Wellbeing Economics and Treasury's Perspective on New Zealand's Economic Performance

Paul Dalziel
Professor of Economics,
AERU Research Unit, Lincoln University

Caroline Saunders
Professor of Trade and Environmental Economics,
AERU Research Unit, Lincoln University



(24 March 2016)

Wellbeing Economics and

Treasury's Perspective on New

Zealand's Economic Performance

Abstract

Policy makers internationally are shifting emphasis from measures of economic production

to more general measures of wellbeing. The paper addresses what this adds to policy by

using a 'wellbeing economics' perspective to critique the economic strategy prepared by the

New Zealand Treasury at the 2014 general election. It builds on the Treasury's analysis of

prosperity, sustainability and inclusiveness, but argues for 'value-added growth' rather than

'export-led growth'. A major theme is that New Zealand's national economic strategy must

be grounded in its own particular geography, history and resources to take advantage of its

specific opportunities in the global economy.

Keywords: Wellbeing; Economic strategy; New Zealand

JEL Codes: E61, F15, I31

Acknowledgements

We thank colleagues in the Agribusiness and Economics Research Unit at Lincoln University for many discussions on wellbeing economics and all those who have talked to us about our 2014 book on this topic. We acknowledge partial funding for this paper from the Ministry of Business, Innovation and Employment through the New Zealand Sustainability Dashboard research programme (AGRB1201) led by The Agribusiness Group. Parts of the paper were presented to a joint workshop on working together for higher living standards, hosted by Statistics New Zealand and the Treasury on 26 November 2014. An early draft was presented to the annual conference of Australia and New Zealand Regional Science International at the University of Technology Sydney, 1-4 December 2015, and was discussed at a seminar at the New Zealand Treasury hosted by Girol Karacaoglu (Deputy Secretary, Macroeconomics and Research) on 22 January 2016. We are grateful to participants at all of these events for their insightful comments. We also thank Bryan Perry (Ministry of Social Development) for his very helpful suggestions on the use of low income data in his report Household Incomes in New Zealand: Trends in Indicators of Inequality and Hardship 1982 to 2014. The views expressed in this paper are our own and should not be attributed to any of the persons or organisations mentioned in these acknowledgements.

Wellbeing Economics and Treasury's Perspective on New Zealand's Economic Performance

1. Introduction

In 2009, the Commission on the Measurement of Economic Performance and Social Progress headed by Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi released its influential report with the unifying theme that "the time is ripe for our measurement system to shift emphasis from measuring economic production to measuring people's well-being" (Stiglitz et al, 2009, p. 12; emphasis in the original). This is not entirely new; the Australian Treasury, for example, has long begun its mission statement with the phrase "to improve the wellbeing of the Australian people", leading it to develop a formal wellbeing framework for policy advice (Treasury, 2004; Henry, 2006; Gorecki and Kelly, 2012). Nevertheless, the Commission's recommendations has renewed worldwide policy interest in measuring personal and community wellbeing. In 2010, the National Council of Economy and Labour and the Italian National Institute of Statistics began Italy's BES programme (benessere equo e sostenibile) to develop multi-dimensional measures of equitable and sustainable wellbeing (CNEL and ISTAT, 2010). On 25 November that same year, the Prime Minister of the United Kingdom launched the National Wellbeing Programme: "And so from April next year, we'll start measuring our progress as a country, not just by how our economy is growing, but by how our lives are improving; not just by our standard of living, but by our quality of life" (Cameron, 2010). In 2011 the OECD released their report on How's Life?: Measuring Well-being, which drew explicitly on Stiglitz et al. (2009) to present a conceptual framework of three wellbeing pillars: quality of life; material living conditions; and sustainability (OECD, 2011a, p. 18). In the OECD framework, the standard measure of economic production (gross domestic product, GDP) is recognised as a part of individual wellbeing, but only a part and associated with some 'regrettables' (see Figure 1).

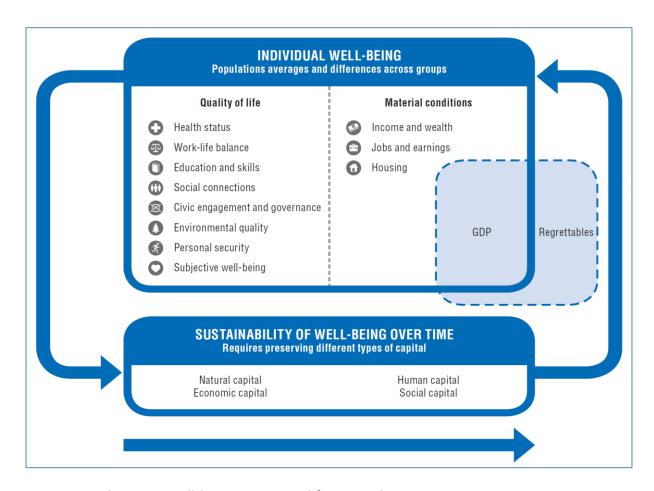


Figure 1. The OECD well-being conceptual framework.

Source: OECD (2013a, Figure 1.2, p. 21).

New Zealand too has a history of policy initiatives that recognise broader measures of wellbeing than GDP. Each year between 2001 and 2010, for example, *The Social Report* was published with four key aims (Ministry of Social Development, 2010, p. 4): (i) to report on social indicators that complement existing economic and environmental indicators; (ii) to compare New Zealand with other countries on measures of wellbeing; (iii) to contribute to better-informed public debate; and (iv) to aid planning and decision making, and help identify key areas for action. More recently, the first review under the mandate of the Environmental Reporting Act 2015 considers five environmental domains: air, atmosphere and climate, fresh water, land and marine. The report includes data and analysis on the state of the environment, the pressures that have created that state, and how this is influencing the country's economy, health and social wellbeing, as well as Māori culture and heritage (Ministry for the Environment and Statistics New Zealand, 2015, p. 15).

In a wider ranging project, Statistics New Zealand in 2002 published a report on *Monitoring Progress towards a Sustainable New Zealand*, followed up in 2009 with its *Framework for Measuring Sustainable Development*. Like the OECD's framework in Figure 1, a capitals approach was adopted to recognise that economic, human, natural and social capital make up the country's national wealth. Measures were organised under three 'target dimensions': environmental responsibility; economic efficiency; and social cohesion (Statistics New Zealand, 2009a). Reports published data to record progress in each dimension (Statistics New Zealand, 2009b, 2009c and 2011) and sixteen summary indicators are now regularly updated on the dedicated website, "New Zealand Progress Indicators Tupuranga Aotearoa".

The above work by the Ministry of Social Development and Statistics New Zealand was used by the Treasury when it came to develop its own Higher Living Standards Framework (HLSF) for policy advice (Gleisner et al, 2011, p. 7; see also Gleisner et al, 2012; Karacaoglu, 2012; and Treasury, 2015). The HLSF has the standard four capitals at its centre, surrounded by a pentagon of points identified as impacting on these capitals in ways particularly relevant for the Treasury's policy advice. The five points are: economic growth; sustainability for the future; managing risks (sometimes labelled as 'resilience'); social cohesion (initially labelled as 'social cohesion'); and increasing equity. In 2014, a simplified version was used in the preparation of the post-election briefing paper Holding On and Letting Go (Treasury, 2014; hereafter referred to as HOLG). The simplification converted the HLSF pentagon into three dimensions represented as concentric circles: an inner circle of 'prosperity' (covering the HLSF point of 'economic growth'); a middle circle of 'inclusiveness' (covering 'social cohesion' and 'increasing equity'); and an outer circle of 'sustainability' (covering 'sustainability for the future' and 'managing risks'). HOLG sets out the Treasury's thinking about how to improve economic performance "in order to stimulate debate and further analysis" (idem, p. i). This present paper responds to that invitation and is written in the same spirit of collaborative enquiry.

¹ The title is a reference to Glenn Colquhoun's poem *The trick of standing upright here*, published in Colquhoun (1999). The involvement of the Higher Living Standards Framework in the preparation of this briefing paper is explained in Treasury (2015, p. 14).

Another motivation for this paper comes from a recent response to our own research on what we call a "wellbeing economics framework" (see, for example, Dalziel, 2012; Dalziel *et al*, 2006; Dalziel and Saunders, 2007 and 2011; Miller *et al*, 2015; Saunders and Dalziel, 2004 and 2015; and Schischka *et al*, 2008). We prepared a synthesis of our understanding of this framework for publication as a BWB Text (Dalziel and Saunders, 2014a). It was followed by a précis (Dalziel and Saunders, 2015) in a special issue of *New Zealand Sociology* edited by Charles Crothers and Michael Fletcher (2015). A reviewer in that issue chided us for our style, complaining that the "book throughout is couched in the mildest, friendliest terms, even on issues which might make a reasonable person angry" (Hazledine, 2015, p. 70). Professor Hazledine hypothesised this is because we "don't want to make a fuss". We do not agree, but it is fair to ask what the fuss is all about: does wellbeing economics, reflected in the global movement to shift emphasis from measuring economic production to measuring people's wellbeing, add anything important to policy discussions not already available in traditional analytical frameworks? This paper attempts to answer that question by using a wellbeing economics framework to analyse and build on the contents of *HOLG*.

Following this introduction, the paper presents a section on each of the three dimensions of economic performance discussed in HOLG. Section 2 explains that 'prosperity' in a wellbeing economics framework is an indicator of national wellbeing, but argues that economic growth is not a policy instrument for achieving prosperity or wellbeing. Section 3 explains that 'sustainability' is an important concept in wellbeing economics because of the scientific evidence that current modes of production are creating environmental damage that is unsustainable (including the risks associated with global climate change), but argues this is not captured by the Treasury's view that "the biggest issue for the sustainability of New Zealand's economic performance is around our stocks of financial and produced capital" (Treasury, 2014, p. 14). Section 4 explains that the approach of wellbeing economics to 'inclusiveness' is consistent with the Treasury's support for "a primary focus of policy on removing the barriers and increasing the opportunities for people, especially for people experiencing hardship" (idem, p. 36), but argues this requires a focus on the types of work and skills development that are taking place, not just on levels of employment and education. The paper then draws together these themes to examine a core objective of the HOLG strategy, namely its target of increasing exports as a percentage of GDP. In Dalziel and

Saunders (2014a, pp. 118-125), we were critical of New Zealand's long emphasis on 'export-led growth'; hence section 5 explains why we find the evidence in *HOLG* unconvincing on this point and section 6 explains why we think policy should aim instead for 'value-added growth'. The paper finishes with a brief conclusion in section 7.

2. Prosperity

As already noted, the three dimensions of economic performance in *HOLG* are presented as nested circles, with 'prosperity' at the centre. This arrangement reflects the pre-eminence given to prosperity, which is to be achieved through economic growth: "We want economic growth to bring New Zealand greater prosperity, but it is important to ensure that prosperity is inclusive and sustainable" (Treasury, 2014, p. 2).² Indeed, growth in *HOLG* is virtually synonymous with prosperity, since prosperity is "about higher incomes and jobs for New Zealanders" (ibid). Of course, prioritising growth in this manner is not uncommon in national economic strategies. In his speech introducing the United Kingdom's National Wellbeing Programme, for example, the Rt. Hon. David Cameron (2010) felt it necessary to deny that "talking about wellbeing ... is somehow sidelining economic growth as our first concern" and he affirmed that "growth is the essential foundation of all our aspirations" (Scott, 2014, provides a critique of this aspect of the United Kingdom wellbeing discourse). In New Zealand, a similar affirmation was made in the Speech from the Throne at the opening of Parliament following the 2008 general election (Satyanand, 2008):

The driving goal of the new Government will be to grow the New Zealand economy in order to deliver greater prosperity, security and opportunities to all New Zealanders. It will be going for growth because it believes in the power of economic growth to deliver higher incomes, better living conditions and, ultimately, a stronger society for New Zealanders.

The core idea in these quotations is that economic growth is to be understood as an *instrument* for promoting the wellbeing of a country's residents; that is, economic growth is conceptualised as a mechanism that policy makers can use to bring prosperity, to support

-

² In their guide introducing the HLSF, the Treasury (2015, p. 15) reinforce this pre-eminence, saying

[&]quot;we put economic growth at the top (after all we are the Government's lead economic advisor)".

aspirations and to deliver a stronger society. In a wellbeing economics framework, this is considered a conceptual error; instead economic growth and prosperity are to be understood as *indicators* of national wellbeing, to be monitored alongside other wellbeing measures collated in a modern framework such as the OECD example presented in Figure 1 above. As wellbeing rises in a country, this typically involves economic growth, but the higher level of GDP does not *cause* the higher wellbeing any more than a higher level of mercury in a Fahrenheit-designed thermometer can *cause* a rise in temperature.

Differences between the two conceptualisations have strong implications for policy advice. If economic growth is an instrument, then economic policy can concentrate on promoting increases in GDP (supplemented with suitable concerns for inclusiveness and sustainability), confident that economic growth will produce higher wellbeing. This is the approach taken in *HOLG*. If growth is only a partial indicator, however, then a siloed approach of this type leaves open the possibility of economic growth coexisting with falling levels of important aspects of national wellbeing. To avoid this possibility, policy should aim at promoting wellbeing directly, recognising that increases in wellbeing are likely to be reflected in rising GDP. This is the wellbeing economics approach.

The possibility of economic growth with falling levels of important aspects of national wellbeing can be illustrated using New Zealand data. Figure 2 depicts New Zealand's real per capita GDP for years ending March from 1983/84 to 2013/14, covering thirty years since the country's programme of economic reforms were introduced after the 1984 general election. The series divides naturally into three phases, beginning with the reforms themselves between 1983/84 and 1992/93. There was little economic growth during this period, but in the second phase the economy grew from just over \$35,000 per person in 1992/93 to nearly \$51,000 per person in 2007/08 (all values measured at 2013/14 prices). Thus New Zealand achieved a growth rate in per capita GDP of 2.5 per cent per annum over those fifteen years, broadly in line with other advanced economies (Treasury, 2014, p. 5). In the third phase, the cycle of economic downturn and recovery after the 2008 global financial crisis meant the series did not actually breach \$51,000 until the last year of the series. Nevertheless, real per capita gross domestic product in 2013/14 was more than 50 per cent higher than it had been in 1983/84.

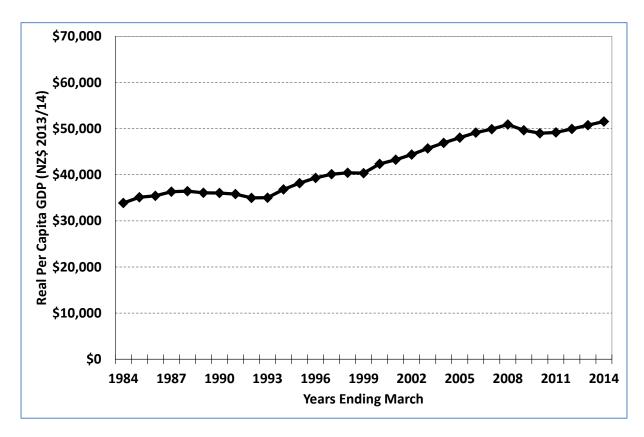


Figure 2. New Zealand real per capita gross domestic product, 1983/84-2013/14.

Notes: Real GDP is taken from the Statistics New Zealand series SNEA.SG01RAC00B01.

Population data are for the end of the September quarter in each financial year. Series

DPEQ.SBEC has been spliced to the series DPEQ.SG1CTOT at 1991/92 using the ratio of their average September values 1991-1996.

Source: Statistics New Zealand.

Within the *HOLG* framework, an increase in real per capita gross domestic product of 50 per cent represents a substantial increase in prosperity, which ought to be "linked to better outcomes across a range of social, environmental and economic measures that matter for living standards" (Treasury, 2014, p. 2). There are important aspects of wellbeing, however, for which this is not true, with arguably the most important being child wellbeing. Figure 3 presents two measures of the percentage of children living in households with less than 60 per cent of median income (adjusted for household size and composition) after housing costs. The Constant Value measure defines the threshold using the median income for 1998 (adjusted for inflation), chosen because that year's median income in real terms was close to the value in 1982 (idem, p. 102). The Relative Value measure recalculates the threshold in

each survey using contemporary median income. Thus the measures respectively indicate 'absolute poverty' (socially defined at a particular year) and 'relative disadvantage' (socially defined each year).

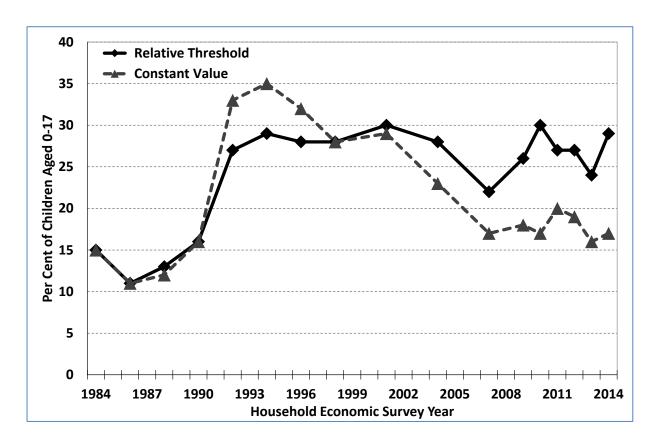


Figure 3. Percentage of children aged 0-17 in low-income households, 1984-2014. *Notes*: Low income households are defined as 60 per cent of median income (adjusted for household size and composition) after housing costs. The Relative Threshold measure uses contemporary median income in the year of the survey. The Constant Value measure is anchored by the median income for 1998 (adjusted for inflation) used for the whole series. *Source*: Perry (2015, Table F.7, p. 103).

Both series are troubling from the perspective of wellbeing economics. After three decades in which GDP per capita increased by 50 per cent, the percentage of children living in 'absolute poverty' (socially defined) has not improved; indeed this measure is slightly worse at the end of the series than at the beginning. Further, the percentage of children living in 'relative disadvantage' has almost doubled between 1984 and 2014. Economic growth has not been sufficient to improve child wellbeing on these two measures.

There is evidence of other serious problems being experienced by young New Zealanders, despite economic growth. In 2011, for example, the Chief Science Advisor to the Prime Minister, Sir Peter Gluckman, released a report on adolescent transitions prepared by an expert taskforce chaired by himself and Professor Harlene Hayne (now Vice-Chancellor of the University of Otago). The opening paragraph of the report's executive summary observed (Gluckman, 2011, p. 1):

Adolescents in New Zealand relative to those in other developed countries have a high rate of social morbidity. While most adolescents are resilient to the complexities of the social milieu in which they live, at least 20% of young New Zealanders will exhibit behaviours and emotions or have experiences that lead to long-term consequences affecting the rest of their lives.

From a wellbeing economics perspective, the sustained absolute poverty and sharp increase in relative disadvantage among children, as well as the internationally high social morbidity among adolescents, are particularly troubling for at least three reasons. First, the data are likely to reflect low levels of wellbeing being experienced by higher numbers of young New Zealanders. Second, the authors have previously proposed that alongside the four standard capitals (economic, human, social and natural), a fifth type should be recognised: 'cultural capital', defined as "a community's embodied cultural skills and values, in all their community-defined forms, inherited from the community's previous generation, undergoing adaptation and extension by current members of the community, and desired by the community to be passed on to its next generation" (Dalziel et al, 2009, p. 19). Following the research of economists such as Throsby (1994, 1995, 1999, 2001), de Bruin (1998, 1999) and Klamer (2002), we argue that the passing on of cultural capital from one generation to the next is essential for a community's cultural vitality; hence child disadvantage and adolescent morbidity indicate a serious loss of social wellbeing to their parents' generation. Third, HOLG defines sustainability as being "about prosperity tomorrow – and the future prosperity of our children" (Treasury, 2014, p. 2). In our view, future prosperity must be adversely affected by a doubling in the rate of relative disadvantage among New Zealand children and such a high rate of social morbidity among New Zealand adolescents.

Based on observations such as the above, a wellbeing economics framework argues that policy must address wellbeing more directly. This requires shared language for discussing what 'wellbeing' means in a country of diverse communities, households and individuals (OECD, 2011a and 2013a). Both the Australian Treasury's Wellbeing Framework and the New Zealand Treasury's Higher Living Standards Framework draw inspiration from Amartya Sen's writings on this topic, as has our own research (Henry, 2006, pp. 6-7; Karacaoglu, 2012, p. 1; Dalziel and Saunders, 2014a, pp. 18-22). A key term in Sen's lexicon is 'capabilities' (Sen, 1989, p. 18; see also Nussbaum, 2011):

The analysis of development presented in this book treats the freedoms of individuals as the basic building blocks. Attention is thus paid particularly to the expansion of the 'capabilities' of persons to lead the kinds of lives they value – and have reason to value.

Sen's capabilities approach emphasises the personal agency of individuals going about their daily business to lead lives they themselves value. Although people's choices may be limited by social factors, this does not mean an outsider should presume to make choices on their behalf or to impose the outsider's own values; this would not be authentic development (similar views are expressed in the Nobel Prize acceptance speech of Ostrom, 2010, pp. 416-7). The final phrase in Sen's statement adds that citizens should also "have reason" for valuing the lives they lead. This insistence on *reasoned* values moves Sen away from individual libertarianism and gives his analysis a strongly communal character.

It is not difficult to see that competitive markets must play a key role within the capabilities approach. As summarised by McMillan (2002, p. 13 and p. 14) "markets are the most effective means we have of improving people's well-being", although "to deliver their full benefits, they need support from a set of rules, customs, and institutions". Because well-functioning markets facilitate efficient and decentralised decision-making, people in market economies have greatly enhanced capabilities to make individual and collective choices consistent with living the kinds of lives they value. Further, because GDP is designed to measure market production, increases in wellbeing in a market economy are typically associated with increases in GDP. To repeat our earlier point, this means GDP is a partial indicator of wellbeing. It does not make GDP a policy instrument.

3. Sustainability

As already noted above, the nested model in *HOLG* gives pre-eminence to prosperity; this is confirmed in the *HOLG* definition of sustainability: "Economic performance is not just about prosperity today; it is also about prosperity tomorrow – and the future prosperity of our children" (Treasury, 2014, p. 2). Since prosperity is "about higher incomes and jobs for New Zealanders" (ibid), this sequence conceptualises sustainability in terms of ongoing economic growth. The strategy recognises that New Zealand needs to improve its management of natural resources, but concludes: "we think the biggest issue for the sustainability of New Zealand's economic performance is around our stocks of financial and produced capital" (idem, p. 14). Consistent with that thinking, its section on sustainability involves substantial discussions on saving rates and investment in infrastructure.

This approach to 'sustainability' in terms of savings and investment harks back to the neoclassical growth model of Solow (1956) and Swan (1956), addressing what determines a country's level of sustainable living standards; that is, the level of a country's per capita output consistent with physical capital supply-side constraints. The answer is that output per capita tends to be higher if a higher proportion of annual output is invested in new capital stock (sometimes called the national saving rate) and economic growth tends to be higher if labour productivity grows more quickly.³

In more recent times, however, the word 'sustainability' is primarily used in the context of questions asking whether current levels of economic activity can be sustained if the impact on the natural environment (especially resource depletion and global climate change; see United Nations, 2015) are reducing options available to future generations. This is, for example, the way in which the sustainability issue is addressed in the Treasury's (2013b)

³ See, for example, Dalziel and Saunders (2014b). Output per capita will also be higher if physical capital depreciates at a lower rate or if the population grows more slowly. The model's implications for raising the sustainable growth rate through increases in national savings rates and labour productivity are widely adopted in policy advice; they were, for example, the two medium-term policies advocated by the IMF (2015) after a recent official mission to New Zealand.

Higher Living Standards Framework, which uses the widely-cited Brundtland vision (WCED, 1987, par. 27):

Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits – not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities.

This definition of sustainability is urgent for national economic strategies (United Nations, 2015), in part because of accumulating scientific evidence for global climate change due to anthropogenic emissions of greenhouse gases (IPCC, 2015, p. 4):

Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century.

Figure 7, which is reproduced from a recent report by the Intergovernmental Panel on Climate Change (IPCC), illustrates this urgency in three panels. Working backwards, panel (c) shows that if annual greenhouse gas (GHG) emissions remain at their 2010 level, cumulative CO₂ emissions by 2050 are projected to be in the order of 3,750 to 5,000 gigatonnes. This is projected to cause increased global mean temperatures relative to pre-industrial levels in the order of 2 to 3 degrees Celsius (shown in panel b), which are then associated with higher risks as shown in panel (a). This alone would be a cause for concern, but the IPCC baseline scenario paints a more worrying picture on the basis that ongoing economic growth around the world, *ceteris paribus*, is expected to see annual GHG emissions rise well beyond their 2010 level. Thus, the baseline scenarios suggest a temperature rise in the order of 3.5 to 5 degrees Celsius, meaning the environmental risks being imposed by current economic activity on the next generation in 2050 are high or very high (shown in panel a).

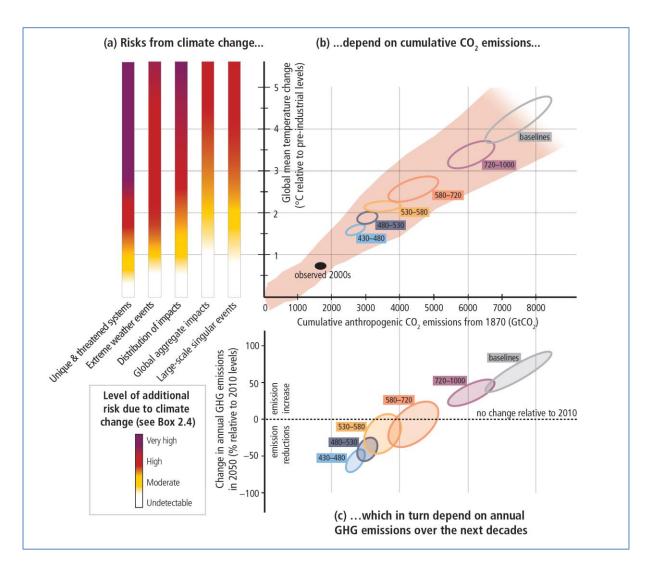


Figure 7. Risks from climate change, temperature change, cumulative carbon dioxide emissions and changes in annual greenhouse gas emissions by 2050.

Source: IPCC (2015, Figure SPM.10, p. 18).

Recall that the one of the points affecting wellbeing in the HLSF is 'managing risks'. The IPCC analysis indicates that higher GHG emissions will substantially increase the risks faced by the next generation and so these risks must be managed as a key element in a national economic strategy; for example, by promoting an economic growth path that constrains CO₂ emissions. There is some general recognition of this in *HOLG* (Treasury, 2014, p. 9):

As an island nation and with an economy reliant on primary production, climate change presents risks for New Zealand. Although we may not be as severely affected by climate change as some countries, impacts may include an increased frequency and intensity of

natural hazards and extreme events – although these are nearly impossible to predict with any precision. Any further action by New Zealand in this area will need to be carefully calibrated to ensure that our long-term living standards are protected.

Nevertheless, a key foundation in the *HOLG* strategy is the expectation that production growth will increase prosperity. Risks from global climate change threaten that expectation. Consequently, close attention must be made to this issue in national economic strategies, particularly as it applies to investment-led growth. This explains the world-wide push to shift investment towards low-carbon technologies, reflected, for example, in the OECD's goal on its 50th anniversary of "working with partners to build a stronger, cleaner, fairer world economy" (OECD, 2011b, p. 8, emphasis added). This requires initiatives across a range of public policies (including energy, transport, industry, skills formation, as well as economic development; see, for example, Miranda et al, 2011, and Vivid Economics and Energy Centre, University of Auckland Business School, 2012). Carefully constructed national strategies can coordinate public and private initiatives to make a material difference to the pressing challenge of global climate change wellbeing. There is no suggestion that this is an easy task, which is one of the reasons global climate change is an important strategic issue. As the author of the influential Stern Review (2006) recently commented, "the science 'conspires' to render the making of policy very troublesome" but "there are severe dangers of delay [because] carbon dioxide is long-lasting and difficult to extract from the atmosphere at scale once it has been released" (Stern, 2015, pp. 2-3).

The preceding paragraphs emphasise the risks associated with environmental damage, but there are also opportunities available to New Zealand producers and processors for adding value to exported agri-food if they are able to communicate credible claims to overseas consumers about the sustainability credentials of the country's produce (Manhire *et al*, 2012; Miller *et al*, 2014; Saunders *et al*, 2015). These opportunities are reflected in the Te Hono Movement, comprised of more than 130 leaders of agribusiness who have participated in the New Zealand Primary Sector Bootcamp at Stanford University. The group's vision for New Zealand agribusiness is the following (Te Hono Movement, 2015):

From price taking to market shaping. Transforming the primary sector to realise the opportunity for Aotearoa, New Zealand to be recognised for our natural environment and

products, as world leaders in innovation – a place to prototype and amplify, and the quality of our relations with the rest of the world.

An often-cited example of a large New Zealand agribusiness that has transformed itself from price taking to market shaping is Zespri International, "now recognised as the world leader in premium quality kiwifruit, managing 30% of internationally traded kiwifruit by volume, yet accounting for approximately two-thirds of global value" (New Zealand Government, 2012, p. 19). Zespri devotes considerable resources to communicating its sustainability credentials to customers, including how it works "with leading research institutes and partners to understand and improve our environmental position, while a cross functional team spanning our industry assesses the feasibility of new sustainability initiatives and supports their implementation" (Zespri International, 2015). Another notable example is the Sustainable Winegrowing New Zealand initiative directed through New Zealand Winegrowers. It has produced sustainability standards to ensure its members, who cover approximately 90 per cent of the wine produced in New Zealand, meet international guidelines for sustainability practices in seven key focus areas: biodiversity; soil, water and air; energy; chemicals; by-products; people and business practices (Sustainable Winegrowing New Zealand, 2015).

HOLG does recognise that New Zealand could increase incomes "by getting higher prices on world markets for what is produced", citing evidence from Grimes (2006) and Conway and Meehan (2013) about the importance of this phenomenon (Treasury, 2014, p. 4). This suggests a significant strategic opportunity, but the possibility is mentioned only to be immediately dismissed in the following paragraph of HOLG as "unlikely" (ibid). Thus, HOLG appears wedded to price taking strategies, in contrast to the Te Hono Movement vision cited above. This paper will return to this missed strategic opportunity, but first the following section considers the third dimension in HOLG.

4. Inclusiveness

HOLG addresses the challenge of "enabling all New Zealanders to reach their potential and play a meaningful role in the economy and society" (Treasury, 2014, p. 35). This objective has a venerable tradition in New Zealand public policy. There is the famous Fraser and Beeby

statement in 1939, for example, that declared the citizen's right "to a free education of the kind for which he is best fitted, and to the fullest extent of his powers" (Beeby, 1992, p. 124). The Royal Commission on Social Security (1972, p. 65) expressed the aim "to ensure, within limitations which may be imposed by physical or other disabilities, that everyone is able to enjoy a standard of living much like the rest of the community, and thus is able to feel a sense of participation in and belonging to the community" (see also Royal Commission on Social Policy, 1988, p. 13). The following summary in its 1987 briefing papers to the incoming government is representative of the Treasury's ongoing concern for this fundamental equity issue (Treasury, 1987, p. 7):

Income is the passport to participation in society. Access to social services like education and health are critical to personal well-being. The maintenance of a fair society by the redistribution of income to the poor and the protection of their access to social services is a fundamental equity issue facing the Government. Without government redistribution, some would be forced to lead mean and squalid lives.

Nevertheless, it must be acknowledged that progress has been poor in some aspects of this policy challenge over the last thirty years. Section 2 has noted the trends in child poverty between 1984 and 2014; another indicator is low quality housing. The OECD wellbeing framework lists housing as the third material condition needed for personal wellbeing (see Figure 1 earlier in this paper). The Treasury (2014, pp. 43-44) also recognises the importance of quality housing, especially for good health and educational outcomes of young people, citing research by Weinmayr *et al.* (2013) and James and Saville-Smith (2010). In that context, Table 1 presents Census data from 1991 to 2013 on the percentage of residents within the boundaries of the Counties Manukau District Health Board living in crowded housing. The table also shows data for all New Zealand. The years 1991 to 2013 were associated with a 40 per cent increase in real per capita gross domestic product (Figure 2) and this is reflected in some reduction in the percentage of New Zealanders living in crowded housing nationally. Table 1 shows, however, there was no improvement in Counties Manukau; indeed the data indicate a slight increase in crowded households in this part of "New Zealand's international gateway and only global city" (Treasury, 2014, p. 16).

Census Year	Per Cent of Population Living in Crowded Housing			
	Counties Manukau	New Zealand		
1991	21.1%	11.8%		
1996	21.3%	10.9%		
2001	21.2%	10.1%		
2006	21.9%	10.4%		
2013	21.8%	10.1%		

Table 1. Proportion of people living in crowded households, Counties Manukau and New Zealand, 1991-2013.

Notes: Crowding is defined using the Canadian National Occupancy Standard; see Goodyear et al. (2011) for an explanation. Counties Manukau is defined as the area within the boundaries of the Counties Manukau District Health Board.

Source: Baker et al. (2012, Table 6, p. 12) and Ministry of Health (2014, Table 1d, p. 10).

To promote inclusiveness, *HOLG* supports "a primary focus of policy on removing the barriers and increasing the opportunities for people, especially for people experiencing hardship" which "implies a focus on work, education, and supportive social services, as well as income protection" (idem, p. 36). As in the rest of the document, there is much to applaud in this focus, but we comment on one aspect particularly relevant to our own research; namely, the role of developing skills as a way to promote inclusiveness. *HOLG* rightly emphasises the importance of skills in the labour force (idem, p. 41):

The skills system will also need to respond to longer-term trends. Big changes in the global and domestic economy are radically changing the nature of work. The 'great doubling' of global labour supply from an emerging Asia, combined with technological change, is continuing to reduce low-skilled job opportunities while increasing opportunities for those with high skills. In the face of these long-term trends, New Zealand will increasingly rely on skilled people to ensure our economy is productive, competitive and innovative. This makes education all the more important.

The OECD (2012, p. 3) similarly describes skills as the global currency of the 21st century, going on to observe: "Without proper investment in skills, people languish on the margins of society, technological progress does not translate into economic growth, and countries can no longer compete in an increasingly knowledge-based global society." This observation is consistent with our own research on skills systems (Dalziel, 2010, 2012, 2013a, 2013b, 2015a and 2015b). In that context, an issue that arises in a national economic strategy is whether a focus on the supply of skilled workers can be effective without an equally strong focus on the *type* of skilled or unskilled jobs being created in the national economy. This is particularly important for New Zealand because of some stylised facts about this country's education reported in *HOLG* (Treasury, 2014, p. 39 and p. 40):

- A higher percentage of the variation in student performance in New Zealand appears to be explained by parents' socioeconomic status that for the OECD as a whole; and
- New Zealand returns from education appear low by international standards.

Thus, further time spent in education may be ineffective for lifting people from poverty and low quality employment can be an ongoing poverty trap. Consider, for example, the *HOLG* observation that "New Zealand is particularly unusual in terms of the high proportion of our children in sole parent households and our low employment rates for solo mothers" (idem, p. 36). One of the key contributions to this outcome is likely to be the low quality jobs where single parents typically find employment in New Zealand. In 2013, the Treasury undertook a study on who was earning wages less than the 'living wage' (\$18.40 at the time); that is, the hourly rate "necessary to provide workers and their families with the basic necessities of life [that] will enable workers to live with dignity and to participate as active citizens in society" (King and Waldegrave, 2012, p. 3). The Treasury analysis found that "over half of the sole parents with dependents who are working have wage rates below the Living Wage, and most of these earn less than \$15 per hour" (Treasury, 2013a, p. 8).

Wellbeing economics identifies this as an important issue for economic strategy because it indicates that, given the wage rates available to them, these parents do not have the 'capability' to create a kind of life they have reason to value. This has consequences for the young people in these households, as explained in *HOLG*: "the children who are most at risk

of the worst outcomes come from backgrounds with a range of disadvantages, such as families with lower incomes, less education, lower employment *and increased levels of stress and anxiety*" (Treasury, 2014, p. 38, emphasis added). The association between low quality employment and ill-health is well-recognised, with the Marmot Review of Health Inequalities in England expressing the risks as follows (Marmot *et al*, 2010, p. 26):

Insecure and poor quality employment is also associated with increased risks of poor physical and mental health. There is a graded relationship between a person's status at work and how much control and support they have there. These factors, in turn, have biological effects and are related to increased risk of ill-health. Work is good — and unemployment bad — for physical and mental health, but the quality of work matters. Getting people off benefits and into low paid, insecure and health-damaging work is not a desirable option.

This conclusion that work quality matters is not restricted to single parents. The study cited above of people earning less than the living wage also reported the following result (Treasury, 2013a, p. 8):

In 25% of households with two adults and dependants, the principal earner of the household is on a wage rate below the Living Wage. This earner may also have income from other sources, but generally the partner and dependants will have an even lower wage rate if they are earning wages or a salary.

One-quarter of households with two adults and dependents is a high proportion of the New Zealand population. The observations in Treasury (2013a) therefore provide an important insight into the trends reported in Table 1 and Figure 3 about ongoing issues in low quality housing and child poverty rates in New Zealand. In summary, the country's current economic path is creating a high proportion of low paid jobs in which employees are unable to earn a living wage. By definition, not earning a living wage means that employees in these jobs who are parents lack the capability to provide a material standard of living we have reason to value for New Zealand families. In a wellbeing economics framework, this is a major failure of national economic strategy.

5. Export-led Growth

The idea that national economic strategy should focus on 'export-led growth' has a long history in New Zealand policy advice. It was a feature of responses to the 1967 collapse in the international price of wool (McAloon, 2013, p. 133) and a prominent theme at the 1984 Economic Summit Conference prior to the economic reforms (Dalziel, 1986). Opening the economy to greater international competition was a feature of those reforms (Evans *et al*, 1996, p. 1883; Dalziel, 1998, pp. 108-119). In 2006, Cabinet agreed that the Economic Transformation Agenda should include "globally competitive firms" and "Auckland – an internationally competitive city" among its five themes (Dalziel, 2007, p. 6). More recently, the Business Growth Agenda identifies "building export markets" as one of six key ingredients for business success, with a target of increasing the ratio of exports from 30 to 40 per cent of GDP by 2025 (New Zealand Government, 2012).

HOLG similarly calls for a shift in economic activity towards exports, citing OECD (2013b) modelling that increasing imports and exports from 60 to 80 per cent of GDP by 2025 (that is, meeting the Business Growth Agenda target) might increase GDP by nearly 3 per cent thirty-five years later.⁴ Two empirical observations are offered in support of this strategy. First, HOLG observes that "New Zealand's trade (both imports and exports) looks low compared to other small countries" (Treasury, 2014, p. 17). Second, HOLG presents a time series graph showing that in the last economic upturn "New Zealand saw strong growth in non-tradable GDP (those industries that are less exposed to international competition), while tradable GDP was broadly flat" (idem, p. 26). Both pieces of evidence invite further attention, however, since New Zealand firms face commercial incentives to perform well and operate in a domestic policy environment commended for its international good practice (idem, p. 4). It is therefore not obvious why businesses would consistently make poor decisions about tradeable and non-tradable activities on a scale that would justify public policy intervention.

_

⁴ Treasury (2014, p. 17). Note that this reward for such a radical transformation is not high. A three per cent increase in GDP in 2060 can be compared to the data in Figure 2 that per capita might be expected to increase by 2.5 per cent in a standard year.

Consider first the observation that New Zealand's international trade is low compared to other small countries. A recurring theme throughout *HOLG* is that New Zealand faces particular economic challenges because of the small size of its domestic market and the large distance from its major world markets. These disadvantages are compelling presented in the strategy's Figure 8, which plots for 27 countries domestic population on the horizontal axis and distance from world markets on the vertical axis (Treasury, 2014, p. 16). New Zealand stands out in the top left-hand corner as uniquely small *and* distant. Other small economies (Ireland, Denmark and Finland) are close to large and rich markets; other distant countries (Chile and Australia) have local populations of more than 15 million people. Nevertheless, *HOLG* reaches a relatively benign conclusion about the significance of these disadvantages (Treasury, 2014, p. 22):

However, geography is not destiny. Countries can and have overcome the constraints associated with size and distance from markets. New Zealand did so for many years in the first half of the 20th century through close trading relations with the United Kingdom and through innovating and specialising in particular traded goods. While we will have to work hard to take advantage of it, our location is becoming less of a liability with the shifting of global economic power and the increasing predominance of Asia.

That paragraph, if true, might support a comparison between New Zealand's export levels and those of other small countries, but each of its sentences can be criticised. First, it should be noted that the phrase "can overcome constraints" is a profoundly non-economic concept, which inevitably creates problems in an economic strategy. Further, the reference to "countries" (plural) having overcome these constraints is inconsistent with the convincing demonstration in *HOLG* that New Zealand is *uniquely* small and distant. The example of last century's trading relations with the United Kingdom was of its own time in history and was associated with some serious problems (see the review in chapter 1 of McAloon, 2013, and McAloon's own views in that book's chapter 3). It also had much to do with policy in the United Kingdom – including the experience of two devastating wars – as well as choices made in New Zealand (Saunders *et al*, 2015, Chapter 3). Finally, the reference to the increasing predominance of Asia must be read in the context of the strategy's earlier statement that "Auckland is not much closer to cities in Asia than cities in Europe are" (Treasury, 2014, p. 16, citing Boulhol and de Serres, 2008).

Philip McCann (2009) has argued convincingly that much of New Zealand's economic situation can be explained by economic geography and indeed there is considerable material in *HOLG* that illustrates the vital importance of geography for all small countries. To cite an example relevant to this discussion, *HOLG* suggests that geography was a consideration in the strategy adopted by the overseas exemplars to increase their export ratios (Treasury, 2014, p. 19, emphasis added):

In contrast, many of the small countries that have significantly increased their contribution of gross exports to GDP, such as Ireland and Finland, have done so by playing a greater role in GVCs [global value chains]. As a result, they have seen a substantial increase in both exports and imports. In part *this is because their location*, together with their product mix and skill sets, has enabled them to benefit from the increased fragmentation of production processes across borders. And, in part it is a result of *a deliberate strategy* in those countries to strengthen international integration, including foreign and outward direct investment.

Playing a greater role in value chains with large *neighbouring* markets has been a successful strategy to improve the economic performance of Ireland and Finland, but this does not mean a distant country can replicate the same strategy with the same success. In particular, given the country's distant location, it is implausible to think that New Zealand's processing productivity could be sufficiently high to justify the two-way transport costs of importing raw materials for transformation into exports back to Asia, Europe or North America. Instead, New Zealand must develop its own strategy for wellbeing, grounded in its own particular geography, history and resources, to take advantage of its own particular opportunities in a continuously changing global economy (as argued by Skilling, 2012). The resulting ratio of exports to GDP will be what it will be; there is no reason to adopt a specific target simply because that has been the value achieved by other countries following their own specific strategies.

Consider now the claim that the tradable sector has performed poorly compared to the non-tradable sector in the most recent economic upturn. Figure 4 depicts the relevant data, originally developed in a Statistics New Zealand study by Attewell and Crossan (2013). The two series show tradable GDP and non-tradable GDP growing at similar rates to the end of

1996, after which the tradable sector stalled and then flattened from 2003, while the non-tradable sector continued to surge until the 2008 global financial crisis. This representation is striking, but also selective. As *HOLG* acknowledges, Attewell and Crossan used two methods to develop their data. The second method results in a very different narrative; see Figure 5. Tradable GDP and non-tradable GDP again move together in the first seven years but there is no subsequent imbalance towards the non-tradable sector. Nor is there any relatively weak performance by the tradable sector after 1998. To the contrary, these data indicate that New Zealand's recovery from 1993/94 was indeed export-led, in line with the policies of the day, with the non-tradable sector lagging until a return to parity at the beginning of 2007. The two series then moved more or less in tandem for the last seven years.

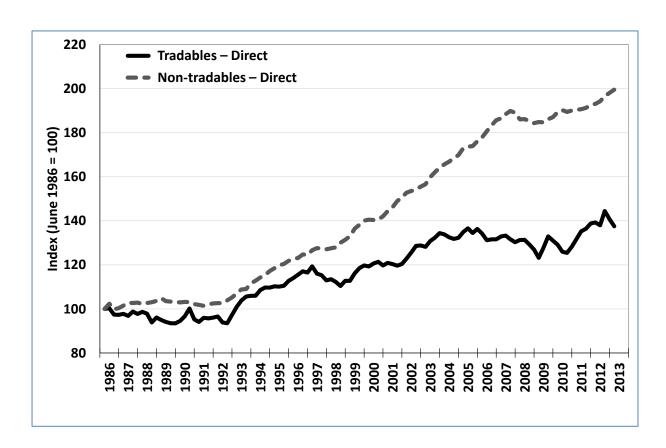


Figure 4. Tradable and non-tradable GDP, direct measures, 1986(2)-2013(2). *Note*: The industry classification uses the direct method of Attewell and Crossan (2013) in which the tradable industries are: agriculture, forestry and fishing; mining; and manufacturing.

Source: Statistics New Zealand (2013).

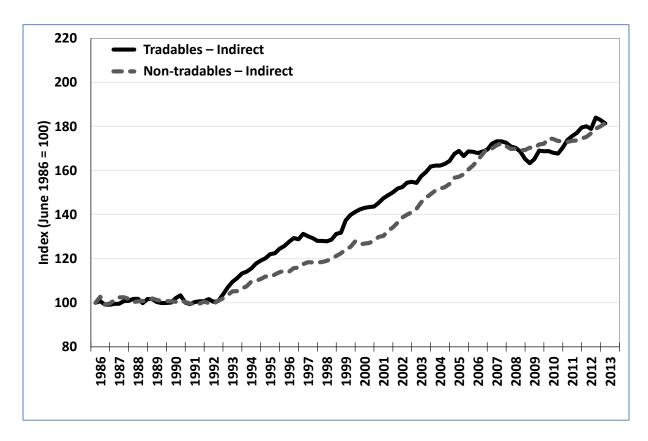


Figure 5. Tradable and non-tradable GDP, modified indirect measures, 1986(2)-2013(2). *Note*: The industry classification uses the modified indirect method of Attewell and Crossan (2013) in which the tradable industries are: agriculture, forestry and fishing; mining; manufacturing; wholesale trade; transport, postal and warehousing; information, media and telecommunications; and professional, scientific, technical, administrative and support services.

Source: Statistics New Zealand (2013).

The analysis is therefore sensitive to the chosen method. The original authors advised caution on this matter, noting that "the distinction between whether an industry is tradable or non-tradable is essentially subjective ... it would be more objective and more insightful to analyse the performance of industries relative to each other, rather than the performance of an arbitrary tradable non-tradable GDP split" (Attewell and Crossan, 2013, p. 23). Nevertheless, if a choice must be made, there are good reasons not to choose the data produced by the direct method, since this results in tradable GDP being comprised of three industries: agriculture, forestry and fishing; mining; and manufacturing. Thus, policy advice to promote the tradable sector defined in this way would require policies to favour the

primary and manufacturing sectors, whereas economic development is typically associated with an increasing share of the services sector (ibid; see also Coyle, 2014, p. 24).

The Treasury, of course, does not propose a strategy in favour of the primary and manufacturing sectors; *HOLG* explicitly states that "New Zealand needs to complement growing agricultural exports with a growing share of knowledge-intensive manufacturing and services exports" (Treasury, 2014, p. 21). The data produced from the second method are therefore more appropriate, since this expands the tradable sector to include: wholesale trade; transport, postal and warehousing; information, media and telecommunications; and professional, scientific, technical, administrative and support services. Adopting this definition, Figure 5 shows that there has been no imbalance between tradable and non-tradable activities in recent years to require a public policy response. This opens the door for a more nuanced national economic strategy based on fundamental principles of wellbeing economics, as discussed in the following section.

6. Value-Added Growth

Export-led growth has been a prominent term in the country's economic lexicon for a long time. We do not suggest that international trade is unimportant; to the contrary, exporting is typically necessary for enterprises to capture the benefits of economies of scale and is also associated with greater employment and productivity growth (Treasury, 2014, p. 18; see also Fabling and Sanderson, 2013). Our argument is that deeper economic principles must underpin a national economic strategy, which leads us to propose that the core organising principle should not be 'export-led growth', but 'value-added growth' (Dalziel and Saunders, 2014a, pp. 118-125). The purpose of this section is to explain this concept from a wellbeing economics perspective, starting with the following five principles (idem, p. 27):

Principle 1: The purpose of economic activity is to promote the wellbeing of persons.

Principle 2: The wellbeing of persons is related to their capabilities to lead the kinds of lives they value and have reason to value.

Principle 3: Economic policies should expand the substantive freedom of persons to lead the kinds of lives they value and have reason to value.

Principle 4: Wellbeing is created through persons making time-use choices they judge will contribute to their leading the kinds of lives they value.

Principle 5: Market production should enable persons to add value to the kinds of lives they value.

These principles are, we think, generally accepted. Principle 1 is consistent with a long tradition of welfare economics; it becomes controversial only when it is acknowledged that economic growth is not an instrument for promoting wellbeing. Principle 2 comes from Sen's capabilities approach, discussed earlier in this paper. Principle 3 follows naturally from the first two principles. Principle 4 is another application of Sen's theory; further, the concept of individual choices has always been at the core of market analysis. Principle 5 introduces the concept of 'value-added'. This is a familiar idea in national income accounting, which calculates any enterprise's contribution to the economy as its 'value-added': the difference between the market value of its outputs and the market value of its inputs. In Dalziel and Saunders (2014a, p. 120), we argue from these principles that value-added activities are the backbone of the wellbeing economics framework:

The *only* way we can increase our wellbeing is by engaging in activities (market and non-market) that add more value to individual wellbeing. Only if we involve the whole population in engaging in greater value-added activities can we produce 'cultural vitality', 'economic thriving', 'human flourishing' or any other term we might choose to describe wellbeing growth at the communal level.

Another name for 'value-added' is productivity, and so this approach is consistent with a strong refrain in *HOLG*; namely, that "labour productivity matters because over the long term, growth in incomes and, therefore, the goods and services that New Zealanders can consume, depends on it" (Treasury, 2014, p. 7). Using the language of wellbeing economics, we would say that failing to focus on value-added growth results in slow productivity growth. In that context, consider Figure 6, which updates a key graph in *HOLG* originally presented in a New Zealand Productivity Commission report by Conway and Meehan (2013). It compares two New Zealand productivity measures with the average of the same measures for twenty OECD countries. The top line shows the New Zealand gap in 'work intensity', defined as the number of hours in paid work divided by the population. The second line shows the gap in

'labour productivity'; that is, GDP produced per hour of work. In 1970, New Zealand values for work intensity and labour productivity were close to the average of the twenty countries. Between 1974 and 1978, labour productivity fell to twenty per cent below the average, offset by rising work intensity. During the reforms (1984 to 1994), rising unemployment meant that work intensity fell to the OECD average. Work intensity in New Zealand has grown again over the last two decades towards 20 per cent above average, but labour productivity continues to slip; it is now 30 per cent lower than the average of the twenty OECD countries in this data set.

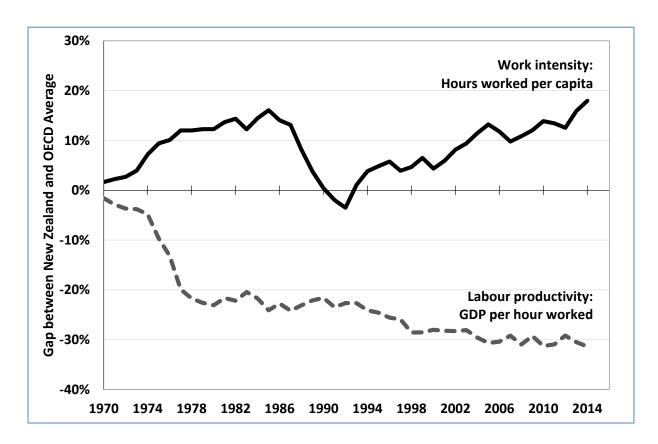


Figure 6. Work intensity and labour productivity, New Zealand relative to selected OECD countries, 1970-2014.

Note: Based on twenty OECD countries with the necessary data from 1970, namely: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Turkey, United Kingdom and United States of America.

Source: The data come from OECD (2015); the presentation comes from Conway and Meehan (2013, Figure 12, p. 24) and Treasury (2014, Figure 2, p. 5).

Thus, it is incontrovertible that New Zealand's "labour productivity performance has continued to drift downward relative to other advanced countries" (Treasury, 2014, p. 5). This is the macroeconomic counterpart to the observation in section 4 that New Zealand's economic path is creating a high proportion of low paid jobs in which employees are unable to earn a living wage. *HOLG* considers possible causes offered by previous analysts: the substitution of labour made cheaper by high unemployment for capital (Parham and Roberts, 2004); the pull of low productivity workers into the labour force (Maré and Hyslop, 2007); a weakening pace of economic reform and poor state sector performance (2025 Taskforce, 2009); low levels of domestic savings resulting in high interest and exchange rates (Reddell, 2013, and Brook, 2013); and the country's small population and long distance from international markets (McCann, 2009). After considering these possibilities, *HOLG* identifies 'connecting internationally' as the priority strategic challenge (idem, p. 15):

However, whatever emphasis you place on the various explanations, a small and distant economy needs to be focused on how we connect to the rest of the world. This is intertwined with the challenge of lifting our labour productivity. International connections can boost productivity by bringing scale, competition, investment and ideas. But we need a productive economy to attract international flows of goods and services, people, capital and ideas.

In our view, this approach is too ungrounded to be a useful organising principle in a national economic strategy. Our own response in Dalziel and Saunders (2014a, p. 120, emphasis in the original) was "to argue that the objective of New Zealand's economic strategy should be to promote *value-added growth*", by which "we mean that private and public enterprises should be constantly searching for activities that will add greater value to wellbeing". International connections will play a part, of course, but only a part. The search for value-added activities must be founded in New Zealand's specific strengths for creating value and its concrete opportunities for increasing wellbeing.

To illustrate, New Zealand's distance from the world's large markets means it cannot hope to imitate other small countries who have deliberately strengthened their participation in manufacturing value chains beginning and ending in those large markets. Instead, New Zealand's future will depend on the *value* it can obtain from its own natural environment

(including control of the fourth-largest exclusive economic zone established under the 1982 United Nations Convention on the Law of the Sea) and from its own discoveries and utilisation of new knowledge. We have italicised *value*, because we are not restricting this strategy to increased *quantities* of production. We agree with *HOLG* that "moving into more knowledge-intensive goods and services in all sectors will enable us to exploit opportunities for productivity growth and innovation" (Treasury, 2014, p. 21; see also de Serres *et al*, 2014, chapter 3). This includes agri-food exports; in our own work, we have emphasised the possibilities of maximising export returns through providing overseas consumers with valued credence attributes associated with New Zealand produce (Guenther *et al*, 2015; Saunders *et al*, 2015). More generally, a successful national strategy for New Zealand will build on the country's natural and human capital strengths by integrating private enterprise, supportive public policies, and judicious investments by private and public stakeholders.

7. Conclusion

This paper began with the unifying theme in Stiglitz et al. (2009) that the time is ripe to shift emphasis from measuring economic production to measuring people's well-being. Against that background, the paper has sought to explain how a wellbeing economics framework can add important insights to policy discussions. Section 2 argued that economic growth and prosperity are partial indicators of wellbeing, but not instruments. Section 3 argued that 'sustainability' is a concept used primarily to refer to the impact that current levels of economic activity will have on future generations as a result of resource depletion and climate change. Section 4 argued that New Zealand's current economic development path is creating a high number of low paid jobs, in which parents are unable to earn a living wage, which was described as a major failure of strategy to promote wellbeing. Section 5 argued against the emphasis in HOLG on 'export-led growth', explaining why its evidence is unconvincing for there being any serious problems in New Zealand's tradable sector that would justify a public policy response. Instead, section 6 argued that the organising principle for the country's national economic strategy should be 'value-added growth', founded in New Zealand's specific strengths for creating value and in its concrete opportunities for increasing wellbeing.

A recurring theme has been the thesis that New Zealand's national economic strategy must be grounded in our own particular geography, history and resources to take advantage of our specific opportunities in the global economy. Indeed, we argue that this specificity is the major theme of Glenn Colquhoun's poem that gives *HOLG* its name. Colquhoun begins with a reference to the famous conclusion of Allen Curnow's poem *The skeleton of the great moa in the Canterbury Museum, Christchurch* (first published in Curnow, 1943): "Not I, some child, born in a marvellous year, / will learn the trick of standing upright here." Thus Colquhoun opens his poem by suggesting "The trick of standing upright here / Is the trick of using both feet." Subsequent stanzas play on Māori and Pākehā images embedded in the country's cultural capital before concluding with Colquhoun's variant of Curnow's phrase: "The art of walking upright here / Is the art of using both feet. / One is for holding on. / One is for letting go." In both poems, *here* is the key word; how do we stand and walk upright *here*? Similarly, New Zealand's national economic strategy has to be grounded *here*.

In this respect, we are reminded of the comments by Douglas Lilburn in a talk given at the first Cambridge Summer School of Music in January 1946. Lilburn spoke of a New Zealand composer who, following graduation, goes overseas for further study. There he acquires some experience and technique, but then returns to his own country (Lilburn, 1946, p. 38):

The first thing he finds is the lack of any tradition to guide him, either of folk music or of serious music written in his own country – he is poverty stricken. Yet in another sense he is immensely rich, because being heir to no particular tradition he inherits the whole world's music, but of course this doesn't so much keep him well-nourished as keep him in a state of chronic indigestion.

Similarly, we economists in New Zealand are able to draw on the whole world's economics literature, but that literature must be digested to develop a national economic strategy that fits our own country. *Holding On and Letting Go* is an important step in developing our own "particular tradition", but we think there are more steps to be taken before we can claim to have learned the art of walking upright here.

References

- 2025 Taskforce (2009) *Answering the \$64,000 Question: Closing the Income Gap with Australia by 2025*. Wellington: 2025 Taskforce.
- Attewell, Jason and Simon Crossan (2013) "The Tradable Sector and its Relevance to New Zealand's GDP." Paper presented at the New Zealand Association of Economists conference, Wellington, 3 July. Accessed 8 October 2015 at www.stats.govt.nz/methods/research-papers/nzae/nzae-2013/crossan-tradable-non-tradable-GDP.aspx.
- Baker, Michael G., Rosemary Goodyear, Lucy Telfar Barnard and Philippa Howden-Chapman (2012) *The Distribution of Household Crowding in New Zealand: An Analysis Based on 1991 to 2006 Census Data*. He Kainga Oranga Housing and Health Research Programme, University of Otago, Wellington.
- Beeby, Clarence E. (1992) *The Biography of an Idea: Beeby on Education*. Wellington: New Zealand Council for Educational Research.
- Boulhol, Hervé and Alain de Serres (2008) "Have developed countries escaped the curse of distance?" OECD Economics Department Working Paper 610; subsequently published in *Journal of Economic Geography*, 10 (2010), pp. 113-139.
- Brook, Anne-Marie (2013) "Policy Options to Narrow New Zealand's Saving-Investment Imbalance." Paper presented to Exchange Rate Policy Forum: Issues and Policy Implications, The Treasury and Reserve Bank of New Zealand, Wellington, 26 March.
- Cameron, Rt. Hon. David (2010) "PM Speech on Wellbeing." Speech given by the United Kingdom Prime Minister, 25 November. Accessed 8 October 2015 at https://www.gov.uk/government/speeches/pm-speech-on-wellbeing.
- CNEL and ISTAT (2010) "CNEL and ISTAT Measure Well-being: Set of Indicators to be Identified by 2011." Press Release. Accessed 8 October 2015 at www.istat.it/en/archive/10128.
- Colquhoun, Glenn (1999) The Art of Walking Upright. Wellington: Steele Roberts.
- Conway, Paul and Lisa Meehan (2013) "Productivity by the Numbers: The New Zealand Experience." Research Paper RP 2013/01. Wellington: New Zealand Productivity Commission.
- Coyle, Diane (2014) *GDP: A Brief but Affectionate History*. Princeton and Oxford: Princeton University Press.
- Crothers, Charles and Michael Fletcher (2015) Editorial introduction. Wellbeing frameworks special issue of *New Zealand Sociology*. *New Zealand Sociology*, 30(3), pp. 2-7.

- Curnow, Allen (1943) *Sailing or Drowning: Poems by Allen Curnow*. Wellington: The Progressive Publishing Society.
- Dalziel, Paul (1986) The 1984 Economic Summit Conference: A search for policy objectives. New Zealand Economic Papers, 20, pp. 41-51.
- Dalziel, Paul (1998) New Zealand. In Charles E. Morrison and Hadi Soesastro (Eds) *Domestic Adjustments to Globalization*. Tokyo: Japan Center for International Exchange, pp. 103-134.
- Dalziel, Paul (2007) Integrating Employment, Skills and Economic Development: New Zealand.

 Report to the OECD. Lincoln University: Agribusiness and Economics Research Unit.

 Accessed 11 November 2015 at www.dol.govt.nz/PDFs/iesed.pdf.
- Dalziel, Paul (2010) Developing the next generation: Employer-led channels for education employment linkages. In Jane Bryson (Ed) *Beyond Skill: Institutions, Organisations and Human Capability*. London: Palgrave Macmillan, pp. 154-175.
- Dalziel, Paul (2012) Well-being economics and regional science. *Australasian Journal of Regional Studies*, 18(1), pp. 60-82.
- Dalziel, Paul (2013a) Training in SMEs in the Canterbury Region, New Zealand. In *Skills Development and Training in SMEs*. OECD Skills Studies, OECD Publishing, pp. 117-123, http://dx.doi.org/10.1787/9789264169425-en.
- Dalziel, Paul (2013b) Education and skills. In Max Rashbrooke (Ed) *Inequality: A New Zealand Crisis*. Wellington: Bridget Williams Books, pp. 184-197.
- Dalziel, Paul (2015a) Regional skill ecosystems to assist young people making education employment linkages in transition from school to work. *Local Economy*, 30(1), pp. 53-66.
- Dalziel, Paul (2015b) Education and qualifications as skills. In John Buchanan, David Finegold, Ken Mayhew and Chris Warhurst (Eds) The Oxford Handbook of Skills and Training.

 Oxford: Oxford University Press, forthcoming.
- Dalziel, Paul, Hirini Matunga and Caroline Saunders (2006) Cultural well-being and local government: Lessons from New Zealand. *Australasian Journal of Regional Studies*, 12(3), pp. 267-280.
- Dalziel, Paul and Caroline Saunders (2007) Community initiatives for environment-based economic development in a depressed region: A case study from the West Coast of New Zealand. *International Journal of Business and Globalisation*, 1(3), pp. 391-403.
- Dalziel, Paul and Caroline Saunders (2011) Equity and sustainable development. In Jonathan Boston, Andrew Bradstock and David Eng (Eds) *Ethics and Public Policy: Contemporary Issues*. Wellington: Victoria University Press, pp. 297-323.

- Dalziel, Paul and Caroline Saunders (2014a) Wellbeing Economics: Future Directions for New Zealand. Wellington: Bridget Williams Books.
- Dalziel, Paul and Caroline Saunders (2014b) *Economic Development: A Review of Key Themes in the International Literature*. Wellington: Ministry of Transport.
- Dalziel, Paul and Caroline Saunders (2015) Wellbeing economics: A policy framework for New Zealand. *New Zealand Sociology*, 30(3), pp. 7-22.
- Dalziel, Paul and Caroline Saunders with Rosie Fyfe and Bronwyn Newton (2009) "Sustainable Development and Cultural Capital." *Official Statistics Research Series*, Volume 5. Wellington: Statistics New Zealand.
- de Bruin, Anne (1998) Cultural capital. In Phillip O'Hara (Ed) *Encyclopedia of Political Economy*. London: Routledge.
- de Bruin, Anne (1999) Towards extending the concept of human capital: A note on cultural capital. *Journal of Interdisciplinary Economics*, 10(1), pp. 59-70.
- de Serres, Alain, Naomitsu Yashiro and Hervé Boulhol (2014) *An International Perspective on the New Zealand Productivity Paradox*. Working Paper 2014/01. Wellington: New Zealand Productivity Commission.
- Evans, Lewis, Arthur Grimes and Bryce Wilkinson with David Teece (1996) Economic reform in New Zealand 1984-95: The pursuit of efficiency. *Journal of Economic Literature*, 34(4), pp. 1856-1902.
- Fabling, Richard and Lynda Sanderson (2013) Exporting and firm performance: Market entry, investment and expansion. *Journal of International Economics*, 89(2), pp. 422-431.
- Gleisner, Ben, Mary Llewellyn-Fowler and Fiona McAlister (2011) "Working towards Higher Living Standards for New Zealanders." New Zealand Treasury Paper 11/02. Wellington: The Treasury.
- Gleisner, Ben, Fiona McAlister, Margaret Galt and Joe Beaglehole (2012) A living standards approach to public policy making. *New Zealand Economic Papers*, 46(3), pp. 211-238.
- Gluckman, Sir Peter (2011) *Improving the Transition: Reducing Social and Psychological Morbidity during Adolescence*. Wellington: Prime Minister's Chief Science Advisor.
- Goodyear, Rosemary, Angela Fabian and J. Hay (2011) "Finding the Crowding Index that Works Best for New Zealand." Statistics New Zealand Working Paper No. 11-04. Wellington: Statistics New Zealand.
- Gorecki, Stephanie and James Kelly (2012) Treasury's wellbeing framework. *Economic Roundup*, Issue 3, pp. 27-64. Accessed 8 October 2015 at www.treasury.gov.au/Publications/andMedia/Publications/2012/Economic-Roundup-Issue-3.

- Grimes, Arthur (2006) "A Smooth Ride: Terms of Trade, Volatility and GDP Growth." Occasional Paper 06/04. Wellington: Ministry of Economic Development.
- Guenther, Meike, Caroline Saunders, Paul Dalziel, Paul Rutherford and Timothy Driver (2015)

 Maximising Export Returns. Consumer Attitudes towards Attributes of Food and

 Beverages in Developed and Emerging Export Markets Relevant to New Zealand. AERU

 Research Report. Lincoln University: Agribusiness and Economics Research Unit.
- Hazledine, Tim (2015) Economics and the meaning of life. *New Zealand Sociology*, 30(3), pp. 68-78.
- Henry, Ken (2006) "Wellbeing and Public Policy." Presentation to the Population Wellbeing Data Gaps Workshop, Australian Bureau of Statistics, Canberra, 8 June.
- IMF (2015) "New Zealand: Staff Concluding Statement of the 2015 Article IV Mission." Washington: International Monetary Fund. Accessed 10 November 2015 at www.imf.org/external/np/ms/2015/111015.htm.
- IPCC (2015) *Climate Change 2014: Synthesis Report*. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Geneva: Intergovernmental Panel on Climate Change.
- James, Bev and Kay Saville-Smith (2010) Children's Housing Futures. Prepared by Public Policy & Research and CRESA. Wellington: Centre for Housing Research Aotearoa New Zealand. Accessed 8 October 2015 at www.chranz.co.nz/pdfs/childrens-housing-futures-report.pdf.
- Karacaoglu, Girol (2012) "Improving the Living Standards of New Zealanders: Moving from a Framework to Implementation." Speech by the Treasury Chief Economist, 18 June.

 Accessed 8 October 2015 at www.treasury.govt.nz/publications/media-speeches/livingstandards.
- King, Peter and Charles Waldegrave (2012) *Report of an Investigation into Defining a Living Wage for New Zealand*. The Living Wage Campaign. Accessed 8 October 2015 at www.livingwage.org.nz/reports and research.
- Klamer, Arjo (2002) Accounting for social and cultural values. *De Economist*, 150(4), pp. 453-473.
- Lilburn, Douglas (1946) "A Search for Tradition." A talk given at the first Cambridge Summer School of Music in January 1946. Reprinted in and cited from *A Search for Tradition & A Search for a Language*. Wellington: Lilburn Residence Trust, 2011.
- Manhire, Jon, Henrik Moller, Andrew Barber, Caroline Saunders, Catriona MacLeod, Chris Rosin, Dave Lucock, Elizabeth Post, Franz Ombler, Hugh Campbell, Jayson Benge, John Reid, Lesley Hunt, Paul Hansen, Peter Carey, Stephanie Rotarangi, Stuart Ford and

- Tremane Barr (2012) *The New Zealand Sustainability Dashboard: Unified Monitoring and Learning for Sustainable Agriculture in New Zealand*. NZSD Research Report 13/01. The Agriculture Research Group on Sustainability.
- Maré, David C. and Dean R. Hyslop (2007) Earnings heterogeneity and job matching Evidence from linked employer-employee data. *New Zealand Journal of Employment Relations*, 32(1), pp. 1-16.
- Marmot, Sir Michael, Jessica Allen, Peter Goldblatt, Tammy Boyce, Di McNeish, Mike Grady and Ilaria Geddes (2010) *Fair Society, Healthy Lives: Strategic Review of Health Inequalities in England Post-2010*. London: The Marmot Review.
- McAloon, James (2013) *Judgements of All Kinds: Economic Policy-making in New Zealand* 1945-1984. Wellington: Victoria University Press.
- McCann, Philip (2009) Economic geography, globalisation and New Zealand's productivity paradox. *New Zealand Economic Papers*, 43(3), pp. 279-314.
- McMillan, John (2002) *Reinventing the Bazaar: A Natural History of Markets*. New York and London: W. W. Norton.
- Miller, Sini, Tim Driver, Noelani Velasquez and Caroline Saunders (2014) *Maximising Export*Returns (MER): Consumer Behaviour and Trends for Credence Attributes in Key Markets

 and a Review of How These May Be Communicated. Research Report No. 332. Lincoln

 University: Agribusiness and Economics Research Unit.
- Miller, Sini, Peter Tait and Caroline Saunders (2015) Estimating indigenous cultural values of freshwater: A choice experiment approach to Māori values in New Zealand. *Ecological Economics*, 118, pp. 207-214.
- Ministry for the Environment and Statistics New Zealand (2015) *New Zealand's Environmental Reporting Series: Environment Aotearoa 2015*. Available from www.mfe.govt.nz and www.stats.govt.nz.
- Ministry of Health (2014) *Analysis of Household Crowding Based on Census 2013 Data*. Wellington: Ministry of Health.
- Ministry of Social Development (2010) *The Social Report*. Wellington: Ministry of Social Development. Accessed 8 October 2015 at www.socialreport.msd.govt.nz/.
- Miranda, Gabriela, Paul Dalziel, Cecilia Estolano, Kris Krasnowski and Graham Larcombe (2011) *Climate Change, Employment and Local Development, Sydney, Australia*. OECD Local Economic and Employment Development (LEED) Working Papers, 2011/14. Paris: OECD Publishing, http://dx.doi.org/10.1787/5kg20639kgkj-en.

- New Zealand Government (2012) *Building Export Markets*. Wellington: Export Markets Group of Ministers. Accessed 8 October 2015 at www.mbie.govt.nz/info-services/business/business-growth-agenda/2012/export-markts.
- Nussbaum, Martha (2011) *Creating Capabilities: The Human Development Approach*. Cambridge, MA: Belknap Press.
- OECD (2011a) *How's Life?: Measuring Well-being*. OECD Publishing, http://dx.doi.org/10.1787/9789264121164-en.
- OECD (2011b) *Better Policies for Better Lives: The OECD at 50 and Beyond*. OECD Publishing. Accessed 8 October 2015 at www.oecd.org/about/.
- OECD (2012) *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*. OECD Publishing, http://dx.doi.org/10.1787/9789264177338-en.
- OECD (2013a) *How's Life? 2013: Measuring Well-being*. OECD Publishing, http://dx.doi.org/10.1787/9789264201392-en.
- OECD (2013b) OECD Economic Surveys: New Zealand 2013. OECD Publishing, http://dx.doi.org/10.1787/eco surveys-nzl-2013-en.
- OECD (2015) "Level of GDP Per Capita and Productivity" dataset, OECD.Stat, accessed 14 November 2015 at http://stats.oecd.org/Index.aspx?DataSetCode=PDB_LV#.
- Ostrom, Elinor (2010) Beyond markets and states: Polycentric governance of complex economic systems. In Karl Grandin (Ed) *The Nobel Prizes 2009*. Stockholm: Nobel Foundation, pp. 408-444.
- Parham, Dean and Paul Roberts (2004) "Productivity Growth and its Sources: How do NZ and Australia Compare. Paper presented to *Productivity: Performance, Prospects and Policies*, The Treasury, Reserve Bank of New Zealand and Ministry of Economic Development, Wellington, 28-29 July.
- Perry, Bryan (2015) Household Incomes in New Zealand: Trends in Indicators of Inequality and Hardship 1982 to 2014. Wellington: Ministry of Social Development.
- Reddell, Michael (2013) "The Long-term Level 'Misalignment' of the Exchange Rate: Some Perspectives on Causes and Consequences." Paper presented to Exchange Rate Policy Forum: Issues and Policy Implications, The Treasury and Reserve Bank of New Zealand, Wellington, 26 March.
- Royal Commission on Social Policy (1988) *The April Report, Vol. II: Future Directions*. Wellington: Royal Commission on Social Policy.
- Royal Commission on Social Security (1972) *Social Security in New Zealand: Report of the Royal Commission of Inquiry*. Wellington: Government Printer.

- Satyanand, Hon Anand (2008) "Speech from the Throne." Delivered by the Governor-General at the State Opening of Parliament, 9 December. Accessed 8 October 2015 at https://gazette.govt.nz/notice/id/2008-vr9736.
- Saunders, Caroline and Paul Dalziel (2004) Economic well-being in regional economic development. *Australasian Journal of Regional Studies*, 10(3), pp. 355-366.
- Saunders, Caroline and Paul Dalziel (2015) "25 Years of *Counting for Nothing*: Waring's critique of national accounts. *Feminist Economics*, forthcoming.
- Saunders, Caroline, Paul Dalziel, Meike Guenther, John Saunders and Paul Rutherford (2015)

 The Land and the Brand. AERU Research Report prepared for AGMARDT, ANZCO Foods,

 Beef and Lamb New Zealand, Fonterra and Zespri. Lincoln University: Agribusiness and

 Economics Research Unit.
- Schischka, John, Paul Dalziel and Caroline Saunders (2008) Applying Sen's capability approach to poverty alleviation programmes: Two case studies. *Journal of Human Development and Capabilities*, 9(2), pp. 229-246.
- Scott, Karen (2014) Happiness on your doorstep: Disputing the boundaries of wellbeing and localism. *Geographical Journal*, doi: 10.1111/geoj.12076, pp. 1-9.
- Sen, Amartya (1989) Development as Freedom. Oxford: Oxford University Press.
- Skilling, David (2012) "There is No Such Thing as Domestic Policy.' Presentation to the New Zealand Treasury, 15 May. Accessed 8 October 2015 at www.treasury.govt.nz/
 www.treasury.govt.nz/
 www.treasury.govt.nz/
- Solow, Robert M. (1956) A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70(1), pp. 65-94.
- Statistics New Zealand (2009a) *Statistics New Zealand's Framework for Measuring Sustainable Development*. Wellington: Statistics New Zealand.
- Statistics New Zealand (2009b) *Measuring New Zealand's Progress using a Sustainable Development Approach: 2008.* Wellington: Statistics New Zealand.
- Statistics New Zealand (2009c) *Key Findings on New Zealand's Progress using a Sustainable Development Approach: 2008.* Wellington: Statistics New Zealand.
- Statistics New Zealand (2011) *Key Findings on New Zealand's Progress using a Sustainable Development Approach: 2010.* Wellington: Statistics New Zealand.
- Statistics New Zealand (2013) *Gross Domestic Product: June 2013 Quarter*. Wellington:
 Statistics New Zealand. Accessed 8 October 2015 at www.stats.govt.nz/
 browse for stats/economic indicators/GDP/GrossDomesticProduct HOTPJun13qtr/.

- Stern, Nicholas (2006) *Stern Review: The Economics of Climate Change*. London: H M Treasury.
- Stern, Nicholas (2015) Economic development, climate and values: Making policy. *Proceedings of the Royal Society B*, 282: 20150820, http://dx.doi.org/10.1098/rspb.2015.0820.
- Stiglitz, Joseph, Amartya Sen and Jean-Paul Fitoussi (2009) *Report by the Commission on the Measurement of Economic Performance and Social Progress*, published at www.stiglitz-sen-fitoussi.fr.
- Sustainable Winegrowing New Zealand (2015) "Sustainable Winegrowing New Zealand Standards." Brochure accessed 10 November 2015 at www.nzwine.com/assets/sm/upload/hx/ar/90/qk/SWNZ%20Audit%20STANDARDS.pdf.
- Swan, Trevor W. (1956) Economic growth and capital accumulation. *Economic Record*, 32, pp. 334-361.
- Te Hono Movement (2015) "Our Story". Webpage accessed 10 November 2015 at www.tehono.co.nz/about-us.
- Throsby, David (1994) The production and consumption of the Arts: A view of cultural economics. *Journal of Economic Literature*, 32(1), pp. 1-29.
- Throsby, David (1995) Culture, economics and sustainability. *Journal of Cultural Economics*, 19(3), pp. 199-206.
- Throsby, David (1999) Cultural capital. Journal of Cultural Economics, 23(1), pp. 3-12.
- Throsby, David (2001) Economics and Culture. Cambridge: Cambridge University Press.
- Treasury (1987) *Government Management*. Brief to the Incoming Government 1987, Volume 1. Wellington: The Treasury.
- Treasury (2004) Policy advice and Treasury's wellbeing framework. *Economic Roundup*, Winter, pp. 1-20. Accessed 8 October 2015 at http://archive.treasury.gov.au/documents/876/PDF/ER Winter 2004 compressed.pdf.
- Treasury (2013a) "Living Wage Information Release." Wellington: The Treasury. Accessed 8

 October 2015 at www.treasury.govt.nz/publications/informationreleases/
 www.treasury.govt.nz/publications/
 www
- Treasury (2013b) "Living Standards: A Short Guide to 'Sustainability for the Future'." Wellington: The Treasury. Accessed 8 October 2015 at www.treasury.govt.nz/abouttreasury/higherlivingstandards.

- Treasury (2014) Holding On and Letting Go: Opportunities and Challenges for New Zealand's Economic Performance. Wellington: The Treasury. Accessed 8 October 2015 at www.treasury.govt.nz/publications/briefings/holding-on-letting-go.
- Treasury (2015) "An Introduction to Using the Living Standards Framework July 2015." Wellington: The Treasury. Accessed 8 October 2015 at www.treasury.govt.nz/abouttreasury/higherlivingstandards/his-usingtheframework-v2.pdf.
- United Nations (2015) "Adoption of the Paris Agreement." Framework Convention on Climate Change, Document FCCC/CP/2015/L.9/Rev 1. Accessed 14 December 2015 at http://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf.
- Vivid Economics and Energy Centre, University of Auckland Business School (2012) *Green Growth: Opportunities for New Zealand*. Report prepared for the New Zealand Green Growth Research Trust. Accessed 8 October 2015 at http://pureadvantage.org/wp-content/uploads/2015/04/PURE-Advantage-the-full-report.pdf.
- WCED (1987) *Our Common Future*. Report of the World Commission on Environment and Development. New York: United Nations.
- Weinmayr, Gudrun, Ulrike Gehring, Jon Genuneit, Gisela Büchele, Andrea Kleiner, Robert Siebers, Kristin Wickens, Julian Crane, Bert Brunekreef and David Strachan (2013) Dampness and moulds in relation to respiratory and allergic symptoms in children: Results from Phase Two of the International Study of Asthma and Allergies in Childhood (ISAAC Phase Two). Clinical and Experimental Allergy. 43, pp. 762-774.
- Zespri International (2015) "Growing a Better, Healthier Future." Brochure accessed 10 November 2015 at www.zespri.com/Documents/Zespri-Sustainability-Brochure.pdf.