealth

Net household wealth has been increasing and nearly doubled between 2000 and 2009. The majority of this rise has been due to house price increases. In addition, local and central government wealth has also increased.

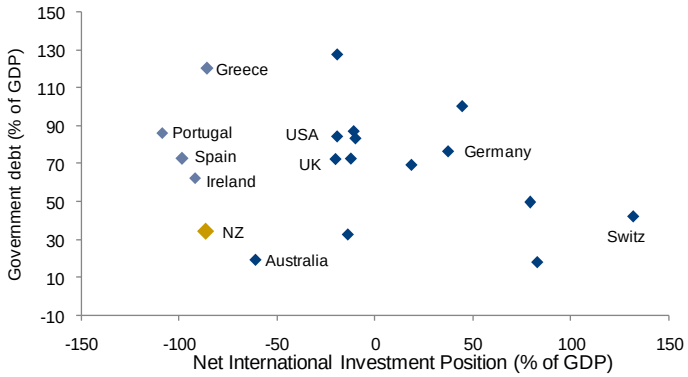
Figure 10 - Net household wealth in New Zealand per household ($m)



Source: RBNZ (2011); Statistics New Zealand (2010) & Statistics New Zealand (2011b)

Though public debt levels in New Zealand are relatively low, they are increasing. However, the overall financial position of the country is much weaker, with NIIP (the difference between overseas financial assets held by a country less the debt owed to the rest of the world) at about 90% of GDP.

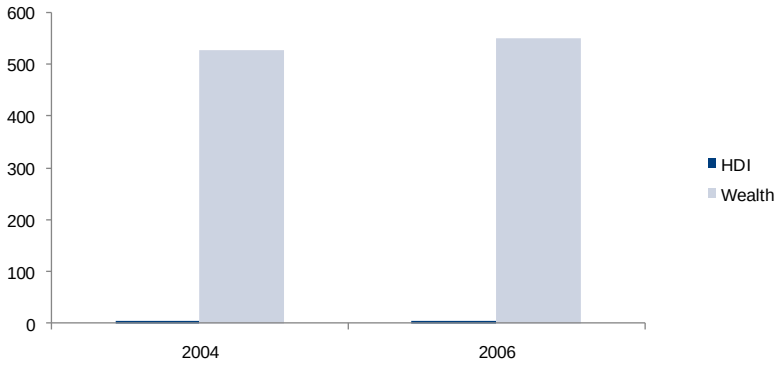
Figure 11 - National indebtedness (2009)



Source: OECD (2011e) and IMF (2011b)

Figure 12 - Ratio of 90:10 percentile - by household disposable income (HDI) and wealth (2006, current prices)

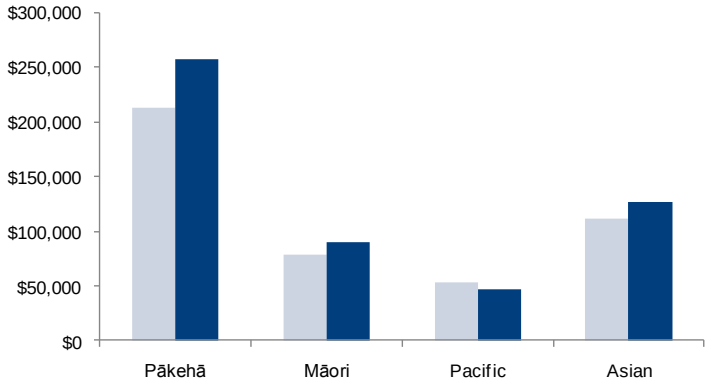
Inequality of wealth is much higher than it is for income, with the top 10% of households owning 500 times more than the bottom 10%.



Source: MSD (2010a) & Gibson et al. (2010)

Figure 13 - Wealth by ethnicity (2004 and **2006**)

Inequality of wealth exists between different ethnicities, but controlling for other variables (such as age), reduces the inequalities between groups.

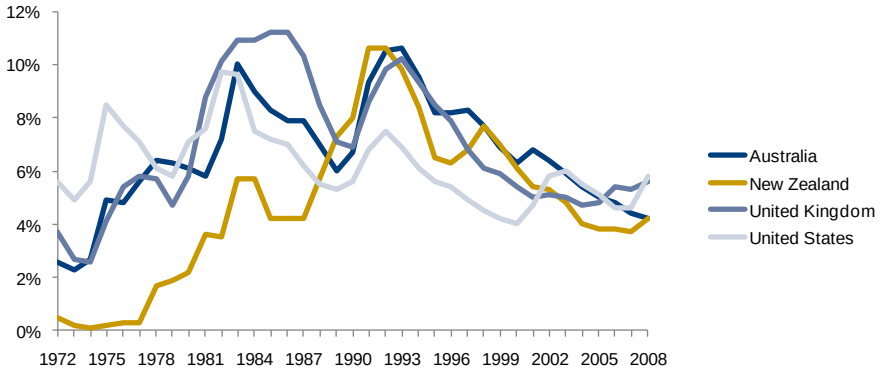


Source: Gibson et al. (2010)

Employment

Figure 14 - Unemployment rate

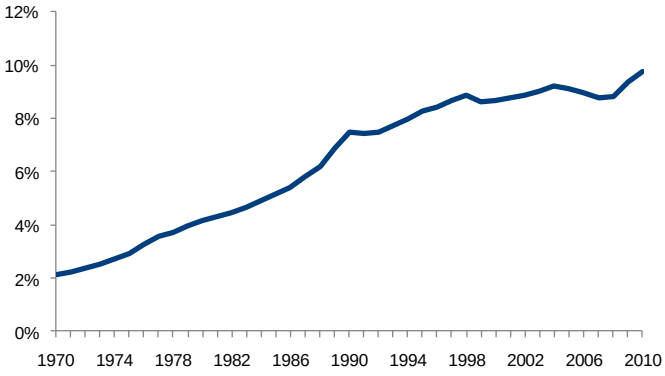
Unemployment rates in many countries have fluctuated over the last few decades, but in 2008 New Zealand had a similar unemployment rate to other OECD countries.



Source: OECD (2010f)

Figure 15 - % of working age population on benefits other than unemployment benefit

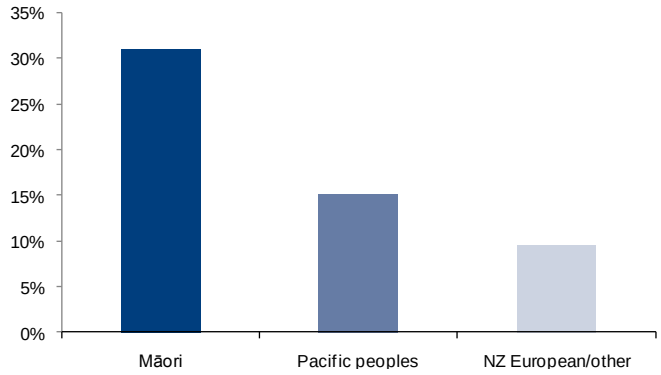
However, New Zealand has a growing number of people on other benefits - whose duration is generally longer than one year.



Source: Welfare Working Group (2011)

Figure 16 - % of working age population on any benefit (June 2010)

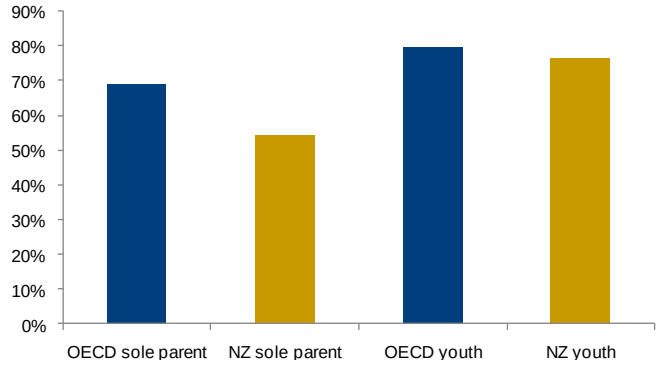
There are very large differences in the proportion of each ethnicity that are on benefits.



Source: Welfare Working Group (2011) & Statistics New Zealand (2011b)

Figure 17 - Employment rates for youth (2009) and sole parents (2005-08)

New Zealand has the second lowest rate of sole parent employment in the OECD. Youth employment is slightly lower than other OECD countries.

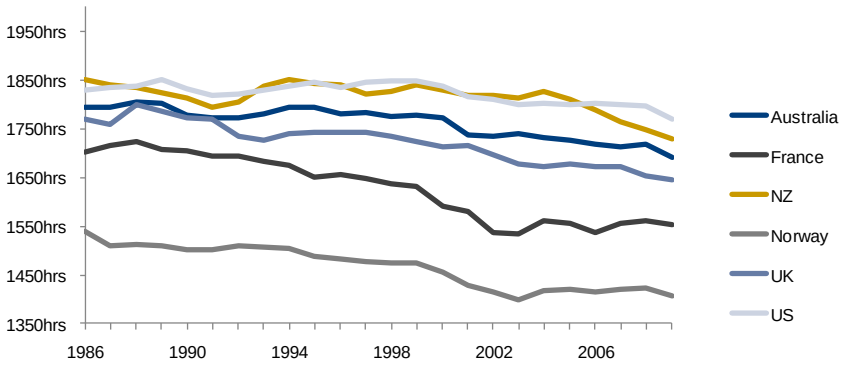


Source: OECD (2011a)

Leisure

Figure 18 - Annual hours worked

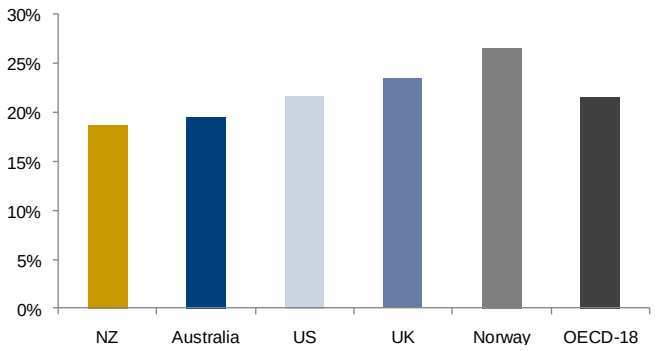
New Zealanders are working longer hours than most OECD countries (although this has dropped recently)...



Source: OECD (2011a)

Figure 19 - % of 24hr period spent in 'leisure' (mostly 2006)

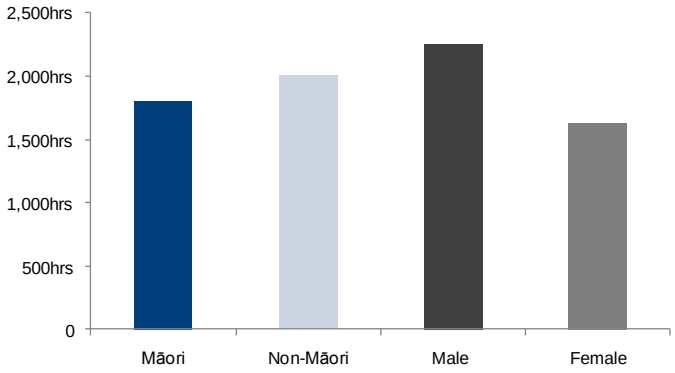
...and the amount of time New Zealanders have for leisure is therefore less than most OECD countries.



Source: OECD (2009a)

Figure 20 - Annual hours worked (1999)

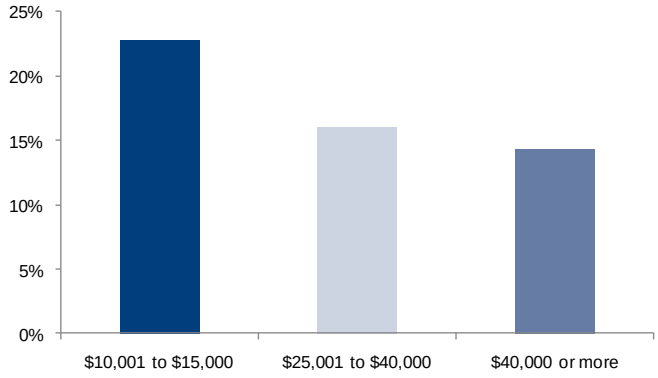
The actual number of hours that people work varies by ethnicity and gender.



Source: Statistics New Zealand (1999)[12]

Figure 21 - % of day spent on 'leisure' activities (1999)

And leisure time varies by income bracket.



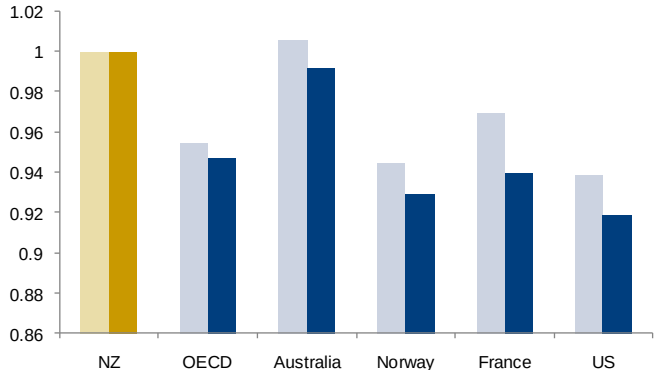
Source: Statistics New Zealand (1999)

[12] Note that the data actually includes total "labour force activities" which includes travel time to work and job seeking, however, the vast majority is actual hours worked.

Education/Skills

Figure 22 - Average PISA scores for 2003 and **2006** [NZ=1]

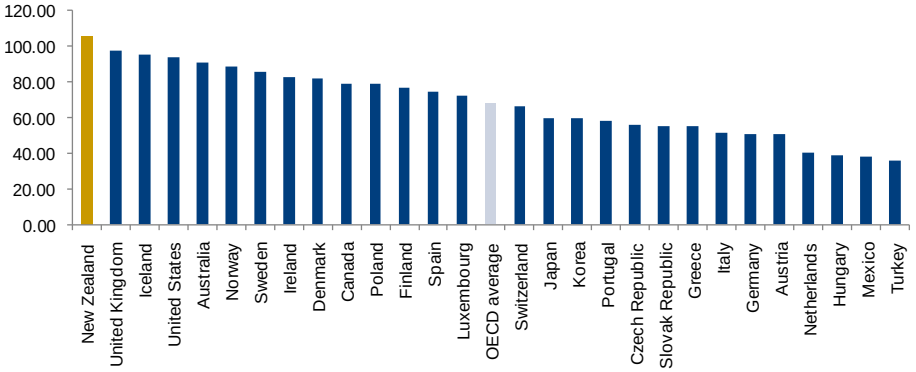
The skill level of New Zealand's 15 year old students (as measured by PISA) has been relatively high compared to OECD countries...



Source: OECD (2011c)

Figure 23 - Variance in 2006 PISA scores within schools

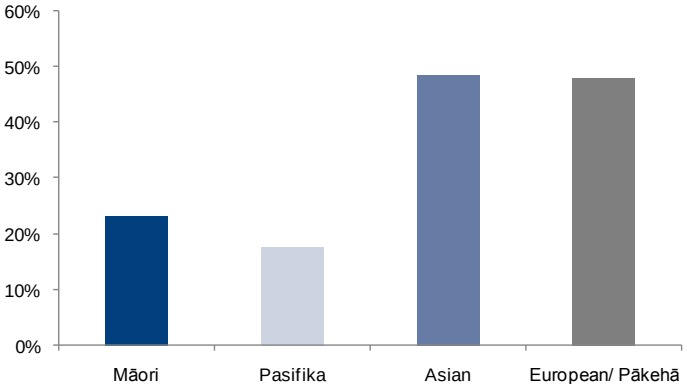
...but compared to the rest of the OECD, New Zealand has the highest level of skills inequality within our schools (as measured by the variance in PISA scores).



Source: OECD (2011c)

Figure 24 - Percentage of 15 year-old students reaching PISA 3 or above (2006)

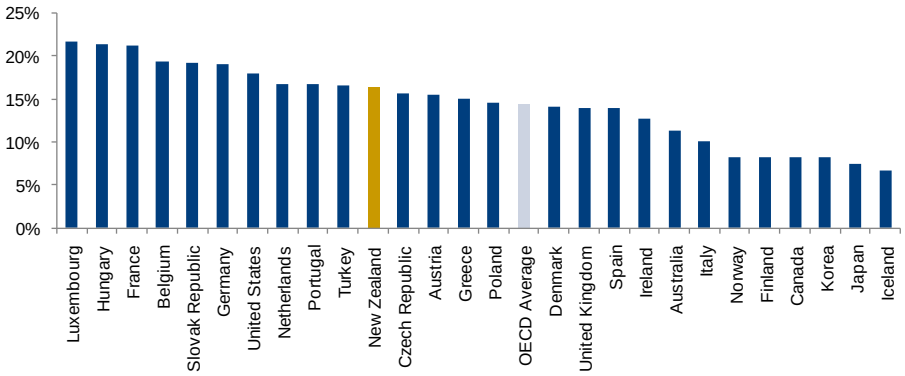
This is in part due to the differences in the skills among ethnic groups.



Source: Education Counts (2006)

Figure 25 - Impact of socio-economic status (SES) on performance

The impact of parental SES on a student's performance is high relative to the OECD average. However, SES only explains 17% of the difference in performance, suggesting that other factors are also important.

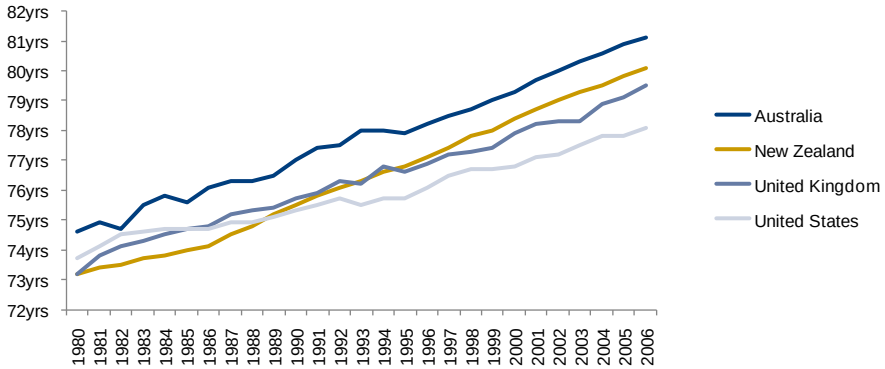


Source: OECD (2011c)

Health

Figure 26 - Life expectancy at birth

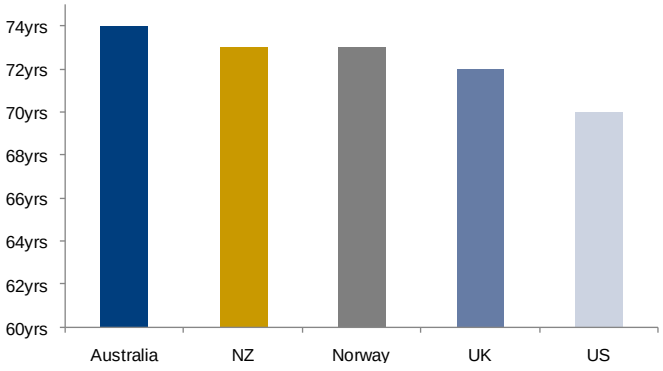
The life expectancy of New Zealanders at birth has increased faster than in many other OECD countries since 1980...



Source: OECD (2011a)

Figure 27 - Healthy life expectancy

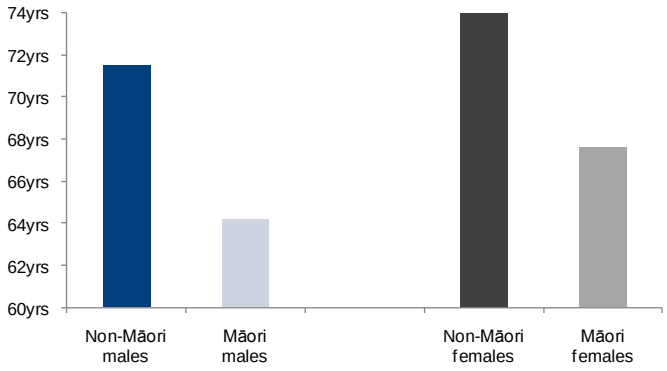
...and the quality of the years lived (measured by 'healthy life expectancy') in New Zealand is slightly above average compared to other OECD countries.



Source: World Health Organisation (2010)

Figure 28 - Healthy life expectancy in New Zealand (2006)

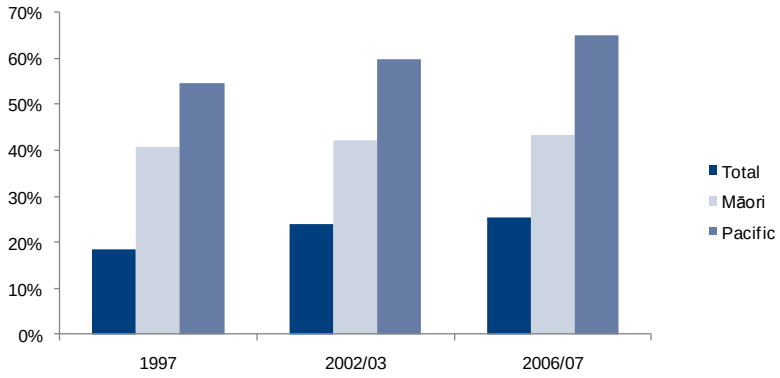
However, differences in healthy life expectancy by ethnicity are high, and there are also gender differences.



Source: Ministry of Health and Statistics New Zealand (2009a)

Figure 29 - Prevalence of obesity in New Zealand (BMI>30)

Obesity, a major determinant of health and life expectancy, has been growing across all of New Zealand society. Levels are significantly higher amongst Māori and Pacific groups.

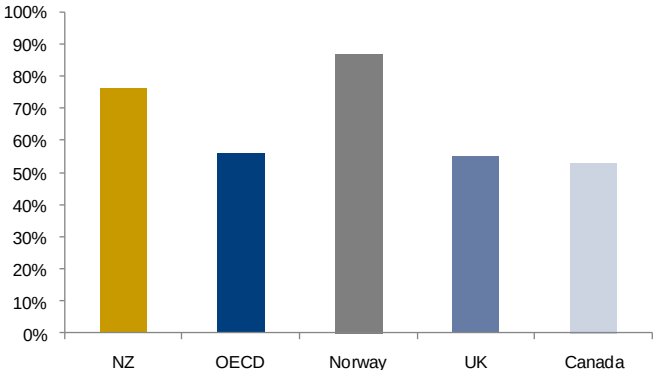


Source: Ministry of Health (2010)

Trust

Figure 30 - Proportion reporting that people can usually/always be trusted (~2006)

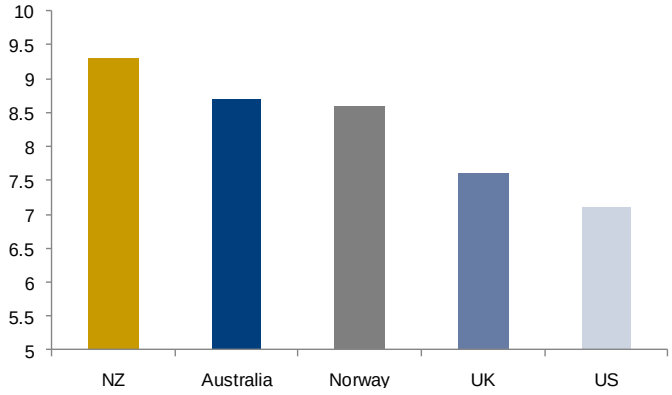
The general level of trust in New Zealand is high relative to other OECD countries...



Source: MSD (2010b)

Figure 31 - Lack of perceived corruption in government (2010)

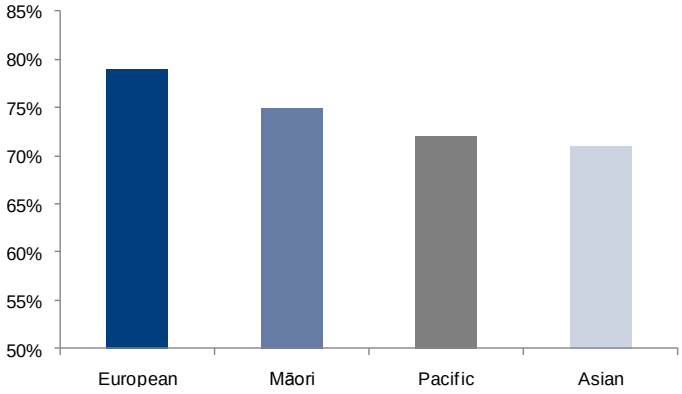
...and New Zealand government institutions are very well trusted (highest trust in the world on a zero to ten scale).



Source: Transparency International (2010)

Figure 32 - Reported as usually or always trusting people - by ethnicity (2008)

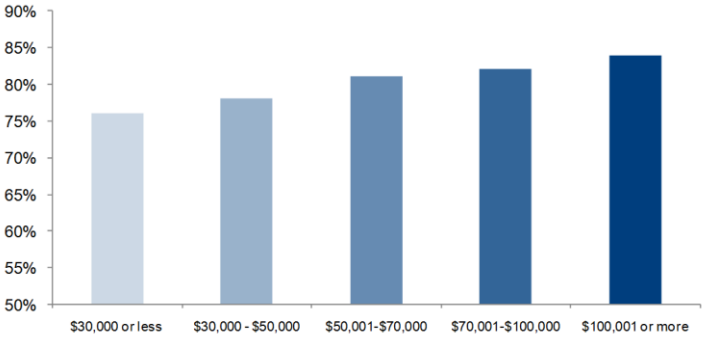
Trust is relatively similar across different ethnicities...



Source: MSD (2010b)

Figure 33 – Reported as usually or always trusting people - by income bracket (2008)

...and across different income brackets.

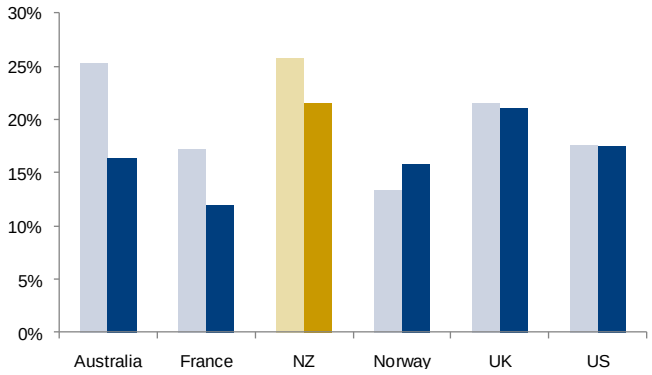


Source: MSD (2010b)

Security

Crime rates are falling, but New Zealand has high rates of victimisation relative to other OECD countries (2nd highest of all).

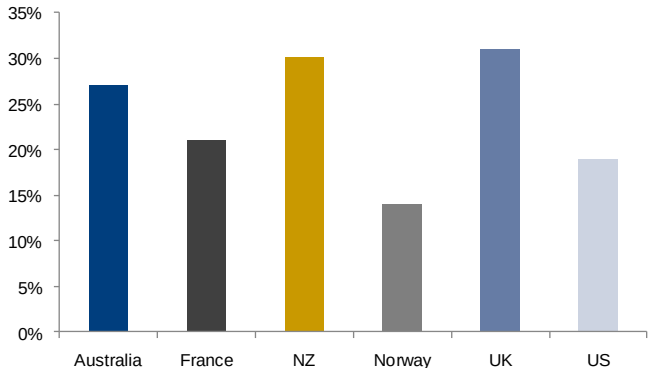
Figure 34 - % population reporting crime over the previous 12 months (2000 vs **2004/05**)



Source: OECD (2009a)

There is a strong relationship between the reported level of crime (above) and the level of perceived safety on the streets. The high levels in Figure 36 have increased to 32% in 2008.

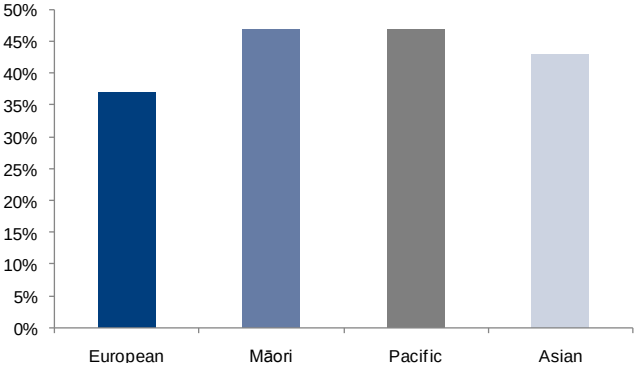
Figure 35 - % population that feels unsafe or very unsafe on the street after dark (04/05)



Source: OECD (2009a)

Victimisation levels are slightly higher for some ethnic groups...

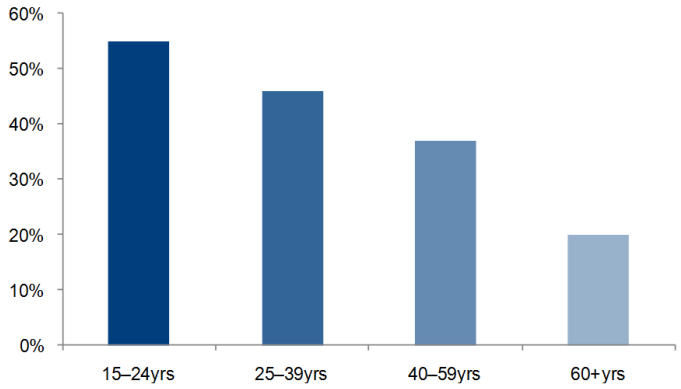
Figure 36 - % of population that reported victimisation in previous year



Source: MSD (2010b)

Figure 37 - % of population that reported victimisation in previous year

…and there are large differences between age groups.

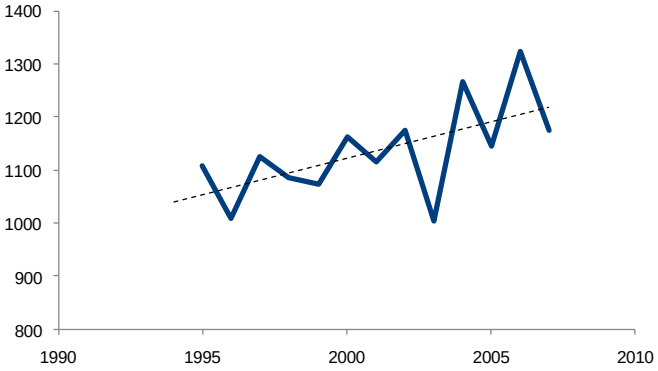


Source: MSD (2010b)

Environment

Figure 38 - Highest levels of nitrogen in rivers - micrograms per litre (at 95% percentile)

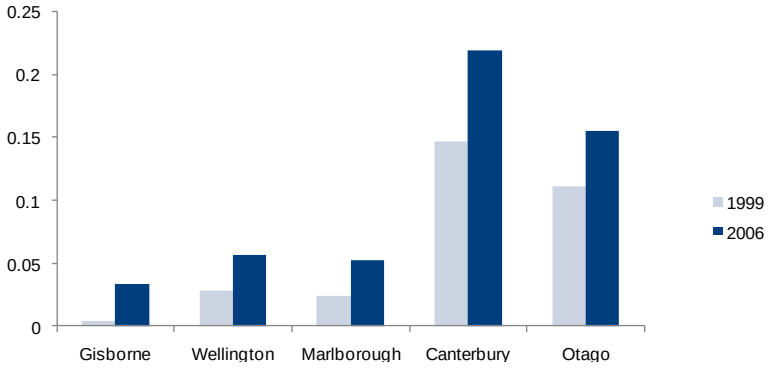
The peak levels of pollution in New Zealand's rivers are increasing...



Source: Statistics New Zealand (2009a)

Figure 39 - Water stress ratio (total allocated/total resource)

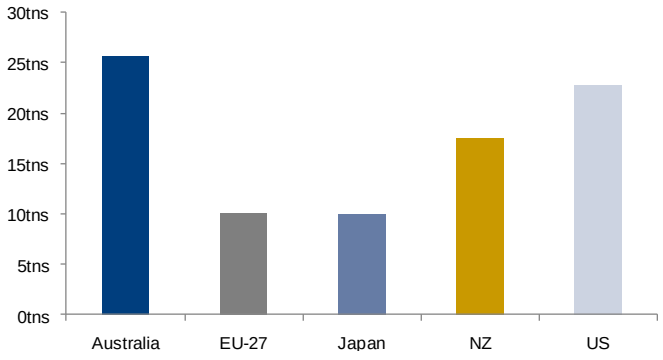
...and water may become a binding constraint in the future (both for production and recreational use). In some of New Zealand's key agricultural regions, water demand is already beginning to outstrip supply.



Source: Statistics New Zealand (2009a)

Figure 40 - GHG emissions per capita 2008 (excluding forestry)

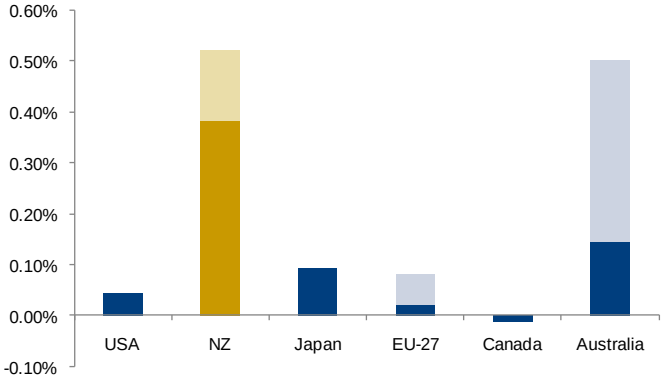
GHG emissions per capita are relatively high in New Zealand, which could undermine future competitiveness if prices of carbon increase or consumers focus on the relative carbon intensity of products...



Source: World Resources Institute (2010)

Figure 41 - Direct costs (as % GDP) of each country's **low** or high ambition 2020 targets pledged

...however, in working towards a new climate change agreement, it will be important that any future target for New Zealand represents a fair share, including consideration of the relative economic effort that countries undertake to meet their targets.

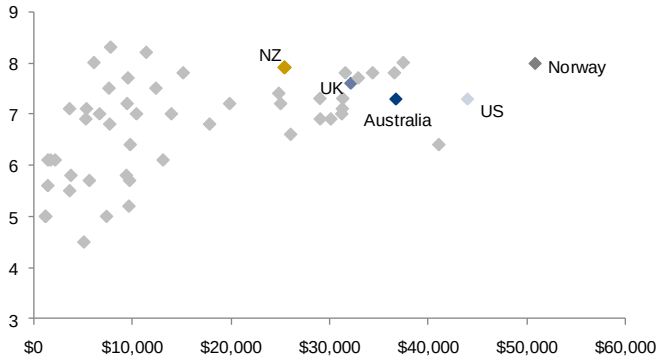


Source: IIASA (2010)

Subjective Wellbeing

Figure 42 - Average life satisfaction vs GDP/capita (2008)

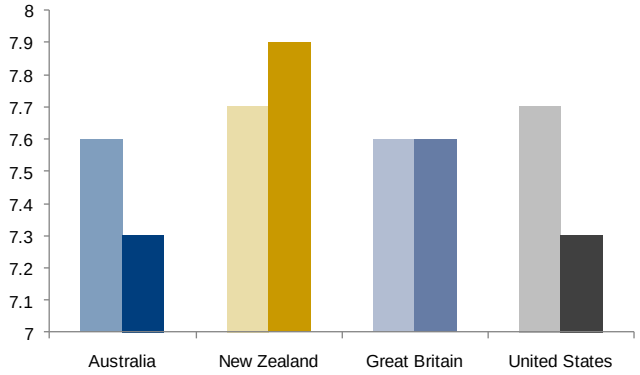
New Zealanders' rating of their satisfaction with life is high relative to other countries with much higher GDP/capita.



Source: Gallup (2010)

Figure 43 - Average life satisfaction 1995-8 vs **2004-06**

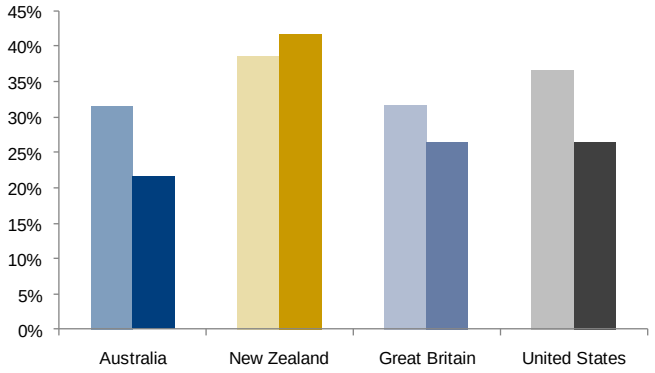
Life satisfaction in New Zealand has increased over the last 10-15 years, unlike in some other OECD countries...



Source: World Values Survey (2011)

Figure 44 - % of population rating 9 or 10 out of 10 satisfied

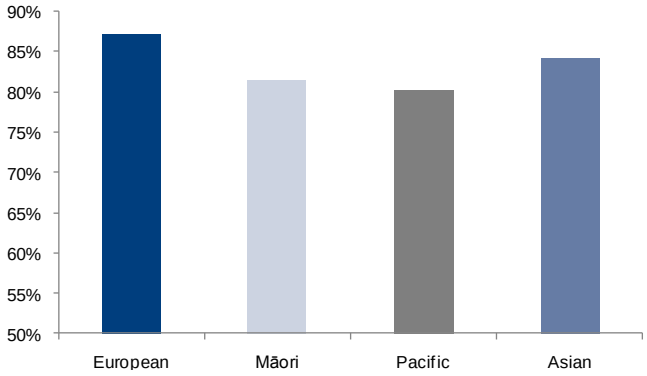
...in particular for those rating their life satisfaction as 9 or 10 out of 10.



Source: World Values Survey (2011)

Figure 45 - % of population 'satisfied or 'very satisfied' with their lives

Life satisfaction is similar for most ethnicities in New Zealand.



Source: Statistics New Zealand (2009b)

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