Migration and Macroeconomic Performance in New Zealand: Theory and Evidence

Julie Fry

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Abstract

New Zealand immigration policy settings are based on the assumption that the macroeconomic impacts of immigration may be significantly positive, with at worst small negative effects. However, both large positive and large negative effects are possible. Reviewing the literature, the balance of evidence suggests that while past immigration has, at times, had significant net benefits, over the past couple of decades the positive effects of immigration on per capita growth, productivity, fiscal balance and mitigating population ageing are likely to have been modest. There is also some evidence that immigration, together with other forms of population growth, has exacerbated pressures on New Zealand's insufficiently-responsive housing market. Meeting the infrastructure needs of immigrants in an economy with a quite modest rate of national saving may also have diverted resources from productive tradable activities, with negative macroeconomic impacts. Therefore from a macroeconomic perspective, a least regrets approach suggests that immigration policy should be more closely tailored to the economy's ability to adjust to population increase. At a minimum, this emphasises the importance of improving the economy's ability to respond to population increase. If this cannot be achieved, there may be merit in considering a reduced immigration target as a tool for easing macroeconomic pressures. More work is required to assess the potential net benefits of an increase in immigration as part of a strategy to pursue scale and agglomeration effects through increased population, or whether a decrease in immigration could facilitate lower interest rates, a lower exchange rate, and more balanced growth going forward.

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Executive Summary

Relative to other OECD countries, New Zealand has high rates of population inflow and outflow. These are related: there has been a deliberate policy choice since the early 1990s to more than replace departing New Zealanders with immigrants. Significant benefits were anticipated from increasing the number and quality of people working within New Zealand's reformed economy and institutions.

Until 1986, New Zealand operated a 'Country-of-origin' immigration system which gave preference to migrants from specific countries. The points system that replaced this in 1991 initially allowed all people who gained or exceeded the points target to gain residence status and there was no attempt to link labour market demand to the specific skills of the migrants. From 1995, changes were progressively made, which among other things increased the focus on labour demand. From 2001 there has been a Cabinet-approved target for the number of immigrants to be granted residence.

Over the past ten to fifteen years, extensive research has sought to understand the implications of these choices. The New Zealand results are consistent with international evidence suggesting that immigration has only modest impacts on overall growth per capita, productivity and living standards.

Despite this, there is value in considering the possibility that immigration could lead to large positive or negative effects. Small overall impacts may reflect complex interactions between offsetting large positive and negative impacts. They could also reflect lags, methodological problems in identifying or proving results, or suboptimal policy design and implementation.

In considering the case for large positive effects of migration, this paper explores the possible roles of factor price equalisation, different migrant characteristics, capital utilisation, scale and agglomeration, and international connectedness, and the scope for migration to mitigate population ageing and generate positive fiscal impacts. The balance of evidence suggests that none of these elements presently generate large positive impacts, although it is possible that the effects of international connectedness and scale and agglomeration operate with long lags. The only likely future source of large positive effects is the possibility that greater scale and agglomeration, coupled with migrant diversity, could lead to increased innovation.

The paper also examines arguments for large negative effects of migration in the specific circumstances that New Zealand faces. It concludes that the economy adjusts reasonably well to increased labour supply, so large labour market impacts are unlikely. However, there is some evidence that immigration, along with other forms of population growth, exacerbates pressures on an insufficiently-responsive housing market. Reddell's (2013a, 2013b) hypothesis is that persistent excess demand created by high levels of inward migration to an economy with only a modest rate of national saving could help explain why the large productivity gap that opened up between New Zealand and other advanced countries has not led to the fall in the real exchange rate that theory would predict. While it seems plausible, the hypothesis is so far empirically unproven. A more formal evaluation of this hypothesis - which suggests that New Zealand's migration policy choices may have contributed to the failure of the productivity gap to close over the last 20 years – would be worthwhile.

Taken together, the available evidence on the possibility of large positive and negative effects suggests that a least regrets immigration policy for New Zealand would involve improvements to the economy's capacity to adjust to population increase; setting immigration targets with this capacity in mind; and commissioning further work to establish the likely impacts of substantially increasing or decreasing immigration flows. In addition to undertaking additional analysis to assess the empirical validity of Reddell's hypothesis, it would be helpful to investigate how much higher New Zealand's population would need to be in order to generate large benefits from any resulting scale and agglomeration effects.

Before concluding, the paper raises other important effects which should be considered alongside macroeconomic effects in the Treasury's Living Standards Framework. Although this paper does not explore any of these effects in detail, a fully informed migration policy will need to compare these effects against the macroeconomic evidence surveyed in this paper.

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1 Introduction

As global migration flows have increased again over the past several decades, a growing theoretical and empirical literature has sought to determine what these changing flows mean for migrants, source countries, and recipient countries.[1]

While worldwide around three per cent of the population lives outside their country of birth, in New Zealand, the percentage of the population born elsewhere is around a quarter.[2] New Zealand has had one of the highest rates of permanent population inflow in the OECD.[3] Both immigration and emigration have increased over time, from around 40,000 people per year in the late 1970s and early 1980s to around 80,000 people per year in the early 2010s. Numbers fluctuate, but on average immigration exceeds emigration. Net immigration has contributed around a fifth of New Zealand's approximately one percent per annum overall population growth over the past two decades.[4]

New Zealand's immigration framework is well-regarded internationally, with an effective points-based system for selecting skilled migrants, and relatively low illegal flows. Compared to other countries and given our international commitments, New Zealand selects relatively high proportions of skilled migrants.[5] Immigration New Zealand is increasingly focused on ensuring good settlement outcomes for migrants.[6] Migration increasingly occurs in two steps, with more than 80 percent of the migrants approved for residence in 2011/12 having previously held a temporary visa. Temporary inflows have increased substantially over the past decade to a peak of 138,000 in 2011/12.[7]

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1 Although there are several well-respected papers and meta-analyses, as a whole the literature on the macroeconomic effects of migration is still developing.

2 Statistics New Zealand, 2013 Census.

3 OECD (2013a). New Zealand's overall population growth rate is also among the highest in the OECD. For a comparison of the differences between New Zealand's population growth rates and that of the median OECD country, see Figure 12 in Reddell (2013a), p. 29.

4 Ministry of Business, Innovation and Employment (2013a), pp. 7-8, and Statistics New Zealand: Infoshare.

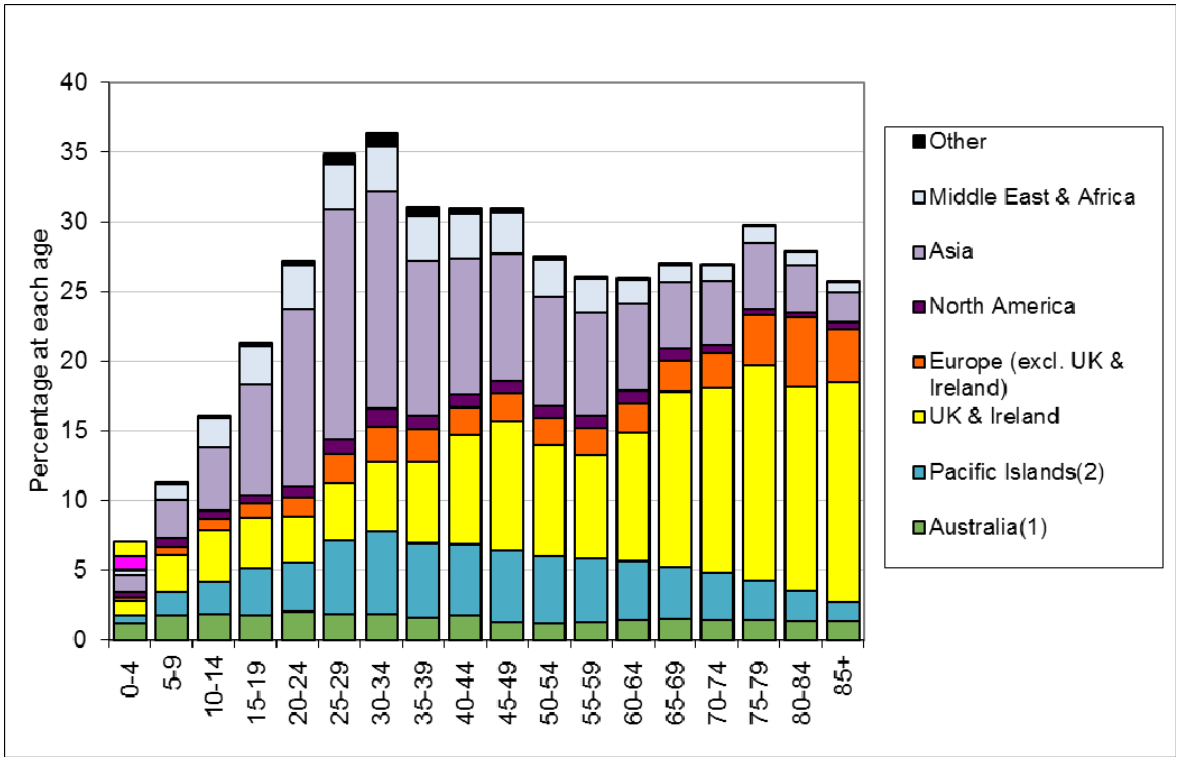
5 Skilled primary applicants make up around a quarter to a third of approvals (Ministry of Business, Innovation and Employment (2013b)). The remainder are partners, who typically have similar skill levels to primary applicants (Becker (2001)), other family members, and non-skill-selected categories including family reunion and refugees.

6 Immigration New Zealand (2013).

7 Ministry of Business, Innovation and Employment (2013c), p. 6.

Source countries are increasingly diverse, and vary over time. Figure 1 shows migrants from the 'early' sending countries (such as the United Kingdom) disproportionately approaching old age, those from the Pacific Islands disproportionately in middle age, and those in the younger age groups disproportionately from Asian countries (the 'new' sending countries). These 'age-specific' shifts in the main countries of origin of New Zealand's migrants will continue to change, reflecting the process of flows becoming stocks over time. The majority of permanent and long term arrivals presently come from Australia, the United Kingdom, the People's Republic of China, India and the United States.[8]

Figure 1: New Zealand Overseas-Born Population by Age and Major Country of Birth



Source: Jackson (2014), NIDEA/Statistics New Zealand 2013 Census QuickStats about national highlights, Table 5.

1. Includes Australian external territories.
2. Consists of Melanesia, Micronesia, and Polynesia.

The economic impacts of immigration in New Zealand have been extensively researched in the past 15 years or so. In the abstract of their paper summarising key findings between 2005 and 2010, Hodgson and Poot (2010) conclude:

> "… immigration has made a positive contribution to outcomes in New Zealand… fears for negative economic impacts such as net fiscal costs, lower wages, and increasing unemployment find very little support in the available empirical evidence… the economic integration of migrants is broadly successful."

[8] Statistics New Zealand: Infoshare.

On emigration, Glass and Choy (2001) concluded that migrants leaving New Zealand for Australia were broadly representative of the population as a whole, as would be expected given there is effectively a common labour market between the two countries.[9] For the rest of the world, Glass and Choy identified a "brain exchange", with both emigrants and immigrants generally appearing to be more skilled than the remaining New Zealand population.[10] However, Manning and SriRamaratnam (2010) reported that that "the skill distribution of people leaving New Zealand has changed over time".[11] They attributed the increasing likelihood that people leaving New Zealand were highly skilled to increased demand for skilled workers worldwide, combined with a higher proportion of highly skilled workers in the New Zealand population. Although migrants to Australia typically have average skill levels, migration from New Zealand to the rest of the world is now strongly biased towards university graduates.

In addition, simulations using a Computable General Equilibrium (CGE) model of the New Zealand economy have shown how, on the assumptions embedded in the models, increased immigration can lead to a larger economy and higher GDP per capita.[12]

Since Hodgson and Poot's survey was published, new theoretical and empirical work has emerged which prompts a reassessment of the possibility that immigration could lead to large positive or negative effects.[13] This paper considers both recent and earlier work in order to draw conclusions about the likely macroeconomic impacts of immigration, discusses least regrets policy implications and suggests areas for further work.

The remainder of the paper is organised as follows. Section three provides a brief discussion of the theory and an overview of high level macroeconomic impacts of immigration. Section four examines the case for large positive effects of migration. Section five looks at arguments for large negative effects of migration. Section six brings the debate together and considers what a least regrets migration policy might look like for New Zealand. Section seven briefly outlines the wider social and economic effects of migration that the Treasury's Living Standards framework should assess. The paper concludes in section eight with suggestions for policy and further research.

9 Glass and Choy (2001), p. 1.

10 Ibid, p. 26. These conclusions are based on arrival and departure card data, which as the authors discuss, is unreliable.

11 Manning and SriRamaratnam (2010), p. 6. On p. 5, the authors note that they were unable to distinguish between New Zealand citizens born in New Zealand, and those who were born elsewhere, due to data constraints.

12 Nana et. al. (2009), p. 11.

13 Reddell (2013a, 2013b); Ortega and Peri (2013); di Giovanni et. al. (2013); Brunow et. al. (2014).

2 Macroeconomic effects of migration

Movements of people have macroeconomic effects inter alia through their impacts on labour supply (including qualitative dimensions such as age profile, skill mix and personal attributes), demand for output (including demand for infrastructure and derived demand for capital), and economies of scale. Economic models are used to trace the relative size of effects, and interactions among effects. Most models, including those looking at New Zealand, suggest only modest net effects from migration in recent decades, leading advocates of immigration to emphasise the importance of productivity gains from sources outside of models (for example, innovativeness of migrants or scale and agglomeration effects). While informative, models are not definitive in their results, and are limited to considering issues covered by their data and assumptions.

This section briefly outlines the macroeconomic impacts of emigration and immigration predicted by theory, and discusses how CGE models have helped frame the debate about macroeconomic effects of migration in New Zealand.

2.1 Theoretical effects of emigration

Although this paper concentrates on the impact of inward migration, emigration affects net migration, and large outward flows are an important motivation for policies favouring large inward flows.

In standard economic models of labour supply and demand, emigration leads to a welfare loss in the source country. Overall per capita income falls, with gains for workers remaining smaller than losses for owners of other productive factors, because relative prices change as labour becomes scarcer relative to other factors.[14] In reality, there are more complex effects.[15] Emigrants may send remittances, which can have both positive and negative impacts on the source country.[16] There may be positive and negative externalities (for example through the creation of new markets, or reduced scale). There may also be dynamic consequences from emigration: departures create opportunities for the people who remain, and the possibility of accessing high incomes offshore raises incentives to invest in human capital.[17] Emigrants may return, bringing enhanced human capital, and financial capital.[18]

2.2 Theoretical effects of immigration

Theory suggests that the net effects of migration on GDP per capita in the destination country depend on disparities between native and immigrant skills; scale effects; and the responsiveness of factor and output markets; in particular how capital adjusts to increases in labour supply.[19] Diverse interacting effects are illuminated by economic modelling.

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14 Bodvarsson and Van den Berg (2009), p. 183.

15 For a critical assessment of the ongoing debate about positive and negative effects of emigration on development, see Gamlen (2014).

16 Bodvarsson and Van den Berg (2009), p. 195.

17 Ibid, p. 211.

18 Devan and Tewari (2001); Saxenian (2002); Lewer and Van den Berg (2009).

19 There is considerable debate about the appropriate metric to use when assessing the impact on host country income. Mulley and Cavannagh (2013), pp. 15-18, conclude that median income for a country as a whole is the best single metric because it is least likely to be influenced by compositional effects. GDP per capita or median income of native residents only are sometimes used, since these metrics recognise the possibility that natives could become worse off even though GDP per capita and/or median income have gone up. In the New Zealand context, Brunow et. al. (2014) discuss whether New Zealand income per capita should

A comprehensive investigation of the many different models developed is beyond the scope of this paper. A helpful summary can be found in chapters 5 and 9 of Bodvarsson and Van den Berg (2009). Modelling results differ in the short and long term and depend on assumptions, such as the form of the production function, the number of goods produced, and immigrant consumption patterns.[20]

In essence, an increase in migration is modelled as adjustment to a labour supply shock. Nickell (2007) has described a simple macroeconomic model which sets out the basic intuition:

> "An influx of migrants lowers the capital-labour ratio, lowers the real wage, raises the return on capital and generates a net welfare gain for natives. The gains accruing to the owners of capital are greater than the losses faced by the suppliers of labour.
>
> In the long run, the higher return to capital stimulates investment and in the new equilibrium the capital-labour ratio, the real wage and the marginal product of capital will revert to their original levels under constant returns. The natives neither gain nor lose and the economy is simply that bit bigger."[21]

In the long run, Nickell argues that migrants may permanently reduce the equilibrium unemployment rate. This can occur through migrants making the labour market more fluid (via Borjas' (2001) "greasing the wheels" argument) and reducing skills mismatch, or if migrants are more elastic, motivated and/or reliable suppliers of labour.

If skills of migrants and locals differ, and flows are large enough, migrants can change the skill mix of the overall population. If migrants are more highly skilled and there is capital-skill complementarity, then in the long run, the capital-labour ratio will be higher and productivity will be higher.

In the short run, Nickell points out that increasing the population through higher migration will increase both aggregate demand and potential aggregate supply. The consequences for monetary policy depend on which effect dominates. If demand effects dominate, migration is likely to lead to a short run increase in output and increased inflationary pressure. Interest rates will rise. If supply effects dominate, there will be smaller effects on output and downward pressure on inflation. Interest rates will fall, which will lead to an increase in output.

2.3 Changing policy expectations

While useful, models do not capture all the effects policymakers expect from immigration. When New Zealand moved to increase the numbers and skills of immigrants in the 1980s and 1990s, policymakers appear to have considered that these changes had the potential to have major beneficial impacts on the New Zealand economy, reinforcing the gains from the other liberalising and deregulating economic reforms undertaken during that period.[22]

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include the earnings of New Zealanders living in Australia. Overall, GDP per capita is the most commonly-used measure. GDP alone is misleading, because migrants simultaneously change both population and output.

20 Bodvarsson and Van den Berg (2009), p. 116.

21 Nickell (2007), p. 57.

22 Trlin (1997) discusses the context in which these changes took place, including the influential role of Kasper (1990).

At that time, it was considered that skills-focused inward migration could: improve growth by bringing in better quality human capital and addressing skills shortages; improve international connections and boost trade; help mitigate the effects of population ageing; and have beneficial effects on fiscal balance. As well as "replacing" departing New Zealanders and providing particular help with staffing public services (for example, medical professionals), it was believed that migration flows could be managed so as to avoid possible detrimental effects (such as congestion or poorer economic prospects) for existing New Zealanders.

Since then, New Zealand has had substantial gross and net immigration, which has been relatively skill-focused by international standards. However, New Zealand's economic performance has not been transformed. Growth in GDP per capita has been relatively lacklustre, with no progress in closing income gaps with the rest of the advanced world, and productivity performance has been poor. It may be that initial expectations about the potential positive net benefits of immigration were too high.

Based on a large body of new research evidence and practical experience, the consensus among policymakers now is that other factors are more important for per capita growth and productivity than migration and population growth.[23] CGE modelling exercises for Australia and New Zealand have been influential in reshaping expectations.

2.4 New Zealand CGE modelling

CGE models provide an economy-wide perspective, capturing the complex inter-relationships among sectors and industries, consumption, imports and exports.[24] CGE models have advantages over stylised two-sector models or partial analyses of particular markets: they can use rich datasets to explore how market forces return the economy to equilibrium after a change in immigration, through changes in prices, wages, production and consumption. The economic effects of different characteristics of immigrants (such as skills, age, language, or source country) and different immigrant flows can be examined. Conclusions and hypotheses from other research can be incorporated to assess their implications, without making forecasts.

A limitation of CGE modelling is that what comes out reflects what goes in: the model's baseline scenario and simulation results depend entirely on the assumptions adopted for the key variables and the data contained in the input-output tables.[25] The channels through which adjustments occur also reflect modelling assumptions. CGE models contain more variables than equations, so to achieve model closure, some variables (typically those relating to production technology, consumer tastes and government tax and spending policies) need to be set outside the model.[26]

Nana et. al. (2009) simulated the macroeconomic impact of an increase in immigration on the New Zealand economy using a CGE model. This model was based on an earlier CGE study by Poot et. al. (1988), which was originally based on an earlier Australian model by Dixon et. al. (1982). Raising the inflow of migrants by 20,000 per annum increased the resident population by 6.1 percent over 15 years, to 4.81 million in 2021. Relative to the baseline, annual GDP growth rose by half a percentage point to 3.6 percent, and real GDP per capita rose by 1.5 percent over the entire 15 year simulation period. The

[23] See for example, the Australian Productivity Commission (2006).
[24] Nana et. al. (2009), p. 13.
[25] Ibid, p. 19.
[26] Hodgson and Poot (2010), p. 43.

increase in GDP per capita arises because the additional migrants are more likely to be of working age than the resident population.[27] Capital is assumed to increase in response to increased labour supply to maintain the capital labour ratio.[28] Both input and output prices are lower relative to the baseline (reflecting increased supply). Lower prices improve international competitiveness.[29]

In this model, the additional economic activity is skewed towards relatively labour-intensive industries (including tourism and other service exports) which benefit from the lower wages associated with increased labour supply.[30] As a corollary, relatively capital-intensive industries do not benefit.

Model assumptions were varied to assess effects on productivity. Of all the assumptions tested, only when immigration is *assumed* to lead to productivity improvements are significant benefits generated above baseline.

Increasing competitiveness via lower wages induced through increased labour supply from immigration is an important driver of the model's results. In contrast, most discussions of the possibility of lower wages as a consequence of immigration consider these as a cost felt by resident workers, as discussed in section 3.2 below. Most theory and research on benefits from immigration focuses on increasing wages through raising skills, skill complementarity, and scale effects leading to productivity and thus higher wages.

Further, adding more labour to reduce wages seems a counterintuitive strategy for an economy that has been characterised as "capital shallow".[31] New Zealand already has relatively low wages for a developed economy (consistent with our relatively low labour productivity) and arguably only used up available labour supply at the peak of the business cycle in 2008.[32] The Nana reasoning is also in direct contrast with Reddell's (2013a) hypothesis that increased immigration hurts export price competitiveness.

A new global CGE model developed by di Giovanni et. al. (2013) finds large welfare gains (5-10 percent) from immigration for receiving countries, specifically including New Zealand (7 percent). In the model, immigration generates welfare gains by increasing the size of the market (scale effects), thus allowing a greater variety of goods in the long run. In the short run, there are small and offsetting impacts on wages for different groups; these depend on the particular distribution of skills in the receiving country and among immigrants. The size of the scale effect in the model is based on research on scale effects, but the same size of effect is assumed for all economies in the model. As scale effects have not been established empirically in New Zealand, this model is primarily useful in providing an indication of the size and nature of benefits that might be achieved if scale effects were realised. Moreover, there is no evidence of larger countries outperforming smaller countries.[33]

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27 These results are comparable to those found by the Australian Productivity Commission (2006).

28 This assumption is necessary to avoid conflating immigration effects and changes in capital intensity. It is acknowledged that immigration can in practice affect capital intensity.

29 A further simulation explored the effects of zero net migration: in the model, population and GDP per capita fell relative to the baseline case (Nana et. al. (2009), p. 37).

30 Nana et. al. (2009), p. 30.

31 Dupuy and Beard (2008).

32 Although unemployment was low by OECD standards in the decade prior to the recession.

33 Poot (2004).

Reflecting the role of assumptions in driving the conclusions of CGE modelling, there is still considerable debate about the potential for migration to lead to large positive or negative effects. Between the possibility of effects not captured in the model and the role of assumptions, the New Zealand CGE modelling does not rule out large positive or negative effects cancelling one another out, or occurring in the future. Arguments concerning large positive and negative effects are examined below.

3 The case for large positive effects

This section considers the possibility that migration could lead to large positive effects through the operation of factor price equalisation, different migrant characteristics, changes to capital utilisation, scale and agglomeration, or improved international connectedness. It also assesses whether migration can mitigate the impacts of population ageing and improve overall fiscal balance. Overall, the evidence points to modest, rather than large positive effects from these sources, although it is possible that scale and agglomeration effects operate with long lags, or require a larger population than New Zealand currently has.

3.1 Factor price equalisation

Migration can have large positive effects in situations where labour is in short supply relative to other factors. As Lucas (1988) noted when discussing migration to the New World in the 18th and 19th centuries:

> "If we… treat labour as the mobile factor and land as immobile, we obtain a model that predicts exactly the immigration flows that occurred and for exactly the reason – factor price differentials – that motivated these historical flows. Though this simple deterministic model abstracts from considerations of risk and many other elements that surely played a role in actual migration decisions, this abstraction is evidently not a fatal one."[34]

Immigration can have large positive effects through factor price equalisation in situations where labour is scarce and wages high, even though increasing labour supply puts pressure on wages. Owners of other factors benefit, as do immigrants (through higher wages than in their homeland), although the effect on existing wage earners is more ambiguous. Large wage differentials suggest transitory rents that drive market adjustment; they can be competed away at low cost to society. Also, people living in sparsely-populated regions get large benefits from increases in population, which allow greater specialisation, a wider range of goods and services, co-operation, and thicker markets for both buyers and sellers. A willingness to bear the costs of taxes and debts to fund immigrant assistance schemes (in addition to declines in wages) illustrates the value early settler societies saw in increasing their population; almost half of the migrants who came to New Zealand from the United Kingdom between 1858 and 1914 received some form of inducement to migrate.[35]

Factor price differentials, migration and trade existed before large scale migration began in the 19th century. Industrialisation supported migration by improving transport and settlement technology and raising incomes. These factors in turn supported larger populations which demanded more food and clothing, which created demands that could be met by primary exports (cotton, wool, grain, timber, and after the development of refrigeration, meat and dairy) from settlement countries. Rising incomes and falling costs also made migration more affordable. Over time as destination and source country wages eventually converged, incentives to migrate were reduced.[36]

Successful economies can absorb large numbers of immigrants while sustaining high per capita incomes, as demonstrated by the experience of New Zealand in the 19th century.

[34] Lucas (1988), p. 16.
[35] Brooke (2011), p. 160.
[36] Hatton and Williamson (1998), p. 36.

However, strong economies also perform well without immigrants: the US economy performed well around 1900 with strong immigration, and also performed well in the 1920s with more restricted immigration.

Factor price equalisation is still relevant as economies and markets evolve. However, today skilled labour is not scarce relative to other factors in New Zealand, or relative to other developed countries. By OECD standards New Zealand is a strong performer on hours and participation, and weak on total factor productivity (TFP) growth; for developed countries there is a negative relationship between TFP growth and growth in total hours worked.[37] New Zealand also has relatively low wages, and high emigration of skilled labour. These circumstances do not suggest a shortage of labour relative to other resources, so there are unlikely to be large positive benefits to New Zealand from factor equalisation from increasing labour supply.[38]

3.2 Different migrant characteristics, matching, and skill shortages

3.2.1 Labour utilisation and qualitative issues

Immigration affects labour utilisation if immigrants or emigrants differ from locals in terms of labour supply characteristics (participation or employment) or demand (starting different businesses or demanding different products). Because immigrants are more likely to be of working age and less likely to be sick or disabled than the New Zealand-born population, increasing immigration can also raise per capita growth through pure population composition effects, although it may not raise the per capita incomes of locals.[39]

Evidence suggests that immigrants are, on average, more qualified than the New Zealand-born.[40] However, they also face language and adjustment barriers, at times including discrimination, which on average take 10-20 years to overcome.[41] In common with overseas patterns, recent New Zealand immigrants have poorer outcomes than others in the labour market, although those outcomes improve over time.[42] Immigrants who are from culturally similar source countries (such as Australia and the United Kingdom) adjust more quickly.[43] On average, migrants from Asia take longer to adjust, and migrants from the Pacific Islands never reach parity with the New Zealand-born, reflecting the fact that they enter mainly on family reunification grounds and non-skills-based quotas.[44] University-qualified migrants also adjust more quickly.[45] In part as a response to adjustment difficulties, migrants are more likely to be self-employed, which can lead to long hours and lower wages.[46]

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37 De Michelis et. al. (2013).

38 Although as Benhabib and Jovanovic (2007) note, from a perspective of enhancing world welfare, there are ongoing benefits from factor price equalisation.

39 See for example the simulations undertaken by the Australian Productivity Commission (2006), which found most of the benefits from immigration were captured by migrants themselves.

40 Winkelmann and Winkelmann (1998); Stillman and Maré (2009); Maani and Chen (2012).

41 Winkelmann and Winkelmann (1998); Poot and Stillman (2010). Lee (2013) also reports adjustment issues for returning New Zealanders, particularly those who had been away for five years or more and settled into careers overseas.

42 Moody (2006); Stillman and Maré (2009).

43 Stillman and Maré (2009), p. 58, find little evidence that migrants from these countries have outcomes that differ from comparable New Zealanders.

44 Ibid, p. 58.

45 Stillman and Maré (2009).

46 Department of Labour (2009); Cain and Spoonley (2013).

Recent changes to immigration policy that have increased the focus on useable skills and job offers when selecting migrants have improved relative utilisation.[47] While focusing on migrants who will assimilate quickly reduces risk and brings immediate advantages via easier adjustment, it reduces the likelihood of attracting migrants with radically different perspectives and approaches who could transform outcomes.

Comparing the characteristics of emigrants with immigrants and the New Zealand-born, Glass and Choy (2001) concluded that New Zealand had approximately a "brain exchange" with the rest of the world. Although immigrants are on paper higher skilled than emigrants, once allowance was made for the costs of immigrant adjustment discussed above, the human capital contribution to the economy was broadly comparable. More recent analysis by Manning and SriRamaratnam (2010) found departures of highly-skilled New Zealand citizens have increased over time. A slightly different pattern occurs for Australia, where the open border facilitates emigration from across the skill range, with a particular emphasis on certain occupations (such as nursing and mining).

3.2.2 Addressing specific skill shortages

Even in an economy operating below capacity, addressing specific skills shortages through immigration can improve productivity in the short run if there are particular vacancies that cannot be filled by domestic residents and these vacancies act as a significant absolute constraint on economic activity.

Where insufficient domestic labour is willing to relocate to address location-specific skills shortages (such as those presently occurring in Christchurch) immigration can also reduce the need for economy-wide tightening of monetary policy to reduce wage pressures.

There are alternatives to immigration as a response to skill shortages, but they can take time. Higher wages and better working conditions can attract more local workers. Production processes can change in response to changes in the availability and price of labour, changing skill mix and/or increasing capital intensity.[48] Firms can refocus production towards activities that are cost-effective without the use of immigrant labour.

Immigrants, particularly less skilled temporary migrants, could substitute for upskilling and employment of locals.[49] However, McLeod and Maré (2013a and 2013b) did not find this effect was significant in New Zealand.

New Zealand has a reasonably flexible labour market, reasonably responsive education and training arrangements, and an economy with relatively low skill intensity. Causation is hard to establish, but to date, low unemployment and manageable skill shortages suggest setting and administering immigration policy in response to labour market demands works reasonably well.

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47 Nana and Sanderson (2008) p. 53, and Household Labour Force Survey, Statistics New Zealand, analysis by the Ministry of Business, Innovation and Employment.

48 For example, the Australian wine industry has adopted more capital-intensive production techniques than the Californian wine industry, in response to relative differences in the availability of low-skilled labour.

49 Quintini (2011) finds that where there are hard-to-fill vacancies, employers may provide opportunities to less qualified candidates, and under-qualified workers may receive a wage return compared to equivalently qualified workers.

Only a small proportion of existing migrants address specific skill needs.[50] While it is difficult to be certain about counterfactuals, key skills shortages could still be addressed with substantially lower immigration. With lower immigration, labour market flexibility and possible offsets from reduced emigration would likely play a greater role in addressing skills pressures.[51]

3.2.3 The impact of migration on location decisions

Within a country, workers relocate in response to changes in economic opportunities. Residents' mobility is constrained by fixed costs of relocation, and social factors.[52] Borjas (2001) has argued that in contrast, immigrants are likely to locate directly to areas with the greatest opportunities. In this way immigration can improve the efficiency of labour market adjustment. Moreover, since immigrants tend to be younger than the population on average, this reinforces their willingness and ability to adjust to economic change. In New Zealand, however, Maré et. al. (2007) find no evidence that recent migrants choose to settle in areas with better labour market outcomes.[53] Rather, both recent and earlier migrants are most likely to settle in areas with larger proportions of prior immigrants from the same region of birth, although local labour market conditions become a more important factor in location decisions the longer migrants remain in New Zealand.

New Zealand is relatively small and has relatively good institutions and transport links, and has limited geographically-based cultural differences. These factors reduce but do not eliminate the costs of moving for internal migrants. In practice, immigration patterns reinforce northward drift, with the majority of internal and external migrants choosing to locate in Auckland, though immigrants often fill specific vacancies in other parts of the country, for example, doctors in the South Island. Stillman and Maré (2007) found the location decisions of immigrants had little effect on the location decisions of locals.

New Zealand probably gets some benefit from the greater location-flexibility of immigrants, but given the tendency for migrants to cluster where other migrants live already, the effect is likely to be small.

3.3 Capital utilisation

Migration affects capital utilisation and thus productivity. Immigrants add labour to the existing capital stock and demand capital indirectly through their demand for goods and services. Immigrants can affect financial capital flows by bringing capital with them, by increasing demand for financial capital, through remittances, or if their saving and borrowing habits differ from locals. If immigrants bring new ideas or affect scale, this can also affect capital utilisation through changing product mix and production methods.

The adjustments implied by these effects can require more and different capital and new ways of working.[54] Economic models of the effects of immigration, including the CGE

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50 Ministry of Business, Innovation and Employment (2013a).

51 Relatively little is known about the extent to which immigration, internal migration and emigration are causally linked, and this would be an interesting area for further research, although it is difficult to obtain data about emigrants once they have left the country. While overall, immigration and emigration are both strongly related to the business cycle, the recent experience of Auckland, which attracts a disproportionate share of immigrants but also experiences net outward internal migration, suggests displacement is possible.

52 Borjas (2001), p. 2, estimates that in the US, which has relatively flexible labour markets, it can take around thirty years for equilibrating labour flows to cut interstate income differentials in half.

53 Maré et. al. (2007), p. 20.

54 Poot and Cochrane (2005), p. 24.

models discussed in section 2.4, often have an important role for changes in the capital-labour ratio. There are different models of capital adjustment but ultimately the question is empirical.[55] Ottaviano and Peri (2005, 2006, 2008) model immigration as "an ongoing and anticipated process [where] capital adjusts continuously to actual and anticipated flows of new immigrants…[the model] permits immigration shocks to cause the capital labour ratio to fall below its long run trend and for the average wage to fall. This stimulates growth in the capital stock, boosts labour productivity, and, in the long run, restores the pre-immigration wage".[56]

If capital growth does not keep up with labour growth, capital intensity and productivity fall, as the economy adjusts to immigration by adopting more labour-intensive modes of production, as has occurred in New Zealand in the past.[57]

Increased economic activity as a consequence of immigration may put pressure on capital weaknesses, for example inadequate infrastructure, or tax distortions. Increased activity may also occur in less- or more-productive sectors: in New Zealand the relatively unproductive construction sector expanded its share of the economy through the 1990s as immigration increased.

In New Zealand the evolution of the capital-labour ratio and multifactor productivity since the 1991 changes in immigration policy show no strong pattern, remaining weak.[58] As immigration is only one contributing factor it is impossible to draw conclusions from this. There may also be lags in the response to migration, and the counterfactual may have been worse. On the other hand, immigration may have compromised productivity growth through capital utilisation by putting pressure on weak housing institutions (thus indirectly increasing the cost of capital for all activity) and shifting capital resources to the construction sector.

3.4 Scale and agglomeration

If net migration leads to population growth, then to the extent that the increased population leads to increased demand for goods or services from sectors that exhibit economies of scale, this could lead to a rise in productivity and income per capita. Conversely, increases in demand for goods and services from sectors that do not benefit from scale economies could divert resources from more productive activities (see the discussion of Reddell (2013a) in section 5.3 below).

At a firm level, scale effects can involve spreading fixed costs over more output, using more volume-efficient equipment, or labour specialisation.[59]

At the industry level, scale effects can result from agglomeration or "thick markets" effects often associated with large cities. Having a larger local pool of skilled labour makes it easier to fill vacancies and employ applicants, which reduces the cost of hiring labour to respond to changing market conditions, and improves the quality of labour market matching. A larger pool of labour might allow firms to reduce labour costs associated with training and skill acquisition. Geographical clustering allows risk pooling and specialist inputs such as legal services or research and development, which may have high setup

[55] Australian Productivity Commisssion (2006); Ottaviano and Peri (2005); Nana et. al. (2009).
[56] Bodvarsson and Van den Berg (2009), p. 119.
[57] Smith and Grimes (1990); de Michelis et. al. (2013).
[58] Conway and Meehan (2013).
[59] Australian Productivity Commission (2006), p. 101.

costs, to be provided at a lower cost because they can be spread over a larger number of firms. Greater degrees of specialisation are also facilitated (for example, not just legal services, but patent attorneys specialising in information technology). There may be network economies (for example, for telecommunications). Larger concentrations of firms and people promote the generation, diffusion and accumulation of information and knowledge through informal physical transmission of tacit knowledge.[60]

3.4.1 Scale, diversity and innovation as prerequisites for productivity

Economic geographers such as McCann (2009) argue that in modern economies, highly productive activities are service- and information-based. Productivity growth requires rapid innovation, achieved by face-to-face contact between large numbers of diverse interconnected people, as found in large cities.[61] In contrast, in the past, productivity gains from scale and agglomeration were driven by mechanisation and the division of labour.

Achieving the modern innovation benefits of agglomeration requires more than simply raw numbers of people; there are numerous examples of populous but unproductive (or averagely-productive) societies and cities.[62] The potential contribution of immigrants comes through both numbers and diversity in relevant attributes (such as skills, attitudes, perspectives, connections, and values) that increase the range of possible activities and ideas.[63]

The potential for large scale benefits has been used to argue not only that New Zealand's productivity performance could improve with a large enough number of people with the right skills and connections, but also that such an increase is a necessary precondition for improved performance.[64] Immigration would necessarily play a large role in achieving a much larger population with the necessary attributes.

The failure of immigration to date to have had material effects on productivity could be explained by the need to reach threshold levels of population well in excess of current levels. Maré et. al. (2011) suggest this as a possible explanation for their failure to find any systematic evidence of an independent link between local workforce characteristics (that is, diversity) and average innovation outcomes in labour market areas in New Zealand.[65]

There may also be issues with migrant motivation and utilisation. Borjas (1987) has argued migration may pre-select smart and driven people. However evidence shows that most migrants coming to New Zealand cite lifestyle as a primary motivation.[66] In addition, many immigrant entrepreneurs in New Zealand set up small-to-medium sized businesses

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60 Australian Productivity Commission (2006), pp. 101-103; Maré and Fabling (2011), p. 60. The operation of these factors also draws internal migrants to larger centres, particularly cities.

61 See Saxenian and Sabel (2008), Saxenian (2006) and Saxenian (2002) for the pioneering analyses of the operation of these effects in Silicon Valley, and Nathan (2011) and Nathan and Lee (2011) for evidence from London that more diverse teams are more innovative.

62 Poot (2004) reports that larger economies do not necessarily perform better on average.

63 For recent European evidence on the impact of population diversity on innovation, productivity and growth see for example Ozgen and de Graaff (2013) and Ozgen et. al. (2013).

64 See for example McCann (2009) and also Skilling (2001).

65 See Maré et. al. (2011), p. 19. Note that if workforce characteristics do not drive innovation in New Zealand, immigration cannot drive innovation either, as immigration works by affecting workforce characteristics.

66 Hodgson and Poot (2010), p. 13.

because they are unable to access the labour market at levels corresponding to their skills and qualifications.[67]

New Zealand's current population is reasonably diverse as a result of education, travel, and immigration to date, and important innovations have originated in New Zealand. Achieving the benefits posited by economic geographers would require expanding on this base, combining scale, agglomeration and diversity, using immigration to create a significantly larger and more productive economy.

3.4.2 Large population increase?

In theory, a high rate of immigration over an extended period could greatly increase New Zealand's population, allowing productivity gains from economies of scale, both from conventional sources and the particular effects identified by economic geographers. However, the 2025 Taskforce, set up to provide advice to the government on how to close the income gap with Australia, did not favour greatly expanding immigration and considered this approach unrealistic and potentially "enormously disruptive".[68]

If in New Zealand's situation a much larger population would greatly improve viability, growth and resilience, disruption may be worth the cost.[69] A larger population is technically feasible; New Zealand has similar land area to countries with much larger populations (for example, the United Kingdom or Japan). The historical growth of Australia over the 19th century, or California during the 20th century provide precedents for large population increases.

However, just because greatly increasing population is feasible does not mean it is a wise strategy. While there is clear evidence that within countries, large urban agglomerations have higher incomes and productivity,[70] there is no such evidence across countries (bigger, more densely-populated countries are not richer than smaller countries with more scattered populations).[71] The observation that the very highest productivity is found in large urban areas producing knowledge-based products does not mean all societies can or should attempt to recreate the San Francisco Bay Area or London. When what is now the United States rust belt was the global productivity leader, many other regions improved their wellbeing through industrial development on a less extensive and less productive scale. Today New Zealand or other productivity "followers" may be able to materially improve productivity and living standards from current levels without adopting a large scale agglomeration strategy. Silicon Valley also illustrates the limitations of such strategies; notwithstanding the presence of Silicon Valley, the State of California has serious economic and fiscal problems. Similarly, Israel has a thriving innovative hi-tech sector, similar population, and comparable overall productivity to New Zealand.

To make a judgment on whether a large increase in population is necessary or wise more information would be required on both costs (including environmental, social, and cultural costs) and benefits. Two key questions are how large the increase would need to be to realise the benefits, and to what extent New Zealand's level of geographic isolation would continue to act as a brake on performance even with a large population.

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67 Department of Labour (2009); Cain and Spoonley (2013). More comprehensive and detailed information on the types of small businesses established by immigrants is needed in order to determine the likely productivity impact of immigrant self-employment.

68 2025 Taskforce (2009), p. 34. This comment was partly specific to a 2025 target date, which meant that New Zealand's population could not grow large quickly enough for the economies of scale to be relevant.

69 Economic geographers argue viability increases with larger numbers due to scale and agglomeration effects.

70 Maré and Graham (2009) provide some New Zealand evidence on this point,

71 Poot (2005), p. 31-32.

3.4.3 Avoiding population decline

The predictions of economic and demographic theory regarding the consequences of population decline are ambiguous.[72] One interpretation of the evidence suggests the New Zealand economy would perform better with a much smaller absolute population size.[73] This approach would be consistent with the efficient utilisation of New Zealand's natural resource endowments, making the best use of New Zealand's land and climate and geographical isolation without attempting to develop unrelated stand-alone activities typically found in larger economies.[74] However, the path to such a position is generally considered to be impractical.[75]

In addition, as a small, isolated economy, New Zealand could be particularly vulnerable to small scale diseconomies, or damaged confidence and investment expectations from a falling population.[76]

Infrastructure is built to match the population it serves. If rising population puts pressure on infrastructure, congestion and overloading can result. If population falls, diseconomies can result as the costs of the now-oversized infrastructure still have to be met. These are short run effects; over time infrastructure adjusts. However, since much infrastructure has a long life, the "short run" may be prolonged. Further, declining populations may build less new capital, forgoing the productivity-enhancing benefits of new technology. Across a shrinking economy costs accumulate and must be spread over the remaining base of population and economic activity.[77]

In addition to cost impacts, population decline can affect confidence, reducing investment in physical and human capital. A particular source of confidence effects is the housing market.[78] As housing supply is slow to adjust downwards, where housing is the dominant asset, falling population can lead to falls in house prices that greatly affect household wealth and thus confidence.[79] From the perspective of an individual business, a rising population looks like a benign environment for expansion, with prospects of more customers and more suppliers. Over-optimistic expansion plans may be made good over time by population growth.[80]

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72 Van Dalen and Henkens (2011).

73 The late economic historian Brendan Thompson raised the idea that New Zealand could have been a large but efficient and capital intensive "farm" with a very small population and high income per capita during a plenary discussion of Poot et. al. (1988) at a New Zealand Demographic Society conference in the late 1980s.

74 To support its current population, New Zealand has to do more than just exploit natural resource endowments. This is a large ongoing challenge for policymakers.

75 Historically, very large population outflows have only occurred in severe circumstances such as famine, war or climatic disaster. Although globalisation and reduced real travel costs have combined to make emigration easier and less expensive, large scale population decline is unlikely in New Zealand. Even if New Zealand's non-citizen immigration flows fell to the levels typical of the mid-1980s, population decline would be modest (assuming unchanged birth, death and emigration rates). Statistics New Zealand's population projections using a zero net migration scenario suggest that the New Zealand population would start to decline from the 2030s in the absence of inward migration.

76 There is a growing literature which explores self-reinforcing regional population decline, particularly in Europe and Japan. See for example, Rowland (2012), Yoshihara and Sylva (2012), Coleman and Rowthorn (2011) and Rink et. al. (2010). In part this literature focuses on fiscal problems arising from difficulties financing welfare systems with a smaller tax base. However, fiscal issues depend on the age profile of the population rather than strictly on its size. Since New Zealand's overall population distribution is somewhat younger this might be a less immediate issue here.

77 Coleman and Rowthorn (2011).

78 Van Dalen and Henkens (2011).

79 This situation differs from cases where house prices are over-valued and house price inflation is an issue, where lower housing market confidence would have a beneficial impact.

80 See Hawke (1985), p. 196, for a discussion of this effect in New Zealand in the 1960s.

Although in New Zealand's recent history, immigration has more than compensated for emigration, it has limits as a strategy to address relative economic decline. Immigration is only a useful response to population decline if the immigrants address the underlying issues that led to the decline in the first place. Adding more people to an economy that faces difficulty in expanding exports as fast as imports will lead to expanding debt unless immigrants bring about productivity-enhancing change, or are large in number and have significantly higher savings rates than natives.

3.5 International connectedness

Although some theory views trade in goods and services and migration as substitutes,[81] empirically, complementarities between migration and trade dominate.[82] Immigrants bring with them detailed knowledge of foreign markets, and personal contacts.[83] Knowledge of factor and product markets in both countries can increase trade and capital flows and support the organisation of international production systems.[84]

Bilingual immigrants can facilitate communication, and immigrant networks can improve information flows and raise trust.[85] International studies find ethnic networks help knowledge diffusion and aid multinational firms' activities.[86] This could lead to resources being reallocated to higher-value exports. Immigrants bring with them preferences for goods produced in their home country.[87] Immigrants from lower income countries and more diverse cultural backgrounds tend to create more trade than other groups.[88]

Although some recent empirical evidence suggests that in certain contexts immigrants may have lower crime rates than natives, international connections can also have negative effects.[89] Criminal, corrupt, inefficient or unethical practices may be brought by immigrants. Immigrants may also lead the composition of demand and supply to change in ways that have little impact on productivity.

At the same time as migration encourages trade, more trade, together with technological change and improved information flows, may encourage more migration.[90]

Over time, the effects of migration on trade tend to dissipate.[91] As immigrant groups get larger, the incentive to produce "home goods" in the destination rather than in the source country rises. In addition, the impact on trade lessens as migrants integrate. There is a tension between the social and economic benefits of faster assimilation, and those of retaining strong connections with the homeland.

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81 See Strutt et. al. (2008): if a product can be more cheaply produced overseas than domestically, either the product will be imported, or the lower cost inputs that allow it to be produced more cheaply will be imported (in the case of labour, through immigration). Since outsourcing typically faces fewer restrictions than immigration, when outsourcing increases, the pressure to admit immigrants diminishes.

82 Genç et. al. (2012).

83 See Law et. al. (2009) for New Zealand evidence on this.

84 Saxenian and Sabel (2008), Docquier and Rapoport (2011).

85 Hodgson and Poot (2010), p. 27.

86 Kerr (2008a, 2008b); Foley and Kerr (2011); Saxenian (2006).

87 Strutt et. al. (2008), p. 36.

88 Strutt et. al. (2008).

89 For an overview, see Wortley (2012).

90 Hodgson and Poot (2010), p. 26.

91 Genç et. al. (2012).

For New Zealand, the effect of immigration on imports is stronger in the short term than the effect on exports. Both effects are relatively small: Law et. al. (2009) find that a 10 percent increase in immigrants from a country leads to a 0.6 percent increase in exports to that country, and a 1.9 percent increase in imports from there (by volume), whereas Qian (2008) finds exports increase by 0.56 percent, and imports by 1.35 percent.[92]

The New Zealand diaspora does not boost New Zealand exports, since most expatriate New Zealanders are located in culturally similar destination countries which already have extensive trade links with New Zealand.[93] The available evidence suggests the effect of outward migration on inward FDI is also small.[94]

Migration leads to small increases in tourism flows. A 10 percent increase in migrant flows from a country increases the number of New Zealanders visiting that country by 4 percent, and raises the number of people from that country visiting New Zealand by 2 percent. A 10 percent increase in the number of New Zealanders living in a foreign country increases the number of visitor arrivals from that country by 1.3 percent, and raises the number of New Zealanders who go to visit family and friends in that country by 2 percent.[95]

Overall, migration's effects on trade, tourism flows, and capital flows have been modest to date.[96] While immigration increases inward and outward flows of trade and tourism, it increases outflows more than inflows, so that the direct financial impact on New Zealand is negative.

3.6 Population ageing

Increases in net migration are sometimes suggested as a solution to the problems created by population ageing. While temporary inward migration may help mitigate the effects of population ageing, those migrants who become permanent residents will also eventually retire and increase the old-age dependency ratio (see Figure 2). Overall, the present pattern of net migration reinforces population ageing, as emigrants tend to be younger than immigrants.[97]

In looking at results for countries and regions including Japan, Germany and Europe, the United Nations (2001) concluded that in order to materially mitigate the impacts of population ageing, flows would need to be many, many times existing population inflows from migration. Jackson (2014) is presently estimating the extent of inward migration flows that would be necessary to compensate for population ageing and outward migration in New Zealand. While exact numbers are not yet available, the same pattern holds: inflows will need to be many times existing levels to make a material impact.

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92 A recent meta-analysis of 48 studies by Genç et. al. (2012) corrects for heterogeneity and publication bias, and finds a 10 percent increase in the number of immigrants increases the volume of trade on average by about 1.5 percent. Over time, the growing stock of immigrants decreases the elasticities.

93 Hodgson and Poot (2010), p. 27. However, the Kiwi Expatriate Association (Kea) is beginning to see more encouraging results through leveraging the skills, experience and connections of a targeted group of around a thousand "World Class New Zealanders".

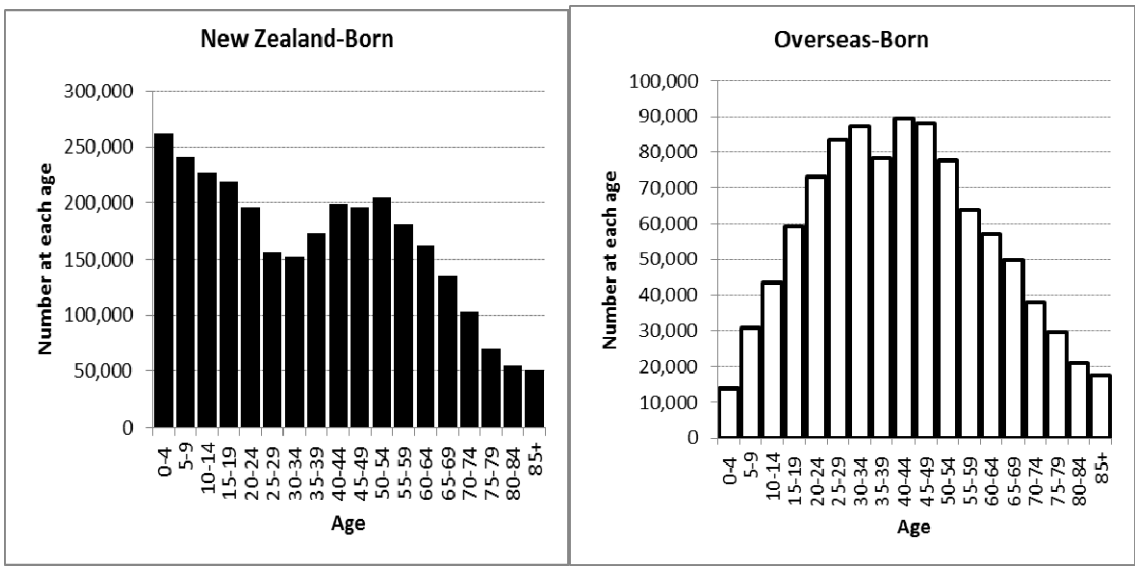
94 Kugler and Rapoport (2007); Driessen et. al. (2011); Foley and Kerr (2011).

95 Hodgson and Poot (2010), pp. 28-29.

96 Brunow et. al. (2014) argue that these effects may become larger over time.

97 Glass and Choy, p. 37. Updated by Jackson (2014) using 2013 Census data.

Figure 2: Age Profiles of New Zealand-Born and Overseas-Born Populations



Source: Jackson (2014) NIDEA/Statistics New Zealand 2013 Census QuickStats about national highlights, Table 5.

Population ageing is occurring worldwide and competition for skilled migrants is expected to increase. New Zealand has some attractive features for potential migrants, but there are also negative factors to contend with, including distance and declining economic performance relative to other traditional destination countries. Taken together, these points suggest that migration is unlikely to "solve" population ageing.

3.7 Fiscal effects

The fiscal impacts of immigration depend on the characteristics of immigrants relative to emigrants and the remaining New Zealand-born population, and how long immigrants stay in New Zealand.

Point-in-time studies of the net fiscal effects of immigration generally show quite large positive effects.[98] The estimated fiscal impact at a point in time depends on the state of the economy: calculations which are made when an economy is performing strongly are likely to overstate the benefits.[99]

These results are unsurprising. Immigrants are typically more likely than the native-born population to be of working age, and in good health. Healthy, working-age people contribute more in taxes and use fewer public services. New Zealand has a relatively high proportion of skilled immigrants, who tend to pay more in taxes than they receive in benefits.[100] In most cases, the new host country does not pay for the cost of educating immigrants, although it generally pays for the cost of educating their children, at least at compulsory school ages.[101] However, static assessments showing positive fiscal benefits of immigration do not provide information about anything other than the short term.

International evidence on the longer term fiscal impact of immigrants is mixed. In part, the effects depend on whether immigrants stay, or go home. On this point, Cobb-Clark and Stillman (2008) developed a model which shows that the incentives to return to the home

98 For example, see Nana et. al. (2003) for New Zealand, and Gott and Johnston (2002) for the United Kingdom.

99 See Gott and Johnston (2002) for a discussion of this point in relation to the United Kingdom.

100 Nana et. al. (2003).

101 At post-compulsory level, some countries distinguish between migrants and locally-born students in terms of funding eligibility.

country are highest at retirement, assuming that wages are higher in the destination country and costs are lower in the source country. This is plausible, given that migration is primarily economically-motivated.[102]

To the extent that immigrants remain in the host country after retirement, their net contributions over a lifetime look much more similar to locally–born net contributions.[103] This is because as immigrants age, they eventually access higher-cost health care, pensions and aged care. In New Zealand, health and aged care are predominantly publicly funded, and immigrants who have lived in New Zealand for ten years including five years after the age of 50 are eligible for national superannuation from age 65.

Over a lifetime, an individual's net contribution will depend on their relative earnings and expenses. In the aggregate, generational accounts calculations for the United States have found that immigration typically has minimal impacts on generational balance.[104] Kotlikoff (2013) says that while it is impossible to draw firm conclusions without redoing the exercise, the overall impact of immigration on New Zealand's generational balance is likely to be positive, but smaller than found in static analyses.[105]

3.8 Large positive effects: conclusion

Overall, the evidence points to modest, rather than large positive effects from factor price equalisation, different migrant characteristics, changes to capital utilisation, scale and agglomeration, improved international connectedness, population ageing and fiscal balance. However, it is possible that scale or international connection effects could operate with very long lags: a new paper by Brunow et. al. (2014) provides tentative empirical evidence suggesting that while net migration does not impact on growth positively or negatively in the decade in which it occurs, it may boost growth in the longer run. Some of the possible channels the authors identify include education and training decisions, skill and diversity spillovers, trade, entrepreneurship, and clustering. It is also possible that scale and agglomeration could create larger positive impacts if future migration flows increase significantly. Existing evidence on these possibilities is too uncertain to enable estimates precise enough to guide policy.

[102] In contrast, New Zealand's lack of pension portability creates an incentive to remain in the country after retirement.

[103] Gott and Johnston (2002) point out that the impacts of immigrants on locals are not typically considered in calculations of fiscal effects. There could be indirect negative fiscal impacts if, for example, migrants lower the wages of locals or displace them into unemployment – thereby reducing the tax contribution of locals and increasing the claim of locals to benefits.

[104] See Auerbach and Oreopoulos (1999). Storesletten (2000) shows the discounted net gain from immigration varies markedly depending on the age and skill profiles of migrants.

[105] Auerbach et. al. (2007). Co-author Kotlikoff was instrumental in constructing New Zealand's first set of generational accounts.

4 The case for large negative effects

This section considers the possibility that migration could lead to large negative effects, either directly on labour or housing markets, or indirectly by diverting resources to less productive activities, or via a "brain drain". Overall, the evidence points to small domestic labour market effects (which may be positive or negative), moderate negative effects on the housing market (which partly reflect other features of the New Zealand market that inhibit the response of housing supply to increased demand), and modest net costs from replacing skilled emigrants with skilled immigrants. Although this is difficult to establish empirically, it is also possible that meeting the infrastructure needs of migrants may divert resources from more productive activities, imposing potentially significant macroeconomic costs.

4.1 Labour market impacts

The impacts of immigration on the host labour market depend on the size of migrant flows relative to the overall population, differences in characteristics of immigrants and local workers, the overall labour market structure and adjustment processes, and the stage of the economic cycle when immigrants arrive.

Since these impacts have changed over time with technology, institutions and in response to immigration itself, this section looks at historical and contemporary impacts separately.

4.1.1 Historical labour market impacts

While bringing in additional labour when it is relatively scarce greatly increases wealth creation opportunities (see the earlier discussion on large positive effects of factor price equalisation in section 3.1), it also has distributional consequences. Hatton and Williamson (2006) argue that examining the period of migration before quotas and other policy barriers were applied can provide clearer insights into the impact of immigration.[106]

The authors conclude:

> "Economic theory and economic history both tell us that immigration reduced real wages in the host country and that emigration raised real wages in the origin country during the first global century."[107]

Prior to World War 1, wage impacts were often dramatic: based on CGE simulations of the period between 1870 and 1910, Hatton and Williamson (2006) suggest that the US real wage would have been 34 percent higher than it actually was in 1910 and the British real wage would have been about 12 percent lower had no US immigration or British emigration occurred.[108] These large effects were observed even though there were large flows of capital alongside labour flows, reducing the impact of immigration on the capital to labour ratio in both economies.[109]

[106] Hatton and Williamson (2006), p. 3.
[107] Ibid, p. 7.
[108] Ibid, p. 5.
[109] Ibid, p. 6.

4.1.2 Contemporary labour market impacts

Factor price equalisation is always a relevant driver of dynamic markets. However, over the last century the geographic pattern of differentials has changed, and restrictions have been introduced, reducing the impact of equalisation. Further, host countries today have larger populations and per capita incomes, reducing the proportionate impact of any given number of immigrants.[110] Good transport and communications technology and high levels of education allow modern markets to respond quickly. Some economies have flexible labour markets, which also support adjustment to immigration. The new production frontiers of the modern economy are typically in services, where necessary capital such as computers and office space are more easily put in place than in the manufacturing plant of the past.

Contemporary literature focuses more on the impacts of immigration on host country workers. The theoretical predictions depend on the underlying framework. For example, in the simplest standard neoclassical model, where immigrants and locals are perfect substitutes, an increase in immigration will lower the wage paid to local workers. Local labour force participation and employment rates will decrease, and unemployment rates will rise. In other models, including some general equilibrium models, the physical capital stock adjusts in response to immigration, and immigrants are assumed to be imperfect substitutes for (or complements to) locals. The more fully and quickly capital adjusts to changes in labour and the greater the complementarities between local and immigrant workers the smaller and shorter the negative impact of immigration on wages.[111] In further contrast, some contemporary models suggest that material positive labour market impacts can occur through diversity in productive skills and increased innovation.[112] In this framework, immigration can raise the wages of the locals, though in the model effects are economy-wide, so distributional and compositional effects are unseen.

The results of a synthesis of recent empirical work in New Zealand are consistent with international evidence suggesting that immigrants do not have a significant negative impact on the labour market outcomes of the local population.[113] The consensus is that there are only small effects of immigration on the wages and employment of locals.[114] An earlier meta-analysis of 45 primary studies on migration, including some from New Zealand, found that "the impact of immigration on the labour market of the native born is quantitatively very small and estimated coefficients are more than half the time statistically insignificant."[115]

The underlying reasons for this overall benign impact have been debated for some time and are still being discussed.[116] The consensus is that they likely include short run and long run changes to the output mix, capital levels, domestic labour supply, and

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[110] Di Giovanni et.al. (2013) note this influence in their contemporary CGE model, which finds welfare gains across countries from immigration of a little over 2 percent (p. 24), with much larger gains to the migrants themselves (for example, 25 percent for migrants from New Zealand to Australia, p.42).

[111] See, for example, Ottaviano and Peri (2006).

[112] Ortega and Peri (2013).

[113] Hodgson and Poot (2010) looked at studies by Maré and Stillman (2009), Maré et. al. (2007), and Stillman and Maré (2007).

[114] There are some studies that demonstrate larger effects, but these tend to rely on complex identification strategies (see Ottaviano and Peri (2008, 2006, 2005)).

[115] Longhi et. al. (2008), p. 24.

[116] For early examples, see Altonji and Card (1991), Card (1991), Chiswick et. al. (1992), Hanson and Slaughter (1999). Several authors raise the possibility that inappropriate econometric methodology (largely failing to factor in endogenous responses following an immigration shock into models) or labour market rigidities preventing adjustment could lead to low measured wage effects (see for example, Poot and Cochrane (2005), p. 9).

productivity which may offset the negative impact of a positive labour supply shock.[117] In other words, the features of the immigrants and the environment they arrived in have been such that adjustment has occurred at relatively low cost.

In the New Zealand context, Hodgson and Poot (2010) suggest that increased local demand from immigrants leads to an inflow of capital which would offset any downward wage pressure.[118] Stillman and Maré (2010) find little evidence that migrant inflows displace either the New Zealand-born or earlier migrants with similar skills in the areas that new migrants are settling, which suggests it is unlikely that internal mobility moderates any potential impacts of immigration on the labour market. The study did not test whether New Zealand-born and earlier migrants were displaced out of the country. In New Zealand, large scale immigration has occurred alongside large scale emigration, which, other things equal, would reduce wage pressure.[119]

Although the overall impact may be small, immigration can still have effects on particular workers and markets, depending on the extent to which immigrants are substitutes or complements to local workers. For example, the meta-analysis conducted by Longhi et. al. (2008) finds a strong and "statistically significant downward effect of newcomers on the wages of earlier migrants, suggesting that in many cases, the substitution elasticity between new arrivals and earlier immigrants will be relatively high."[120]

Dustmann et. al. (2007) show that in a simple model, a skill group whose relative supply has decreased as a consequence of migration will benefit, while a skill group whose relative supply increases will lose out.[121] The degree of substitutability or complementarity drives the size of these effects. This is confirmed by United Kingdom studies finding increased casualisation of low-wage work, a clear "migrant division of labour" in London, and downward wage pressure for low-skilled workers following the rapid increase in unskilled labour flows associated with the increase in migration from Eastern Europe to the United Kingdom following EU enlargement in 2004.[122]

In the New Zealand context, Maré and Stillman (2009) found that increases in the relative skill composition of migrant inflows had a small negative effect on the wages of high-skilled New Zealand workers. McLeod and Maré (2013a and 2013b) do not find any evidence that the large rise in temporary migration over the past decade has affected monthly wages or total employment in New Zealand, but acknowledge that during most of their sample the business cycle was favourable.

Overall for New Zealand, it can be argued that labour market institutions have responded well to increased immigration since the 1990s, particularly in the light of a starting position of high unemployment and few specific labour shortages. This experience is consistent with theory, and the literature on outcomes elsewhere.

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117 For example, Lewis (2005) and Beaudry et. al. (2006) find evidence that there is weaker adoption of advanced technology, which is complementary to skilled labour, in the presence of larger numbers of unskilled workers. This offsets the wage effects of shifts in the proportion of the unskilled workers.

118 Hodgson and Poot (2010), p. 19.

119 Earlier work by Maré et. al. (2007) found that re-migration was relatively more common among migrants with the highest and lowest qualifications. Using data from the Lithuanian Household Budget Survey and the Irish Census following the eastern enlargement of the European Union in 2004, Elsner (2010) found that a one percentage point increase in the emigration rate increased the real wage of men remaining in Lithuania on average by one percent.

120 Longhi et. al. (2008), p. 24.

121 Dustmann et. al. (2007), p. 14.

122 Cook et. al. (2011); Nathan (2011); Nickell and Saleheen (2009); Wills et. al. (2010); Gordon and Kaplanis (2012).

4.2 Housing market impacts

A concern has been house prices rising faster than other prices in the New Zealand economy, leading the Reserve Bank to run tighter monetary policy than it would have otherwise.[123] This focuses policy attention on: the responsiveness of housing supply (town planning and building industry issues); biases in domestic policy settings that potentially favour housing as an investment (taxation); and immigration, including the return migration of New Zealand citizens, as a potential source of housing market pressure.

Migration affects housing demand, since immigrants require accommodation and emigrants vacate accommodation. Using census data, Sanderson et. al. (2008) found that of 109,000 new households created in New Zealand between 2001 and 2006, 42,000 were migrant couples, 21,000 were mixed New Zealand-born/migrant couples, 36,000 were New Zealand-born couples, and 3,500 were single migrants. Over the same period, the number of New Zealand-born single households decreased by 40,000, likely reflecting net emigration.[124]

Migration also affects housing supply and prices. The extent to which a rise in net migration leads to changes in supply, along with differences in preferences and wealth between locals, migrants and emigrants, and prevailing economic conditions, will determine the impact on housing prices.[125]

Migrant housing preferences evolve over time. When immigrants first arrive, they are more likely than the New-Zealand-born population to rent housing. By the time immigrants have lived in New Zealand for 15 years, their housing choices are similar to those of native-born New Zealanders.[126]

Across the OECD housing prices are strongly correlated with population growth.[127] There is also a strong correlation between population growth and residential construction activity. As noted, New Zealand has had strong population growth, with a material contribution from immigration. Migration tends to be pro-cyclical: people choose to come to New Zealand, or to remain here, when economic conditions are favourable.[128] House prices also rise with economic confidence since confidence increases expected income growth and thus housing demand.[129] Rising house prices thus reflect the combined effects of confidence and immigration, leading to difficulty in establishing causality. The evolution of house prices and migration in New Zealand is shown in Figure 3.

[123] See for example Wheeler (2013).

[124] Hodgson and Poot (2010), p. 10. Sanderson et. al. (2008) concluded that migrant characteristics (income, family configuration) explain differences better than migration status. It would be interesting to see whether this conclusion still holds using the most recent census data.

[125] Reddell (2013a) argues that relatively too much weight is put on considering house prices, and too little on considering residential investment. More building would reduce house price effects, but put even more pressure on real resources. See section 5.3 for further elaboration.

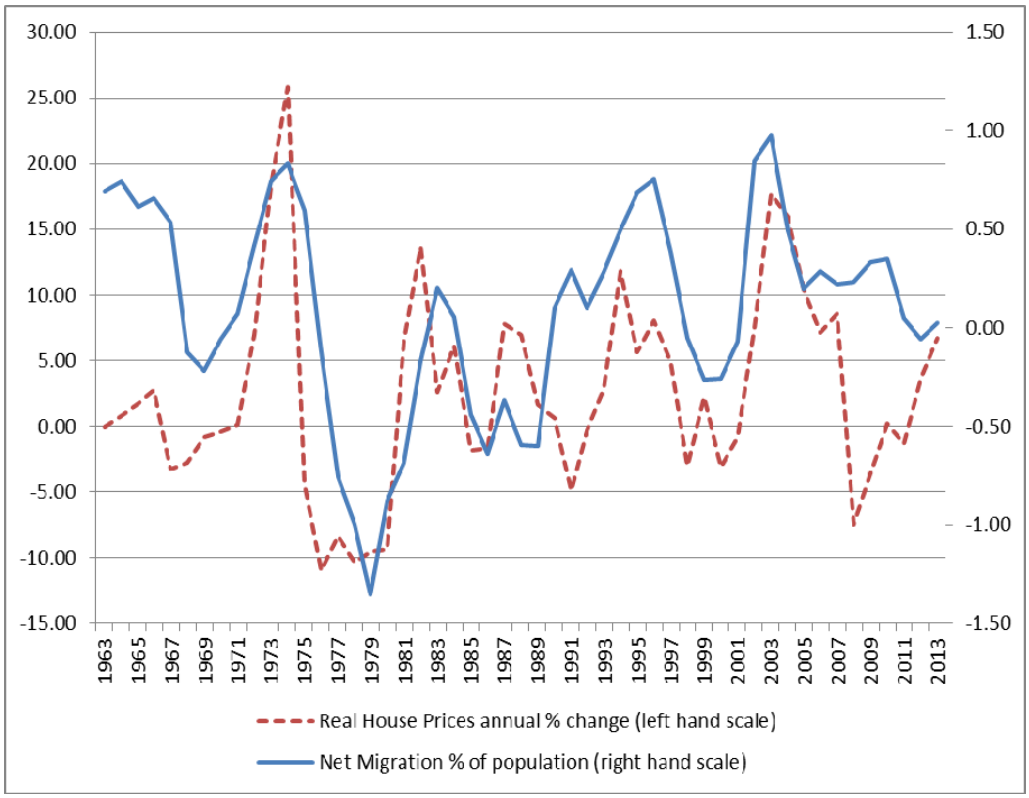
[126] Sanderson et. al. (2008).

[127] Andrews (2010), p. 24.

[128] Reserve Bank of New Zealand (2007).

[129] Goodhart and Hoffman (2008).

Figure 3: Changes in Real House Prices and Net Migration



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

Using a structural vector auto regression model, Coleman and Landon-Lane (2007) found that in the short term a net migration flow equal to one percent of the population led to an increase in house prices of around 10 percent at the national level. More recent work by McDonald (2013) using similar models broke migration numbers down by arrivals or departures, New Zealand or foreign citizenship and, for foreign citizens, by their country of origin. McDonald found that a one percent increase in the population caused an 8 percent increase in house prices over the following three years.[130] These estimates are surprisingly large compared with both longer-term cross country estimates (which suggest a relationship between population growth and house prices closer to unity) and international evidence on the link between migration and house prices (which suggest a positive migration shock of 1 percent of population leads to a 1-2 percent increase in house prices).[131]

Coleman and Landon-Lane suggest their work may overstate the causal relationship because it does not fully capture future income expectations that drive both migration

[130] McDonald (2013), p.4, found that different types of migrants may have different impacts on the housing market. When net migration is separated into arrivals and departures, McDonald (2013), p. 7, found that arrivals have larger house price effects. Real house prices rose by 4 percent when monthly arrivals increased by 1000 people, but only fell by 2 percent when departures fell by the same amount. In addition, changes in New Zealand citizen migration had smaller effects than changes in migration by foreign citizens: a 1000-person rise in the net inflow of foreign citizens led to a 4 percent increase in house prices, while a similar net fall in New Zealand citizen departures raised house prices by around 2 percent. McDonald suggested this may be because New Zealand citizens are able to move in response to economic conditions whereas foreign citizens are more constrained in the timing of their movements (ibid, p. 9).

[131] In a classic study based on the experience in Miami following the 'Mariel Boatlift' which raised population by around 7 percent almost overnight, Saiz (2003a), p. 20, concluded that "an immigration inflow amounting to 1 percent of the city's population is associated with increases in housing values and rents of about 1 percent." In a broader study of inward foreign migration on US cities in the 1970s, 1980s and 1990s, Saiz (2003b) found the overall effect of an immigration inflow of 1 percent of the initial population raises rents and prices by 0.8-1.6 percent.

flows and house prices.[132] Since housing supply does not adjust immediately when there is a net increase in migration, prices go up initially. They remain high because by the time new houses have been built, everyone thinks their own house is more valuable.[133] In this way, immigration can have an upward ratchet effect on expectations of future house prices, especially where repeated migrant inflows lead to further initial price rises. This may be a contributing factor to New Zealand's high house prices relative to income by OECD standards.[134]

Stillman and Maré (2008) suggest estimates of the causal impact of migration will also be biased upwards if migrants are attracted to areas with improving prospects and consequently with rising house prices, or if migrants tend to come to New Zealand when the economy is doing well and house prices are increasing. McDonald (2013) also notes that a strong relationship between migration and house prices could in part result from international factors outside the model which affect both migration and house prices at the same time (such as the performance of the Australian economy).[135]

Research on regional and local markets has found smaller or marginal impacts on house prices. Grimes et. al. (2007) found a significantly greater effect on house prices from an employment shock at the national level when compared with a region-specific employment shock. Looking at more local housing markets, Stillman and Maré (2008) found only a weak relationship – with a 1 percent increase in the population in the local market associated with 0.2-0.5 percent increase in house prices.[136]

While national analysis may overstate macroeconomic effects, local and regional analysis probably understates effects, by taking insufficient account of how local markets interact. Migration into a specific locality may have a limited impact on local prices if it increases demand for housing more broadly. For example, people living in an area with a high inflow of migrants may seek to purchase houses in other areas. If local, regional and even national house markets are close substitutes for each other, then attempting to isolate the effects of migrants to a particular local market may provide limited insight into the overall effect of migration on house prices.[137] However, as long as differences are not fully adjusted away, even if the regional aggregation is imperfect the Stillman and Maré regression should still pick up some of the relationship between immigration and house prices. A large region with higher immigration should have more sub-regions with high house price growth and high immigration.[138]

Although agreement between observable national and regional results would give greater confidence, it is possible to have large effects at the national level that are hard to identify at the regional level. On balance, the available evidence suggests that migration, in

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132 McDonald (2013), p. 13, also discusses this possibility.

133 These expectations are based on previous high prices, and letters from Quotable Value confirming their own property has a higher Government valuation – which will have been imputed on the basis of recent sales prices.

134 OECD (2013b).

135 McDonald (2013), p 13.

136 In contrast with McDonald (2013), p. 10, who found a one percent population increase comprised of foreign citizens increased house prices by more than 10 percent, Stillman and Maré (2008) found returning New Zealanders had larger impacts on house prices than foreigners. Both studies found a population increase comprised of returning New Zealanders raised house prices by 6 to 9 percent.

137 Stillman and Maré (2008), p. 5, assume that this process of equilibration is only partial within the timeframes that they observe. If this is correct, "the relationship between local population change and local house price change still provides a meaningful indication of the impact of population movements on local housing markets".

138 Auckland had most of the population growth during the study period, but its house prices did not increase by as much as would have been expected relative to other cities if most house price growth was immigration related.

conjunction with sluggish supply of new housing and associated land use restrictions, may have had a significant effect on house prices in New Zealand.[139]

4.3 The Reddell hypothesis

Two recent discussion papers by Reddell (2013a, 2013b) which raise the possibility that immigration could cause potentially large negative macroeconomic effects in New Zealand have generated considerable debate. Given the policy implications should the hypothesis be correct, this paper discusses Reddell's ideas, and responses to them, in some detail.

Reddell sets out to explain several key stylised facts about New Zealand's economic performance: that despite far-reaching economic reforms, New Zealand has had weak productivity performance, consistently high real interest rates, and a high average real exchange rate (along with a large negative Net International Investment Position (NIIP)).[140]

Reddell explores the possibility that persistent excess demand created by high levels of inward migration in an economy with quite a low national savings rate could explain why New Zealand's increasingly large productivity gap has not led to the fall in the real exchange rate that theory would predict.[141]

The Reddell story is not about immigration generally being bad or economically negative. In fact, Reddell states that "in general, my reading of the evidence is that it makes quite a small difference either way."[142] Rather, Reddell argues that in assessing the potential impact of migration, it is important to pay attention to the characteristics of individual country experiences, and the possible role of combinations of circumstances. In New Zealand, migration policy has made a large difference to population growth, throughout history and over the past 20 years.

In the late 19th century and early 20th century, immigration to New Zealand could be seen as reflecting a favourable shock to the tradable sector. Opening up new lands to production, falling transport costs, refrigerated shipping combined to lift the population capacity of New Zealand while still offering high wages and high rates of return.

By the middle of the 20th century, New Zealand was settled and producing, and technological change in the key export sectors was no longer as rapid (relative to other producers). The factor price equalisation justification for strong population growth had dissipated, yet population growth remained high. Across the OECD, there is some evidence that rapid population growth in post-war advanced countries was associated with an apparent cost to per capita growth rates.[143]

Indeed, in the period between the end of the Second World War and the late 1970s, the New Zealand debate about immigration was primarily about its macroeconomic impact. Economists such as Belshaw (1952), Gould (1982), Holmes (1966), Hawke (1985, 1981) and others warned that immigration shocks in a supply-constrained economy with low

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[139] The report of the New Zealand Productivity Commission (2012) analyses factors affecting housing affordability and supply in New Zealand.

[140] High NIIP levels are not the key focus of the Reddell hypothesis. Although a formal investigation by Makin et. al. (2009) found New Zealand's net overseas debt levels to be sustainable, that study did not assess the appropriateness of the starting position for the stock of debt, and there remains debate over the extent to which New Zealand's high NIIP is a cause for concern.

[141] For a brief and accessible explanation of the Harrod-Balassa-Samuelson theory, see Tille et. al. (2001).

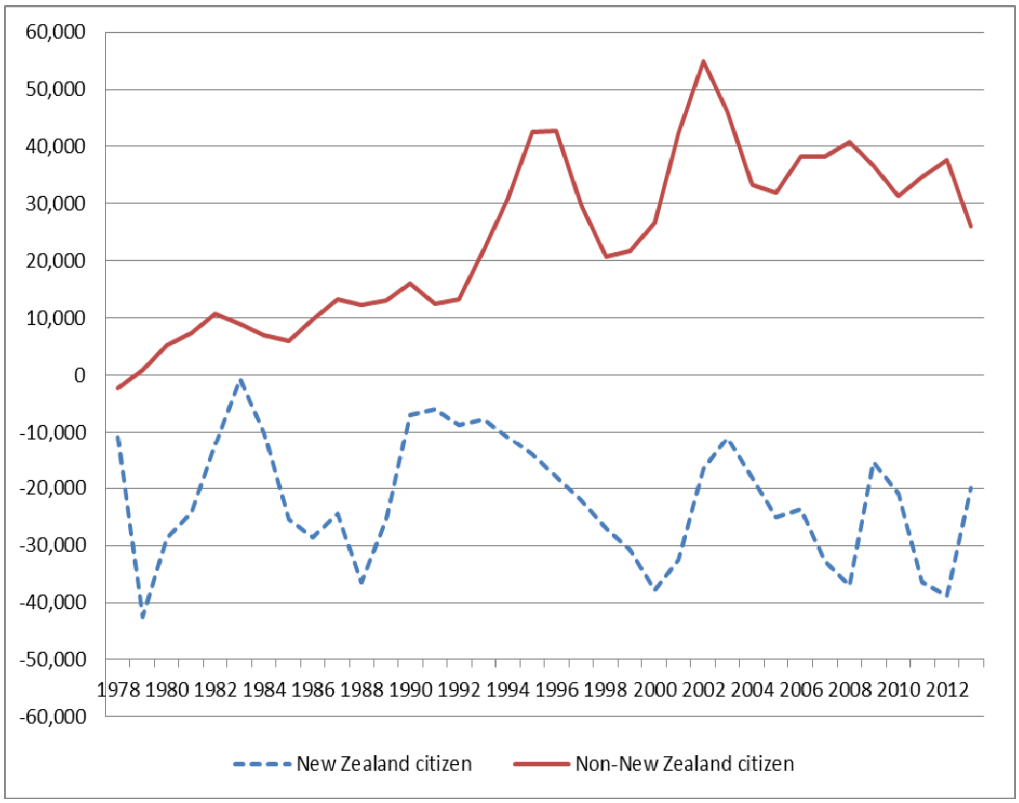
[142] Reddell (2013a), p. 36,

[143] See Dowrick and Nguyen (1989) Note that this study focuses predominantly on natural population increase. This is consistent with the more recent findings of Brunow et.al. (2014).

unemployment would generate excess demand, inflationary pressure and a deterioration in the balance of payments.[144]

In 1974, New Zealand tightened eligibility for entry, and began focusing more on the skills of migrants instead of favouring particular source countries. Soon after, in response to declining economic prospects in New Zealand, large numbers of New Zealand citizens began to leave. A marked liberalisation of arrivals policy began with the passing of the Immigration Act in 1987 and continued with the introduction of the points-based system in 1991.[145] As Figure 4 shows, a pattern of large departures of New Zealand citizens compensated for by large inflows of non-New Zealand citizens has continued, albeit with cyclical fluctuations, for many years.

Figure 4: Net Permanent and Long-term Migration per year by Citizenship



Source: Updated from Reddell (2011), p. 10, using Statistics New Zealand (Infoshare).

Reddell's hypothesis is that substantial inflows of non-New Zealand citizens (comprising around 80% of average population growth over the past two decades) have resulted in pressure on infrastructure (housing, local government services, schools and hospitals) and capital in the workplace.[146] The real investment needs of a rising population have outstripped the available (quite modest) rate of national savings. The reason for focusing on non-citizen arrivals is that these reflect a policy choice: in the absence of these inflows, New Zealand would still have experienced a rise in population from natural increase.[147]

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144 For a summary of how various economic historians have approached the issue of immigration, see Reddell (2013c). Reddell (2013b) notes that relative to New Zealand's population, immigration flows were substantially larger between the 1950s and early 1970s than they are now. However, United Nations figures show that the relationship between New Zealand's average population growth and that of the rest of the advanced world during that period is similar to that in the last 20 years or so.

145 For more detailed information on policy change throughout this period, see Trlin (1997).

146 Reddell (2013a), p. 28, suggests every new person requires an addition to the capital stock (houses, roads, hospitals, schools, electricity supply, offices, factories and shops) roughly equal to 3-4 years income to maintain the existing capital-output ratio.

147 Reddell (2013a). p. 35.

Since New Zealand's national savings rate has not been sufficient to meet the increased demand for investment at given interest rates, some of that excess demand has been met from imports of financial capital, and some crowded out through higher interest rates (or, pre-liberalisation, tighter financial sector controls). As the increased investment has not generated export revenue sufficient to cover its cost, the current account deficit has widened, contributing to a persistently large negative NIIP position.

The role of the Reserve Bank of New Zealand in this hypothesis has simply been to respond to incipient excess demand by raising short-term interest rates to keep inflation within the target range. In turn, this has led foreign investors to bid up the exchange rate until (by uncovered interest parity) the expected future depreciation of the New Zealand dollar offsets the yield gains on the higher New Zealand interest rates.[148] Because the inflows of immigrants and thus demand for infrastructure have continued for more than two decades, sustaining demand for imported capital notwithstanding higher interest rates, the Reserve Bank has been forced to keep short-term interest rates relatively high by international standards to maintain price stability.[149]

Reddell argues that the resulting higher exchange rate has meant that tradables are less price competitive than they would be otherwise. At the same time, higher real interest rates have crowded out domestic investment in general, but particularly investment in the tradables sector, since investors considering investing in that sector face both a high real exchange rate and higher real interest rates, while investors in the non-tradables sector face only the relatively high real interest rates. As there is no independent evidence that immigrants have had a transformative effect on productivity or net exports, and as new immigrants require supporting physical capital immediately while their labour input is supplied over time (and immigrant consumption must also be financed), Reddell argues that the net effect of immigration has been to divert resources from more productive uses that could have lifted labour productivity and incomes.[150] In particular, Reddell (2013a) notes that New Zealand has the second highest ratio of public investment to GDP in the OECD, but has devoted a relatively low share of GDP to business investment over recent decades.[151]

In the absence of high inflows of non-New Zealand citizens, Reddell maintains that the net effect of departures of New Zealand citizens and natural increase would have been lower, but still positive, net population growth. This would have led to reduced aggregate demand, leading to lower real interest rates and exchange rates. With a lower exchange rate, the economy would have rebalanced toward tradables and experienced more productive investment than that required to service a fast-growing population.

Critiques of the Reddell hypothesis have focused on five main angles: the possibility that supply effects could dominate demand effects; alternative explanations for high real interest rates and exchange rates; the extent to which there are other plausible explanations for the persistent productivity gap; the extent to which crowding out is likely;

[148] An alternative approach is to think of the real exchange rate as the price of non-tradables relative to tradables. The latter are largely fixed in international markets, while the former respond to domestic demand pressures.

[149] Long term interest rates are set by the market, and largely reflect expected future short-term rates. In New Zealand, long-term interest rates have typically embodied an expectation (so far not realised) that future short-term interest rates would converge to the levels of the rest of the world.

[150] There is no robust information on the amount of financial capital migrants bring with them. However, even if all migrants brought adequate financial resources into New Zealand, real resources are required to build schools, roads, houses, factories, shops and other necessary physical capital, and it is this that generates the crowding out that Reddell identifies.

[151] Reddell (2013a), p. 19. This is despite New Zealand's population growth having been materially above that of the median OECD country (ibid, p. 29).

and whether migration constitutes an unexpected demand shock or can be controlled.[152] Each of these is discussed below.

4.3.1 International evidence suggests supply effects can dominate

Longer-term historical evidence suggests that the demand effects of immigration typically dominate the supply effects in the short-term.[153] However, some recent international studies suggest that supply effects can dominate in certain circumstances. Most situations where supply effects dominate demand effects in the short term involve cases where the inflow is predominantly unskilled labour. However, this was not the case in Israel, as discussed below.

In the United Kingdom, simulations using the NIESR model found that large numbers of low-skilled, mostly temporary migrants from former communist countries in Eastern Europe following the "A8" accession in 2004 reduced domestic wage pressures.[154] It is suggested that this may have occurred through increased fear of unemployment in the local population, and reduced demand.[155] Immigrants spent a lower proportion of their income (due to remittances and spending less on durables, since 90% planned to return home within two years) and had higher savings (due to remittances and initial reduced access to state benefits). Some firms also substituted labour for capital, thereby reducing investment.[156]

In the US, using a standard small open economy model, Cortes (2006) found that rising shares of low-skilled immigrants in the US labour force reduced the wages of low-skilled workers, particularly immigrants, and thereby reduced prices of non-traded goods by 0.7 percent and immigrant-intensive services such as gardening and housekeeping by 2.1 percent.

In Israel, the unexpected immigration of over 710,000 people from the former Soviet Union between late 1989 and 1997 increased the working age population by 15 percent.[157] Cohen and Hseih (2000) found that average effective wages of native Israelis initially fell, and the return to capital increased. By 1997, the resulting investment boom had returned average wages and returns to capital to pre-immigration levels. Israel experienced a small increase in investment in housing, and a substantial increase in investment in plant and equipment (and a large worsening of the current account).[158] Despite the high education levels of many immigrants, sustained occupational downgrading minimised the impact on the wages of high-skilled Israelis.[159]

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[152] The material in this section reflects comments from a range of sources including participants in seminars, and both formal and informal reviewers of the present paper.

[153] For example, in New Zealand in the latter part of the 19th century, Julius Vogel borrowed extensively to finance the capital works needed to support large-scale inward migration. External central government debt rose from around 5 percent of GDP in the early 1860s to about 130 percent by the late 1880s. Although immigration raised per capita income, sustained current account deficits resulted from demand effects dominating supply effects in the short-medium term, and the NIIP/GDP ratio is estimated to have been around 275 percent of GDP in 1886. For further discussion, see Wilkinson (2013), pp. 32-34.

[154] Barrell et. al. (2010).

[155] Blanchflower et. al. (2007).

[156] Survey evidence shows that the fear of unemployment rose in the United Kingdom, which did not restrict A8 entry, but fell in other European countries which did restrict A8 entry. House of Lords (2008), p. 196.

[157] Reddell (2013a), p, 46, considers the similarities between Israel and New Zealand: high population growth, weak productivity growth, and a very low rate of business investment.

[158] Cohen and Hseih (2000), p. 21, note that "the investment rate in machinery and equipment (as a fraction of the stock of machinery and equipment) increased from 11 percent in 1989 to 19 percent in 1994 and slowly fell to roughly 15 percent in 1998".

[159] Ibid, p. 27.

Focusing on the large-scale migration of people to Israel during 1990, Lach (2007) demonstrated that immigration can have a moderating effect on inflation through direct product market effects. Lach showed that large inflows of consumers with higher price elasticities and lower search costs than the local population could lead to falling prices.[160] On average, after controlling for differences unlikely to be due to migration, Lach found that a one percentage point increase in the ratio of migrants to locals in an Israeli city decreased prices by half a percentage point. Since Lach looked at the resulting impact on prices in only in the year following the inflow, it is unlikely that the price reductions he found came about indirectly through increasing the supply of labour and reducing costs.

New Zealand has experienced quite different migration patterns to these countries. Migrants have typically had higher skills than locals, and inflows have been much more controlled. However, these international studies establish the possibility of significant supply side effects in a range of situations.

4.3.2 Alternative explanations for high real interest and exchange rates

While the Reddell hypothesis argues that high domestic real interest rates have reflected the pressures on domestic non-tradable resources resulting from higher domestic spending,[161] an alternative explanation is that New Zealand's high average real interest rates have simply reflected a "risk premium" that stems from exchange rate liquidity risk or from New Zealand's large negative net international investment position.

The existence of a risk premium is plausible. Sovereign credit rating agencies mark down New Zealand's high external credit rating because of its external debt. Countries with comparable external debts have worse credit ratings than New Zealand. However, this is understandable because New Zealand compensates for large debts with positive attributes such as the floating exchange rate, good fiscal policy, and good institutions.

Reddell argues that if high interest rates reflect a risk premium, long term interest rates should be high relative to short-term rates (because lenders have to be compensated for the expected future fall in the exchange rate), or the exchange rate should undershoot (because expectations of future falls lead to self-reinforcing current falls) or both. But neither have occurred in New Zealand. Moreover, if the risk premium argument dominates, the observed endurance of high short-term interest rates is surprising, since these are largely set to maintain internal price stability in the short term and should not be persistently affected by the existence of a risk premium. The desire of foreign investors to compensate themselves for perceived greater risk is not matched by any increase in domestic borrowers' ability to pay, and thus it is more likely that increased foreign investor concerns would be met by a slightly lower (than otherwise) Official Cash Rate, to leave domestic lending rates little changed, and a lower than otherwise exchange rate. Foreign investors can compensate for increased risk concerns either through a higher interest rate, or through a fall in the exchange rate now to the point where the exchange rate is expected to appreciate in future. On balance, the risk premium is likely to be a relevant but insufficient factor in explaining the high average level of real domestic interest rates relative to those elsewhere in the world. Reddell (2013a) concludes that while the

[160] These effects were likely to be significant. On search costs, Lach (2007) reported that 81 percent of migrants who arrived during 1990 were not part of the labour force, and of those that were, 53 percent were unemployed. Time use data showed that on average, migrants spent 26 minutes per day shopping for everyday items compared to 15 minutes per day spent by locals (pp. 577-8). Lach attributed the greater price sensitivity of migrants to both their lower incomes and their lack of brand and store loyalty.

[161] For more discussion on this point see Labuschagne and Vowles (2010) and Appendix 1 in Reddell (2013a).

possibility of an externally imposed risk premium seems plausible in the abstract, a closer consideration of the stylised facts in New Zealand suggests that it cannot make up the major part of the explanation for New Zealand's persistently high real interest rates.[162]

In a similar vein, high interest rates are not the only plausible explanation for a high exchange rate. For example, it has been suggested that an alternative explanation for New Zealand's high exchange rate is that it reflects the operation of "Dutch disease", whereby strong demand for commodity exports leads to currency appreciation which in turn crowds out non-commodity exports. Cassino and Oxley (2013) find that activity in resource-based industries has risen strongly in New Zealand since around 2000, while manufacturing output and exports of services has declined.[163] This is consistent with "Dutch disease" effects, but the authors note that it is difficult to draw definitive conclusions despite extensive empirical testing.[164]

4.3.3 Alternative explanations for failure of the productivity gap to close

Reddell's hypothesis is one idea that could help explain why relative to the OECD, New Zealand has above-average institutions and below-average productivity. However, there are competing explanations.

For example, at the same time that flows of non-New Zealand citizens began to increase, there were other major changes to the New Zealand economy that could be expected to impact on productivity performance.[165] Parham and Roberts (2004) reported a marked decrease in labour market costs following the introduction of the Employment Contracts Act and welfare reform.[166] Although this had a longer history, social and cultural change also led to rising female labour force participation across the OECD, including in New Zealand, during this period.[167] Parham and Roberts speculate that a large part of the reduction in real wages came about through the increased employment of lower-skilled workers who were previously unemployed.[168] Rising immigration, increasing female participation rates and labour market and welfare reform all increased the supply of labour in New Zealand in the first half of the 1990s.[169] While arguably changes such the Employment Contracts Act and welfare reform would have had a greater impact earlier on, there are no studies that accurately distinguish the relative impact of each of these potential drivers over time.

In addition, New Zealand had a long history of distortions from industry protection policies that may have had long-lasting effects on structure, human capital and expectations. Competition policy is challenging in the face of small market size and political concerns with foreign ownership (Auckland airport) and flagship firms (Air New Zealand). Regulatory policy struggles to balance action on issues of concern with flexibility to

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162 Reddell (2013a), p. 12.

163 Cassino and Oxley (2013), p. ii.

164 Ibid, p. 31.

165 De Michelis et. al. (2013), p. 11, report robust cross-country evidence of a strong negative correlation between growth in total factor productivity and growth in labour inputs over the medium to long run. They suggest that "having an abundant supply of labour could tilt business decisions toward not paying the costs of implementing innovations or reorganising production that would ultimately result in faster TFP growth." The authors mention migration as a possible source of abundant labour supply.

166 Parham and Roberts (2004), p. 5, cite the finding of Black et. al. (2003) that, relative to capital costs, New Zealand labour costs fell 22 percent relative to capital costs from 1992 to 1996.

167 OECD (2013), *StatExtracts.*

168 Although the immediate productivity impacts of increased participation were not favourable, substantial longer term benefits (including across generations) were expected from these changes.

169 However, welfare reform did not increase demand for housing or other public infrastructure.

support efficiency (for example, building industry regulation in the aftermath of leaky building problems). Financial market deregulation increased the supply of financial capital available to fund residential construction.

New Zealand is also small and isolated, which raises the cost of efficiency-enhancing trade, and contributes to small firm and market size and low intensity of competition which dulls incentives for efficiency and innovation. An unusually large primary sector and the fact that the majority of large firms are branches of multinationals located in New Zealand to service the local market may help to explain low private research and development intensity. New Zealand also has a relatively thin capital market, with a dominant role of housing in household asset portfolios.

Overall, it seems that a number of New Zealand's policies, decisions and circumstances have favoured labour-intensive activities: positive revenue surprises have at times been spent on expansions to social services and transfers (health, education, Working for Families); the private sector has focused on low productivity services (tourism; hospitality; eateries; small-scale personal services; retail) which tend to have lower productivity growth;[170] and housing booms have tended to pull resources into lower-productivity construction and transaction-based services (real estate, legal, and retail banking).

Given the many factors affecting productivity and the interactions among them, it is likely the explanation for New Zealand's productivity performance has a number of strands, including a possible role for immigration.

4.3.4 Crowding out

In assessing the likely extent of housing and infrastructure demands created by immigration crowding out more productive alternative economic activity, some discussion has focused on why the New Zealand economy didn't grow more, allowing it to both support immigrants and develop highly productive new tradable industries, or divert resources to support immigrants from elsewhere in the economy. The suggestion is that if new industries were profitable, they should have been able to compete effectively for resources.

One reason new industries may have failed to thrive is that the tradables sector is more sensitive than the non-tradables sector to interest and exchange rate rises. Tradable prices are set in international markets, not domestically. If real interest and exchange rates increase as a result of the inflationary pressures created by immigration, this effectively increases the price of New Zealand-produced tradables, reducing their competitiveness with imports or in offshore markets. This argument has limits; successful high-wage economies compensate for high costs by producing high value products. An objective of bringing in skilled, connected, motivated immigrants was to increase New Zealand's production of such products. However, if such higher value products are subject to increasing returns and need critical mass, they may never have got the chance to get off the ground because of New Zealand's persistently high exchange rate.

A high negative NIIP observed in conjunction with strong population growth, as occurs in New Zealand, is not conclusive evidence for crowding out, as it is consistent with both crowding out (as imported capital is diverted to infrastructure to support immigrants), and with immigrants being similar to the domestic population. New Zealand has a negative, procyclical NIIP: stronger GDP growth worsens the negative NIIP position. If immigrants

[170] This may be a symptom, rather than a cause, reflecting a logical response to an overvalued exchange rate.

make the economy larger without affecting the relationship between imports and exports; the effect of immigration will be a larger negative NIIP, at similar per capita levels. (Intuitively, if New Zealand loses money on every person, more people means more losses in absolute terms, while the loss per person remains roughly the same).[171]

There has also been some debate over the magnitude of impact that increasing demand for housing and infrastructure generates. It has been suggested that an alternative to increasing investment in infrastructure would have been more intensive use of existing infrastructure. Indeed, some increased intensity has occurred, although this is relatively minor compared with the extent of crowded buildings, public services and transport in some other growing economies. It has also been suggested that expansion of housing and infrastructure might have had only modest resource implications as these industries were well developed and had few entry barriers. However, the evidence suggests that significant real resources (notably labour) are used in the expansion of housing and infrastructure. It is also noted that construction requires a mix of skilled and unskilled labour, and the Quarterly Survey of Business Opinion measures indicated that even unskilled labour was in short supply during the economic upturn of the 2000s.

4.3.5 Demand shocks and control of migration flows

Population growth from any source, including natural increase, increases demand. Unanticipated increases in demand can lead to repeated surprises in interest rates. But how can net migration targets which are announced well in advance surprise markets? Reddell (2013a) argues that the market has consistently failed to recognise that the demand effects of repeated waves of migration typically dominate supply effects. As a consequence, while the market has persistently priced and expected a convergence of New Zealand and world interest rates, the market has persistently been wrong.[172]

For policymakers seeking to respond to demand shocks, a key question is whether or not additional demand can be limited through, for example, lowering the formal immigration target. On this point, Poot (2005) notes that with brief exceptions, such as in the early 2000s, a large share of New Zealand's population growth is due to natural increase, and fluctuations in net migration are predominantly driven by the international movements of New Zealanders, not immigrants.[173]

Reddell distinguishes between citizens and non-citizens in his hypothesis, because policymakers have no control over inflows and outflows of New Zealand citizens. In the two-decade period he examines, net inflows of non-New Zealand citizens accounted for approximately 80 percent of population growth, on average.

In contrast, net migration accounts for a much smaller proportion of population growth.[174] Some commentators have argued that limiting the inward migration of non-New Zealand

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[171] Even in the absence of crowding out, demand effects could exceed supply effects if the full increased investment needs of migrants were met from imports of foreign capital. But if supply effects dominated demand effects, New Zealand should expect to see low real interest rates, and an improving NIIP ratio, which has not occurred.

[172] Reddell (2013a), p. 11, notes that domestic market participants, in addition to respected international organisations (such as the OECD and the IMF), persistently expected that New Zealand's "unexpectedly high" exchange rate should fall at some stage in the future. This has yet to occur.

[173] Poot (2005), p. 33.

[174] Using Statistics New Zealand's standard series of arrivals, departures and natural increase, net international migration has contributed around a third of total de facto population growth between 1 April 1991 and 31 March 2013. Using the alternative estimated resident population concept, Jackson (2014) finds net international migration contributed 42 percent of total population growth over the same period.

citizens would have little reliable effect on overall net migration.[175] This point certainly appears to have considerable merit, if it were proposed that migration approvals should be managed in a short-term countercyclical manner. However, Reddell's primary focus is on longer-term average outcomes.[176]

Reddell notes that while the substantial increase in non-New Zealand arrivals in the 1990s and 2000s (relative to the levels from 1975 to 1990) was accompanied by a commensurate increase in average net migration (from significant negative average outflows in the earlier period, to significant positive inflows on average since the early 1990s), the behaviour of New Zealand citizen migration has not obviously changed between the two periods. Thus, Reddell argues that significantly reducing the target inflow of non-New Zealand citizens would not make any material difference to the cyclical fluctuation in net permanent and long-term migration, but could reasonably be expected to significantly reduce the average net inflow over the subsequent 5-10 years. Whether or not this would actually happen depends on how much the future will resemble the past, and is ultimately an empirical question.

4.3.6 Assessment of the Reddell Hypothesis

During the period Reddell considers, immigration provided both a potential brake on per capita GDP, by diverting resources to support immigrants, and a potential support, through the attributes of the migrants and benefits of a larger population. However, the net effect is hard to determine.

Moreover, there are a number of other possible explanations for New Zealand's poor productivity performance over this period, and it is difficult to distinguish the relative contribution that each may have made.

Reactions to the Reddell hypothesis have been mixed. Some commentators find it plausible that immigration, in conjunction with a low saving rate, and the flow-on effects for interest rates and the exchange rate, provides some explanation for the limited development of highly productive new tradables industries in New Zealand over the past two decades. Given that, at least to date, the estimated benefits of present levels of migration in New Zealand are widely agreed to be modest (see Section 3.8), these commentators argue that there would also be modest potential downside in scaling back immigration targets – for example, by 15,000 per year for five years. This would provide an opportunity to see if lower real interest rates and a lower real exchange rate eventuate (although if this did occur, causality would be difficult to establish).[177]

Other commentators contend that much more needs to be done to test the Reddell hypothesis empirically before any consideration is given to policy change. Some commentators find alternative explanations for the phenomena Reddell describes (such as those discussed in Sections 4.3.1-4.3.4 above) more plausible. These commentators argue that even if the hypothesis is correct about the impact of immigration on tradable activities via higher interest and exchange rates, it is impractical to materially limit

[175] Inward migration of non-New Zealanders tends to be highest in periods when the domestic labour market is strongest, and when the net outflow of New Zealanders is relatively weak (net flows of New Zealanders have long been recognised as influenced largely by the relative states of the Australian and New Zealand labour markets).

[176] Irrespective of immigration targets, short-term fluctuations in migration are likely so long as New Zealand citizens have reasonably open access to Australia. Note that although Australians also have free access to New Zealand, in practice the numbers of Australians who move to New Zealand is very low and very stable, reflecting income differentials between the two countries.

[177] While the combination of an emerging upswing in economic activity and the Christchurch rebuild may make a reduced immigration target harder to sell politically, a lower target could still allow for additional construction-sector workers.

immigration flows given the numerical dominance of movements of New Zealand citizens and the open border with Australia. There are also concerns about the possibility of causing offence to migrant communities (which international experience suggests can be detrimental to future migrant flows, particularly those of the most desirable migrants, for whom there is increasing competition internationally).[178]

Given the extent of debate concerning its plausibility, and the potential policy implications, further analysis of the Reddell hypothesis should be a priority for future research.[179]

4.4 The brain drain

A "brain drain" from emigration is a potential source of large negative effects from losses of high-value human capital, in addition to negative effects on scale. As noted in section 2, New Zealand has large departures of New Zealand citizens, substantially but not fully offsetting immigration. Glass and Choy (2001) characterised New Zealand as having a "same drain" with Australia and a "brain exchange" with the rest of the world.

More recently, Manning and SriRamaratnam (2010) reported that departures of highly-skilled New Zealand citizens have been increasing,[180] and that those who leave New Zealand tend to have higher skills than those who stay.[181] The net effects of a "same drain" and "brain exchange" depend on the benefits from increased international connections and diversity, and the costs from imperfect substitutability and lags in utilising the skills of the immigrants who replace emigrants.[182] Other costs and benefits such as housing market effects, education costs and remittances are, in New Zealand's situation, potentially offsetting. To date the "connection" benefits from emigration appear as muted as the "connection" benefits from immigration. Relatively few returning Kiwis use their international experience and connections to develop successful businesses onshore.[183] Overall, New Zealand probably experiences net costs from adjustment lags for immigrants, with as yet unrealised potential for gains from connections for emigrants.

New Zealand policymakers cannot affect important drivers of the brain exchange such as geography, or high level policy in other countries. However, having the best possible policies, both general (low inflation, prudent fiscal policy, sound regulation) and those

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[178] Nicola Dandridge, Chief Executive of Universities UK, the umbrella organisation for Vice-Chancellors, has made this point repeatedly in response to the recent changes in United Kingdom immigration policy which have greatly restricted non-EU migrant flows. See for example Dandridge (2010).

[179] A number of possible approaches have been proposed. Geoff Mason suggests multivariate analysis could be used to test the determinants of interest rates and exchange rates in New Zealand and establish the relative importance of immigration. Jacques Poot suggests testing for crowding out using a macroeconomic panel data analysis of OECD countries to test whether higher net immigration raises real interest rates and lowers the real level of gross fixed capital formation, except for housing. Poot would also be interested in determining whether volatility in population growth rates (say, the variance in annual rates over a decade) affects real interest rates in a multi-decades panel analysis. Michael Reddell recommends using population growth rather than net or gross immigration as an explanatory variable (while acknowledging that immigration and natural increase may have different effects, for example through differences in the timing of supply and demand pressures). Reddell also suggests more could also be done to test the corollaries of the hypothesis (what should be found in the data if the story were true) using cross-country data from advanced countries over as many decades as possible. For example, it could be worth examining how, if at all, real exchange rate deviations from a Balassa-Samuelson model are related to factors such as national savings rates and population growth rates; or following Andrew Coleman's suggestion, one could look at the real interest rates in cities with fast-growing populations. A more careful historical assessment of New Zealand's postwar migration experience would also be valuable.

[180] Manning and SriRamaratnam (2010), p. 6.

[181] Ibid, p. 8.

[182] The benefits and costs of immigrant diversity and adjustment are discussed in Section 4.2.

[183] Increasing these numbers is an important focus of the Kiwi Expatriate Association (Kea). For anecdotal examples, see Philp (2013) on Deep Biotech, Moodie (2011) on 1Above, and Walker (2010) on Everyday Needs.

specifically affecting immigration does affect the relative attractiveness of New Zealand to the most productive migrants.

4.5 Large negative effects: conclusion

Overall, the evidence points to small domestic labour market effects (which may be positive or negative), moderate negative effects on the housing market (which also reflect the operation of local government and other regulations that inhibit a greater housing supply response to increased demand), and modest net costs from replacing skilled emigrants with skilled immigrants. Meeting the infrastructure needs of migrants may also divert resources from more productive activities, imposing potentially significant macroeconomic costs via higher interest and exchange rates, and lower productivity growth. This latter point is difficult to establish empirically, and warrants more in-depth formal research.

5 What might a least regrets policy be?

The most robust empirical evidence suggests that the net effects of New Zealand's current migration policy settings are small. However, it is possible that much larger positive effects could emerge in the future (with a lag) through the interaction of increased scale, agglomeration and diversity. Alternatively, it is possible – although also difficult to establish empirically – that New Zealand's migration policy settings have already had large negative effects on New Zealand's macroeconomic performance, and that these negative effects could persist into the future. What might a least regrets policy look like in this situation?[184]

Looking narrowly at immigration, New Zealand's current position suggests three possible ways forward.

Option 1: **Reduce** the rate of immigration, although not so much as to risk potentially costly population decline, on the grounds that the Reddell hypothesis is plausible, and therefore lower immigration could facilitate lower interest rates, a lower exchange rate, and more balanced growth going forward.

Option 2: **Maintain** current moderately high rates of immigration, on the grounds that some agglomeration and differentiation benefits may accrue, and that stability is an important attribute of policy. In this case, improvements in the economy's capacity to adjust to population increase are needed to maximise the net benefits of migration flows.

Option 3: **Increase** immigration, on the grounds that achieving sufficient numbers of people to realise agglomeration benefits is crucial to supporting performance in a modern economy, especially one as isolated as New Zealand. In addition to improving adjustment to current flows, policy would have to recognise and manage the pressures that would result from an increase.

"Least regrets" is an exercise to weigh valuations of uncertain good and bad outcomes, when the possibilities are often linked. In the present case, the largest possible benefit is from an increase in immigration, which is also associated with the largest possible cost.

One insight from considering a "least regrets" approach is the importance of improving the economy's ability to respond to population increase.[185] Regardless of formal immigration policy, improved relative economic performance from any source will increase New Zealand's population through reducing emigration, and increasing the numbers of returning New Zealanders, and Australians entering via the open border with Australia. If population increases quickly choke off performance through some combination of housing market and interest rate and exchange rate effects, a "speed limit" is effectively imposed on the economy. A key question is: what are the realistic limits of a modern economy's ability to respond to population increase, assuming good institutions? Current New Zealand institutions appear to handle labour market impacts well, but struggle with capital market effects, including housing.

Another insight is the need for better understanding of the implications of an "increasing" strategy given its possibly large but very uncertain benefits via scale and agglomeration, and its associated costs. It is not yet known whether an acceleration of the growth of cities

[184] Alternative decision-theory frameworks could also be considered, since focusing on least regrets under conditions of great uncertainty can skew the decision towards the status quo.

[185] This is not a simple task. One possibility would be to draw on the New Zealand Productivity Commission's (2012) recommendations on increasing the supply of housing land and lowering building costs.

through external migration in addition to internal migration would be likely to raise living standards in New Zealand. Some of the potential costs of increased immigration, such as those associated with congestion, are smaller and more certain, but others, if Reddell is correct, could be large. Two areas for further research stand out:

- The need to establish the credibility of potential scale and agglomeration benefits from an increase in immigration in New Zealand; and

- The need to better understand the size of population increase that might be required, and any associated preconditions, to achieve scale and agglomeration benefits.

More can also be done to assess the empirical validity of the Reddell hypothesis, although it may be difficult to definitively confirm or refute. While this would be contentious, least regrets suggests that at some point, there may be value in risking the seemingly small benefits from existing immigration targets in order to determine whether larger benefits may be obtained via reduced interest and exchange rates following the adoption of a lower immigration target. Arguably, least regrets may also justify accepting a lower burden of proof for proceeding with Option 1 relative to Option 2 or Option 3. This is because the costs of errors associated with "maintaining", "increasing" and "decreasing" strategies are not symmetric: "correcting" a population that is too large is significantly more difficult than "correcting" a population that is too small.

Overall, a key least regrets policy implication is the need to improve the economy's responsiveness to population growth (as unless policymakers anticipate indefinite weak relative performance this will be necessary anyway). If responsiveness to population growth can be improved, then maintaining existing targets (Option 2) may make the most sense. If this cannot be achieved, then migration policy might be a demand management lever to consider. In this instance, depending on the results of further empirical testing of the Reddell hypothesis, Option 1 should be given serious consideration. Option 3 should only be considered if further research provides sufficient confidence that benefits from large increases in population would more than offset the high adjustment costs.

6 Migration and living standards

This paper is about the macroeconomic impacts of migration. Macroeconomic impacts are an important sub-set of the range of factors that should be considered within a living standards framework, which would take into account a wider range of economic effects as well as social and environmental impacts.[186]

Important factors not discussed in detail in this paper include microeconomic, fiscal, political economy, regulatory, and intergenerational effects; settlement and integration (how immigrants fit into New Zealand society); culture and identity (how New Zealand society is affected by the presence of immigrants); environmental costs and benefits (such as those arising from the need for a new hydro dam or increased urban concentration); tensions between multiculturalism and biculturalism as the diversity of non-Māori society increases; congestion (on roads and public transport, and in services such as healthcare and education) and the possibility that high immigration could breach the Treaty of Waitangi.[187]

Overall migration policy needs to consider this full range of costs and benefits, interactions and offsets, and include preconditions in other policy areas that may need to be met if policy is to achieve its objectives.

[186] The Treasury's Living Standards Framework is described in detail in Gleisner et. al. (2011). The Framework derives flows of material and non-material goods and services which enhance living standards from stocks of physical, financial, human, social, and natural capital. Interrelationships among stocks and flows, current and future needs and distributional issues are used to highlight tradeoffs and generate debate about priorities.

[187] Spoonley and Bedford (2012) report that Māori are less happy about increasing immigration in New Zealand than other ethnic groups. They attribute this result to a view that the Treaty of Waitangi established a relationship between Māori and the British Crown, and that by implication, Māori did not "give permission" for migrants from other countries to enter New Zealand. Survey evidence shows Māori see increasing and more diverse migration flows and the emergence of multiculturalism as a threat to the primacy of biculturalism and a potential source of "cultural dilution" in New Zealand. In addition, because of their position in the labour market, Māori are likely to be disproportionately impacted by the effects of greater competition.

7 Conclusion

The macroeconomic effects of immigration in New Zealand are uncertain. There are plausible arguments but as yet no evidence for large positive or negative impacts of immigration. Some economists and geographers argue in favour of high rates of immigration on the grounds that migrants can boost productivity through scale, agglomeration and innovation. In contrast, some macroeconomists argue that in a low savings economy, the resource pressures associated with high migration put persistent upward pressure on real interest and exchange rates, leading to a re-allocation of resources from more productive tradable sectors to less productive infrastructure, and reducing productivity growth.

The lack of evidence is not symmetric. New Zealand has had high levels of inward migration for 20 years now. Arguments for large positive effects invoke the possibility that there are long lags, or that more positive effects will occur once some higher population threshold is reached. In this case there is presently no evidence, but a possibility that positive effects will eventually be reaped. In contrast, stylised facts such as real interest rates that are high by international standards and a real exchange rate which has not adjusted to the sustained deterioration in New Zealand's relative productivity performance are real and demonstrable, but cannot be definitively linked to migration policy.

The complexity of causality means it may not be possible to settle these arguments empirically in New Zealand. The most robust available evidence points to migration having small effects, some of which are positive (such as improving fiscal balance) and some negative (such as labour market competition for the higher skilled). The large productivity benefits hoped for when the scale and skills focus of migration were increased in the early 1990s have not been realised. Why not?

New Zealand's immigration policy and operations are well-regarded among OECD countries. Most recent debate has centred around second-order issues, including the merits of an even greater focus on skills; whether favouring immigrants who assimilate easily compromises potential gains from difference; and the value of settlement assistance.

Immigrants have been skilled and numerous, and have adapted well to New Zealand, but scale and agglomeration effects have yet to be realised. The failure to develop a "high-skill" economy is highlighted by emigration of skilled residents. The new consensus is that initial expectations were too high and factors other than migration are more important in driving productivity and living standards.

It may be that some benefits of migration, such as those resulting from increased international connectedness, could take longer to accrue in New Zealand than previously anticipated. Indeed, it cannot be ruled out that immigration could still drive growth and productivity in the longer term, through channels such as education and training decisions, skill and diversity spillovers, trade, entrepreneurship, and clustering. Although scale, agglomeration and diversity effects could be substantial, the size of population required to achieve these effects is unknown. The workability of a scale, agglomeration and diversity strategy in New Zealand, including whether sufficient population growth is achievable, is also unknown.

It is also possible, although yet to be confirmed empirically, that immigration has led to adverse macroeconomic effects, skewing growth away from tradables sectors, without a sufficient offsetting productivity dividend. Moreover, although the evidence on these points

is not firm, on balance it seems likely that immigration over the last 20 years has exceeded the economy's adjustment capacity in some areas, for example, by exacerbating housing market pressures. A first-best solution would address the underlying causes of low savings rates or slow responsiveness to increased housing demand, but these have so far proved to be rather intractable policy challenges in New Zealand.

From the current position, a least regrets approach would seek to improve the economy's capacity to adjust to population increases; set immigration targets with this capacity in mind (which might involve second-best reductions in immigration levels); and undertake further work to develop a better understanding of the likely effects of substantially increasing or decreasing immigration levels. Impacts from all levels of immigration need to take into account the range of benefits and costs illuminated by the Treasury's Living Standards framework.

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