

Could do better

Migration and New Zealand's frontier firms

NZIER report to the New Zealand Productivity Commission

September 2020

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Key points

Migration policy can probably assist some New Zealand firms to reach the **global** productivity frontier.

But the number of globally significant, New Zealand-based firms that are reliant on migrants for their success is always going to be small.

Conceptually, migration policy should allow potentially globally significant firms reasonably free rein to employ foreigners during all stages of their development, from start-up to maturity. Indeed, this sort of policy has been part of the New Zealand approach to migration since at least 1987.

In practice, identifying such firms in advance is very difficult. Despite this, we consider that current policy for inviting skilled migrants to New Zealand is close to international best practice already.

Migration policies that allow **all** New Zealand firms access to low-cost foreign labour are likely to inhibit many of those firms from moving closer to the **domestic** productivity frontier. These policies reinforce a low-skills, low-wage, low-capital status quo. Worse, they shield important parts of the wider government sector – education and training, but also the social policy, health and community sectors – from the consequences of not addressing long-standing issues of disadvantage and under-delivery.

This sort of policy has dominated modern migration settings in New Zealand.

Migration policy needs to be more targeted, with far less emphasis on allowing large numbers of entrants who aren't directly connected to actual or potential frontier firms.

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1 Introduction

On the first of July this year, the *Financial Times* reported that UK firms were accelerating work on robotic harvesters to pick fruit because of Covid-19 restrictions on labour movements into the UK.¹

Two weeks later, Radio New Zealand's *Morning Report* ran a story on how the New Zealand apple industry was seeking an extension of short-term visas to allow stranded foreigners to pick the New Zealand crop.²

Two stories motivate this report. One is about capital deepening and innovation, the other is of using cheap imported labour.

The goal of this study is to better understand how changes in migration policy could influence firms in New Zealand to make greater use of technology and innovation relative to imported labour.

Here, we look specifically at migration and frontier firms: firms that are at the top of the game when it comes to converting resources into products. We explore both how migration can help frontier firms stay at the top of the class and how immigration settings more generally might have been holding firms back.

As well as being relevant to the Productivity Commission's current inquiry into frontier firms, this report is also timely due to Covid-19. New Zealand has an opportunity to re-think migration policy, as we consider under what conditions we might eventually re-open the border.³

1.1 What's in scope?

Our brief from the Productivity Commission was to present our thoughts on the impact of migration on New Zealand's frontier firms, drawing on our earlier work on migration.⁴ A key issue of interest to the Commission is the role that any changes in migration policy and outcomes could play in encouraging innovation and technology adoption among frontier and other firms in New Zealand.

There are large and detailed literatures on frontier firms and on migration as separate issues. We do not attempt a survey of these extensive fields of scholarship.⁵

Our focus is on the effects, both positive and negative, of existing migration policy and practice in New Zealand on the development of firms that make a disproportionate

¹ Hodge (2020).

² Temporary Workers Want Holiday Visas Extended through Apple Harvest (2020).

³ Wilson and Fry (2020).

⁴ Fry (2014), Fry and Glass (2016), Fry and Wilson (2017), Fry and Wilson (2018), Wilson and Fry (2020).

⁵ On frontier firms, see the extensive references in the Productivity Commission's Issues Paper for this inquiry, Productivity Commission (2020a). On migration, see recent surveys by Edo (2019) and Borjas (2018). There are a number of book-length surveys, including Chiswick and Miller (2014a), Chiswick and Miller (2014b) and Inglis et al. (2020).



contribution to New Zealand's economic wellbeing. We have not undertaken any original empirical analysis, drawing rather on what studies exist on this topic.

We present for discussion and debate some ideas on where policy might lead, especially within the context of the border closures due to Covid-19.

The focus in this paper is on the recent past – since the policy reforms of the late 1980s and early 1990s – and the immediate future. We examine how migration might have contributed to the current state of poor national productivity performance and how changes to migration policy might contribute to moving more New Zealand firms closer to both the domestic and international productivity frontiers, and ultimately, increased productivity overall.

1.2 The limits of migration policy

Migration has frequently been touted as holding out the prospect of providing substantial economic benefits. In reality, migration typically has at most small positive effects on a local economy, many of which are captured by migrants and employers.⁶

New Zealand has a history of introducing immigration policies to meet multiple objectives, which can also reduce the economic benefits from any particular policy. Over time, policies tend to depart from their original objectives, expand in scope, and be reset.⁷

Governments have only a limited capacity to predict the future, especially when it comes to forecasting cross-border people flows. Migration policies can both result in far more migrants than expected (New Zealand's general experience in the last decade) or in far fewer (the outcome of attempts by New Zealand since 1987 to attract entrepreneurs). When we open our door and invite people to enter, we have very limited control over whether they want to come here: migration is voluntary, and while we can provide information and advice about what life is like in New Zealand, the final decision to come is made by migrants.⁸

There are strong information asymmetries between potential migrants and immigration administrators across all migration classes. Operating an immigration system in practice requires criteria that can be independently verified.⁹ When the criteria involve 'soft skills' like entrepreneurial ability, the operational difficulties can be acute.

1.3 Flying through clouds

Statistics NZ and the Ministry of Business Innovation and Employment (MBIE) keep extensive databases on migrant numbers, meaning that we have good evidence on the stocks and flows of people moving across the border. There is also a sizeable literature specifically on migration in New Zealand.¹⁰

⁶ Borjas (2018).

⁷ Several migration programmes, like the Working Holiday and Recognised Seasonal Employer schemes, were originally designed to be small-scale, targeted policies. But over time, the numbers of visas granted under these schemes have increased dramatically. The 'skilled migrant' category is another example, where the definition of 'skilled', as measured by wage thresholds fell over time, until recent policy changes led to increases in wage thresholds.

⁸ Yeabsley (1997) notes that a modest advertising campaign in the United Kingdom generated a significant number of applications from people wanting to migrate to New Zealand.

⁹ Yeabsley (1997).

¹⁰ See Trlin et al. (2010); Spoonley and Bedford (2012) and Fry (2014) for New Zealand surveys.

Drawing conclusions about the effects of individual migration policies rests on an unknown counterfactual: what would have happened without these policies.¹¹ There have been few New Zealand studies that have tested the effects of migration on productivity against a clear counterfactual.¹² International studies that have attempted to specify counterfactuals have concluded that migration tends to have a limited effect on productivity.¹³

1.4 Productivity and wellbeing

Paul Krugman has said that productivity isn't everything, but, in the long run, it is almost everything.¹⁴

Productivity is about how inputs are converted into outputs. The focus can be at the level of a single firm, an industry or the whole economy.

Whatever the level of interest, productivity studies examine either how a single input is used to produce outputs (for example, labour productivity is measured in output per worker, or per hour worked) or how inputs combine (known as 'multi-factor productivity').

Reflecting the work of the Productivity Commission, we have mainly focused on the effects of migration on production in firms, but there are important wider wellbeing factors that should also be considered in setting migration policy.¹⁵ These factors are perfectly summarised in Swiss author Max Frisch's classic line about migrants: "We wanted workers, but we got people instead".¹⁶

1.5 Migration and productivity

At the start of our period of interest, the official government position was that immigration was an essential component of New Zealand's development.¹⁷ This was despite a reasonably strong view among economists in New Zealand since the Second World War that immigration did little to boost the economy.¹⁸ The official view, in part, reflected a fallacy of composition – the idea that if individual businesses benefited from hiring immigrants, the effect of many businesses hiring migrants must be positive at the national level.¹⁹

Fifteen years ago, empirical research began to show that the economic benefits of migration were modest and that there could be significant economic and wellbeing costs.²⁰

¹¹ There are some studies which draw on migration lotteries to provide clear counterfactuals. See for example Gibson et al. (2009), which compares wellbeing across households that were successful and unsuccessful in the Pacific Access Category lottery.

¹² Nana et al. (2009) used a computable general equilibrium model of New Zealand to test the effects of immigration on a range of economic variables. The set-up of the model they used for their study implied an increase in productivity, as opposed to testing for it. This study was part of a five-year research program undertaken by the then Department of Labour on the economic effects of immigration in New Zealand. The results are summarised in Hodgson and Poot (2010).

¹³ Edo (2019).

¹⁴ Krugman (1994).

¹⁵ Fry and Wilson (2018).

¹⁶ Quoted in Borjas (2018).

¹⁷ Burke (1986). Bedford and Lidgard (1998) note that migration policy was also closely linked to foreign policy.

¹⁸ Brooke et al. (2017). See for example Monetary and Economic Council (1966). One interesting feature of these earlier studies is that they were undertaken within the context of a fixed exchange rate policy, where any policy settings that upset the external balance were generally viewed as undesirable.

¹⁹ Finocchiaro (2013) reported that Paul Samuelson defined the fallacy of composition as "a fallacy in which what is true of a part is, on that account alone, alleged to be also true on the whole". We thank Gary Hawke for this insight.

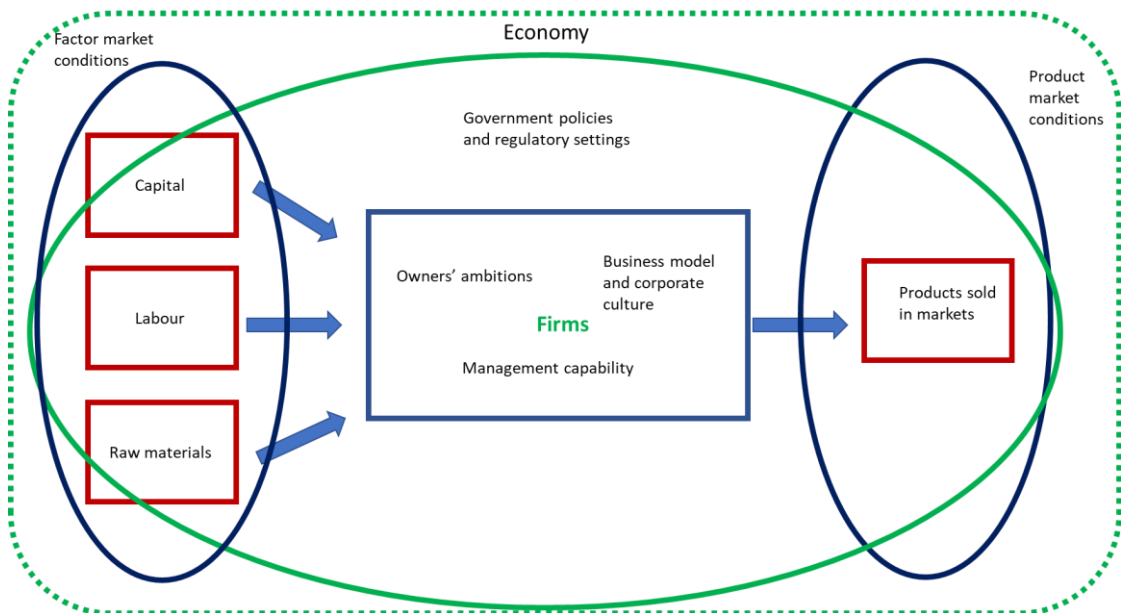
²⁰ Australian Productivity Commission (2006).

It is now more widely accepted in the literature that imported labour can either improve or damage productivity and wellbeing, depending on the exact nature of both migrants and the contexts they encounter.²¹

2 Frontier firms and the world they inhabit

Productivity is the relationship between inputs and outputs, while the determinants of those relationships go much wider and happen both within firms and in the external environment in which they operate. Figure 1 provides a stylised view of the economic context within which firms operate.

Figure 1 The world in which firms operate



Source: NZIER

The ability of firms to control the things that impact productivity may vary by type of firm, size, and the markets in which they operate.

All firms are part of the overall economy and are therefore subject to the same macroeconomic trends (trading partner economic growth, interest rates, inflation levels, the exchange rate, and so on). Few, if any, firms have any ability to influence these factors.

Government policies and regulatory settings are also pervasive. Some types of regulation are generic and apply across large parts of the economy (e.g. the Commerce Act, the Employment Relations Act, the Resource Management Act), while others can be quite industry-specific (banking regulation, food safety).

There has been considerable discussion in materials prepared by the Productivity Commission and others about the apparent disconnect between the quality of New

²¹ Fry and Wilson (2018). Chapter 7 of Spoonley and Bedford (2012) provides a summary of the New Zealand empirical evidence.

Zealand's policy settings and its productivity performance.²² One group of researchers have gone so far as to say that:

*Given its generally favourable policy settings, GDP per capita in New Zealand should be 20% above OECD average, rather than 20% or so below.*²³

Of all the services provided by government, perhaps the most important in terms of its impact on firms is in the education sector, where the Crown is the major provider of primary and secondary education and is the principal funder and regulator of the tertiary education system. The education system and how it develops New Zealanders is a significant input into the skills that people bring to employment. The health and social welfare sectors are also important contributors to the quality of human capital of New Zealand, as is our migration system.

The government provides a range of services that have direct and indirect effects on firms.

In New Zealand, most of the inputs that firms need to undertake their operations are purchased in markets, ranging from the labour market (people), financial service providers (capital) and a vast array of markets for raw materials. Again, regulation of these markets is widespread and diverse.

Firms then sell their products into local and international markets, which are equally varied in terms of regulation, size and scope.

What happens **within** firms is critical to productivity. Key drivers are the ambitions of owners, management capability, and business models. These factors include issues like tolerance to risk (which can be very important when discussing a firm's appetite to undertake costly research and development in-house as opposed to adopting the innovations of others), and the networks of managers and owners, which are often a source of ideas.

Competition **between** firms is also relevant – the workings of the competitive market constantly change conditions.²⁴

How developments in external factors react with the internal drivers of firm performance can be very important. To give a specific example, if firms have highly capable managers and flexible business models, then a major reduction in migration may not have a significant impact on a firm, even if it traditionally employs migrants. This is because managers can adapt to conditions and change the way the firm operates to account for changes in the supply of labour. Inflexible firms, with owners and managers resistant to change, will be more heavily impacted by any change in external influences. But under

²² Barker (2017) and Conway (2016).

²³ de Serres (2014).

²⁴ While competition in the New Zealand economy is clearly a key driver of the productivity of New Zealand firms, New Zealand firms operating internationally will also be competing with firms in foreign markets and any resulting productivity gains may spill over back to the New Zealand economy.



conditions of uncertainty, even highly capable managers will likely need time and resources to engineer the required changes in business models.

2.1 Frontier firms

For the purpose of this report, we think of frontier firms as those that are leaders in their field. Like the Productivity Commission, we distinguish between firms that are truly world-class, and top tier domestic firms.

In its list of the top 100 New Zealand firms prepared for the Productivity Commission, Deloitte Access Economics does not distinguish between overseas-owned firms and those owned by New Zealanders, including such firms as Emirates Airlines, BP and Ford in its list.²⁵ From the point of view of productivity measured in terms of GDP per worker or per hour worked, this is entirely appropriate: GDP measures the value of production undertaken in New Zealand, regardless of the place of residence of the owners of the firm.²⁶

In terms of migration, including foreign-owned firms is also appropriate, as these firms are likely to want to employ staff from their global operations in New Zealand. This is one way in which new technologies and practices can be brought into New Zealand. As these practices disperse, they will help move New Zealand firms closer to the domestic and global productivity frontiers.

Frontier firms operate within the same economy as other firms, but they are better at what they do.

Frontier firms operate within the same economy, with the same policy settings, buying from the same input markets and selling into the same product markets as other firms in the same industry or sector.

But frontier firms can also be leaders in terms of the inputs they use and the outputs they produce. In their paper for the Productivity Commission's Inquiry, Kieran Brown and David Teece say the exercise of "dynamic capabilities" leads to superior firm performance.²⁷

Frontier firms will often be entrepreneurial. One useful definition of an entrepreneur is someone who can see profitable opportunities where others don't.²⁸ This can make spotting an entrepreneur difficult: they can initially look a lot like people with bad ideas.

²⁵ Deloitte Access Economics (2020).

²⁶ The inclusion of production by firms owned by non-residents is one of the many issues with using GDP as a measure of wellbeing. Statistics NZ produces another statistic -- gross national disposable income (GNDI) -- which measures the income of residents. GDP and GNDI in New Zealand are closely correlated.

²⁷ Brown and Teece (2020). Teece et al. (1997) say that dynamic capability is "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". Dynamic capabilities can be contrasted to operational capabilities, which pertain to the current operations of an organisation.

²⁸ Harper (1994).

2.2 How migration can encourage innovation and technology adoption

Creativity and innovation have always been central to economic growth, allowing more or better things to be made more efficiently.²⁹

Innovation is widely recognised to be the source of much, if not most, economic growth.

Innovation is not just something that happens in research and development departments of large firms. Innovation is ubiquitous. Innovation does not always mean discovering something new. It can be about applying an existing process or technique in a firm, resulting in iterative improvements.³⁰

There are three main direct routes by which migration can influence the adoption of technology and innovation within firms, be they those already at the global or local frontier, or those seeking to move to a more productive mode of operations. These are:

- Buying ready-made skills and knowledge
- Bringing in innovators
- Using the New Zealand diaspora.

There is also a fourth, indirect, route: through reducing flows of low-cost imported labour.

2.2.1 Buying ready-made skills and knowledge

Migration can influence the adoption of technology and innovation through its effects on the skills, knowledge and attitudes of the local labour force. Migrants come with a set of skills, knowledge and experiences acquired in (and paid for by) their home country.

Alberto Alesina and his colleagues explain that:

People born in different places are likely to have different productive skills because they have been exposed to different experiences, different school systems, and different 'cultures' and thus have developed different perspectives that allow them to interpret and solve problems differently.³¹

Having a general pool of migrants can, therefore, increase the choices available to frontier firms seeking to employ more workers.³²

Both the skills migrants themselves bring, and how these complement the skills of locals, are important. Where migrants have skills that are the same as local workers, they tend to compete for the same jobs and bid wages down, while if the skills of locals and migrants are

²⁹ Aghion and Howitt (1992).

³⁰ Gill (2015).

³¹ Alesina et al. (2016), p. 4.

³² Of course, all firms potentially have access to migrant workers, either by employing those already in New Zealand or by being a sponsor of individual migrants under several different immigration programmes undertaken by Immigration New Zealand. Burke (1986) notes that 'gap filling', where migration is used as a source of supply of workers not available in New Zealand has long been a part of New Zealand's short-term and permanent migration policy.



complementary, the opposite can happen.³³ In some cases, recruiting highly educated foreign workers can weaken the incentives for locally trained workers to invest in further specialist qualifications.³⁴

Migrants without local language skills and an understanding of the norms of the receiving society ('how we do things around here') can struggle to reach the same level of incomes as domestic workers.³⁵ Assuming wages reflect skills, these migrants may not lift productivity by much in the short- to medium-term.

2.2.2 Foreign innovators

One thing that distinguishes frontier firms from others is having ambitious owners, high-quality managers and a flexible business model. When it comes to issues like adopting overseas practices and introducing innovation to New Zealand, migrants could be a more direct conduit for increased productivity than locals with limited international networks. This is the case for migrants as firm owners and as employees.

Much depends, however, on the specific circumstances of individual firms and immigrants. Immigrants are a heterogeneous group, and some will have more skills, knowledge, experience and, importantly, contacts than others.

Because of its small size, New Zealand is likely to be an adopter of technology, especially 'general purpose technologies' that are not tied to a specific industry (such as adding e-commerce as a channel for retail offerings).³⁶ Overseas-owned firms employing staff from their global operations is one way in which these sorts of technologies can be introduced into New Zealand. Migration policy needs to be able to identify these sorts of opportunities and allow ready access to suitable employees and international consultants.

At the level of firm-specific innovation, it is also likely that migration could be a channel through which new ideas are introduced to New Zealand.³⁷ Here the focus shifts to migrants employed by firms doing the innovating in-house, rather than through service providers.

2.2.3 Leveraging the diaspora

New Zealanders who move overseas can contribute to both the development of frontier firms and the dispersion of their knowledge and practices.³⁸

Yevgeny Kuznetsov, one of the World Bank's leading authorities on what countries can do to benefit from their citizens living overseas, describes three possible approaches to diaspora engagement.³⁹

³³ Edo (2019).

³⁴ David and Goddard-Lopez (2001), p. 17.

³⁵ Borjas (2018) and Winkelmann and Winkelmann (1998).

³⁶ There will always be exceptions and, as Harper (1994) points out, when it comes to entrepreneurs, it is the expectations that matter most. There have been and will likely continue to be New Zealand firms that develop new technologies that are adopted internationally. The Fisher and Paykel dishwasher is an example.

³⁷ McLeod et al. (2014).

³⁸ Eventually, migrants' connections to 'home' will lessen. It is unlikely that they will endure beyond one generation. However, we have seen successive cohorts of emigrants returning to New Zealand who are replaced by Kiwis moving overseas, along with rising circular migration. This can maintain the diaspora's ability to benefit New Zealand firms.

³⁹ Kuznetsov (2006).

The first is encouraging people to come home. Even when countries devote significant resources to this, it is rarely successful.⁴⁰ The second is to encourage people to contribute to projects back home from wherever they are – whether that is via their skills, capital or expertise. The third is to use the diaspora to help those in the home country develop initiatives. Within the third approach, the diaspora can provide ‘bridges’ connecting people in the home country with opportunities in the new country of residence; act as ‘antennae’ that keep an eye out for new developments and how they fit with what is going on back home; and act as ‘mentors’ for compatriots more recently arrived in the new country.⁴¹

Both informal and formal networks can help their members to find and collaborate with others who have the knowledge and connections they need to succeed.⁴² Diaspora members also acquire valuable skills, experiences and contacts abroad that they can transfer back to their country of origin by seeding businesses and entrepreneurship, training and mentoring local workers, and supporting emerging industries. In this context, ‘circular’ migration, where a person moves between one or more places and their home country, is particularly valuable. It helps keep both knowledge and connections current.

A key question is how to connect local frontier firms (or potential frontier firms) to the right networks. To some extent, we would expect that the owners and managers of frontier firms would be the sort of people who would be proactive in doing this themselves: they are unlikely to be willing to simply wait for someone to help them. That said, information is expensive to acquire and bodies like New Zealand Trade and Enterprise and Kea can play a cost-effective role in making connections.

2.2.4 Reducing low-skilled migration

Ironically, there is significant potential to improve productivity in frontier firms by **reducing** migration. Restricting access to low-skilled imported labour would help facilitate the kind of economic adjustment that has led to capital deepening elsewhere.

Productivity-enhancing alternatives to labour and skill shortages – such as improving education and training, paying higher wages and improving working conditions, and increasing automation – are more likely to occur when there is no readily accessible alternative source of workers.

Of these alternatives, wages and working conditions are the quickest and easiest to change.⁴³ Education and training systems typically take longer to adjust. High fixed

⁴⁰ Chaban et al. (2009) note that the New Zealand diaspora can be divided into two broad classes: people leaving long-term for economic and family reasons (with Australia being by far the largest destination) and a smaller group of people going overseas for the traditional overseas experience, who were still classed as permanent and long-term migrants by Statistics NZ if they are away for a year or more. This latter group is far more likely to return to New Zealand. Covid-19 may change this, especially if development of a vaccine or effective treatment takes a long time and larger numbers of long-term New Zealand expats decide to return ‘home’ permanently.

⁴¹ The reverse could apply; when the diaspora of other countries migrate to New Zealand they may act as bridges back to their home countries and so create channels across which productivity enhancing economic activity could flow. It is an empirical question as to how significant this might be. It will depend on who the migrants are, their general and entrepreneurial skills, their links with their homelands, the relevance of those links to New Zealand, and the skills that the migrant has in making New Zealand connections.

⁴² Kea New Zealand is a formal diaspora network founded by Professor David Teece and Sir Stephen Tindall, which receives financial support from the government to help facilitate connections. <https://www.keanewzealand.com/>

⁴³ Borjas (2018) gives the example of a US chicken processing plant that lost 75 percent of its illegal immigrant workers following raids by federal enforcement agents. The plant raised starting wages to \$7 to \$9 an hour, a dollar more than they had paid immigrant workers, and hired local African-American workers instead.



investment costs, seasonal production, and technical difficulties with mechanisation can all delay capital deepening.

3 Context and history

When considering migration and frontier firms, two important parts of our framework are the nature of the local economy and the specific migration policies in place.

3.1 The New Zealand economy at a glance

New Zealand is a small, thinly-populated country with one city that contains a very high proportion of the population. Unlike other settler-colonies of the British Empire, New Zealand has a large, growing and dynamic indigenous population, who retain rights under the Treaty of Waitangi.

New Zealand is much further from world markets than any other small advanced economy.

Consistent with world-wide trends, the production of services dominates the New Zealand economy. Agricultural products dominate New Zealand's exports, and have a strong influence on the mix of local services and manufacturing. The dominance of services is reflected in employment patterns as well: since the end of the nineteenth century, the share of New Zealanders employed in that sector has almost doubled and now comprises around three-quarters of the workforce.⁴⁴

3.1.1 A growing population

The 2010 *New Zealand Yearbook* estimated that the country's population would reach five million in 2031.⁴⁵ This milestone came eleven years early because net migration was much higher than Statistics New Zealand expected.⁴⁶

While overall net migration to New Zealand has not always been positive, there has been a general upward trend in permanent and long-term immigration of non-New Zealand citizens since 1979 and a marked increase since 2013.⁴⁷ It is too soon to tell what impact the response to COVID-19 may have on this trend.⁴⁸

⁴⁴ NZIER (n.d.).

⁴⁵ Statistics NZ (2010).

⁴⁶ Statistics NZ assumed that net migration would average 10,000 people per year from 2013, which was close to the average from 1992 to 2012 (10,967). In fact, the annual average after 2013 was almost 50,000.

⁴⁷ Statistics NZ classifies someone as a 'permanent and long-term migrant' if they stay in New Zealand for over twelve months in the sixteen months after arrival, regardless of their visa status. Until 2017, Statistics NZ classified visitors based on the intentions they stated on their arrival card. Any person indicating that they intended to stay in New Zealand for more than twelve months was classified as a 'permanent and long-term' migrant, regardless of whether they stayed in New Zealand or not. Statistics NZ found that the old measure underestimated permanent migration by up to 20,000 people a year between 2001 to 2008 and underestimated it by about 3,000 people a year in the period after 2010. See Statistics NZ (2017) for more detail.

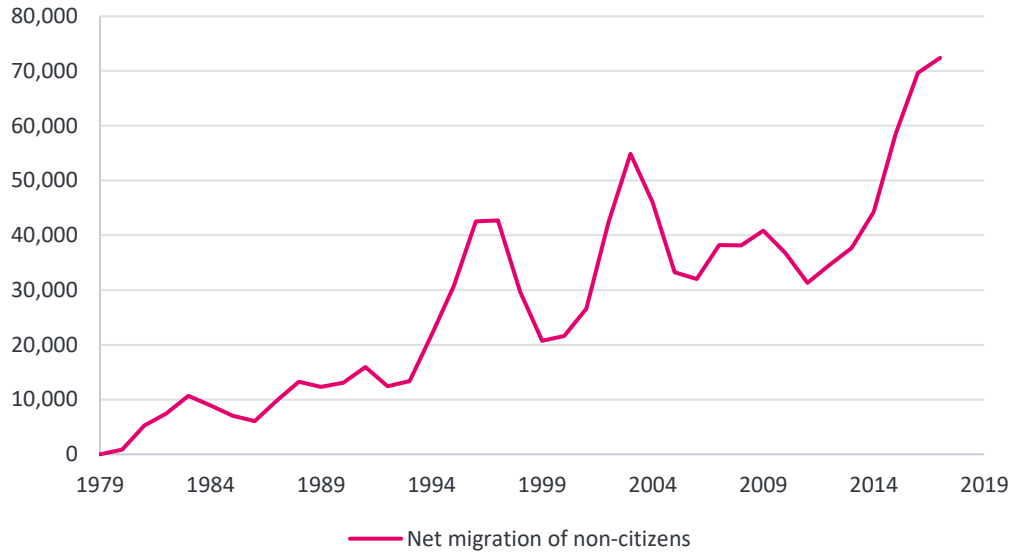
⁴⁸ At the time of writing, policy responses to COVID-19 have suspended the ability to apply for certain visas, or to travel to New Zealand. Only New Zealand citizens and most holders of residence-class visas have an unfettered right to travel to New Zealand, and constraints on quarantine facilities have therefore impacted on the numbers and types of non-nationals able to travel.



For the purposes of this report, there are two important sub-groups of permanent and long-term migrants: temporary workers and students with work rights.⁴⁹

Figure 2 Immigration has been growing

Permanent and long-term migration, intentions-based



Source: Statistics NZ

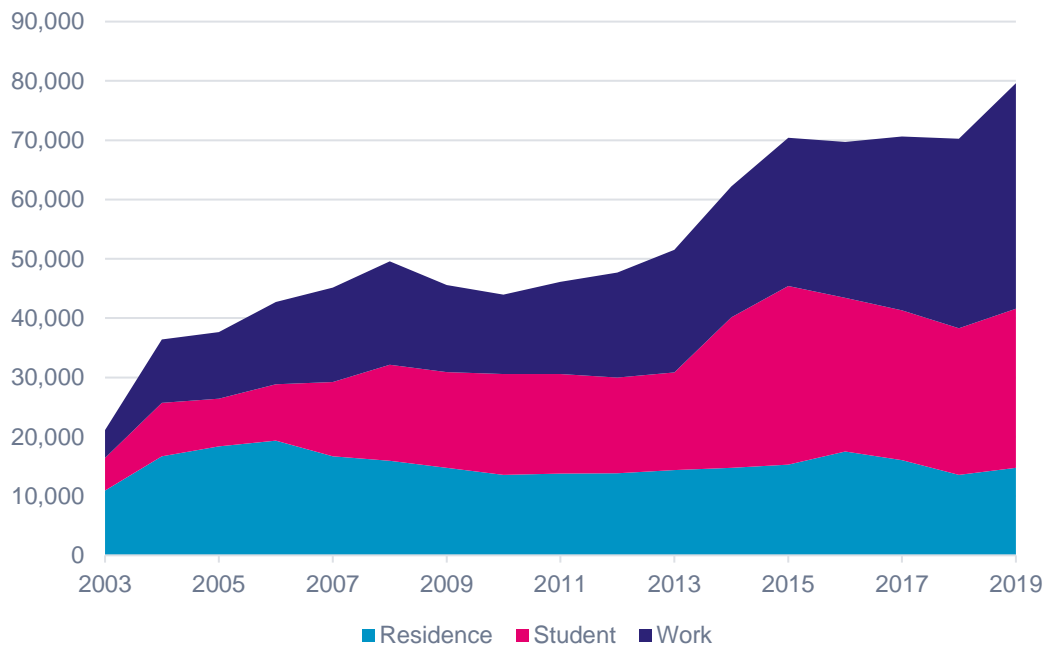
As Figure 3 shows, since 2003, the number of residence class visas granted has remained reasonably stable, while temporary worker and student numbers have risen significantly.

⁴⁹ The Statistics NZ classification 'permanent and long-term migrant' is not the same as the immigration category of 'residence class visa holder' (technically comprising 'resident' visas and 'permanent resident' visas). The holder of a permanent resident visa, as the name suggests, has the right to live in New Zealand permanently. They can work in any job, access publicly funded services like education, health and social welfare benefits, and vote.



Figure 3 Long-term temporary visas have become more common

Estimated migrant arrivals, 12/16 rule



Source: Statistics NZ

Looking at a more granular level, over that period there were also significant increases in the numbers of visas granted to fee-paying students, working holidaymakers and short-term workers in the horticulture and viticulture sectors. All three of these types of visa-holders currently have rights to work in New Zealand, albeit with some limits.⁵⁰ People do not have to be outside New Zealand to be granted any of these visas, and a significant number of grantees each year have come from within New Zealand.⁵¹

Figure 4 shows that in the peak year, 2017, there were almost a quarter of a million foreigners in New Zealand on one of these three visas.

As a consequence of these policies, almost five percent of the New Zealand labour force is the holder of a short-term visa of some sort, one of the highest proportions in the OECD.⁵²

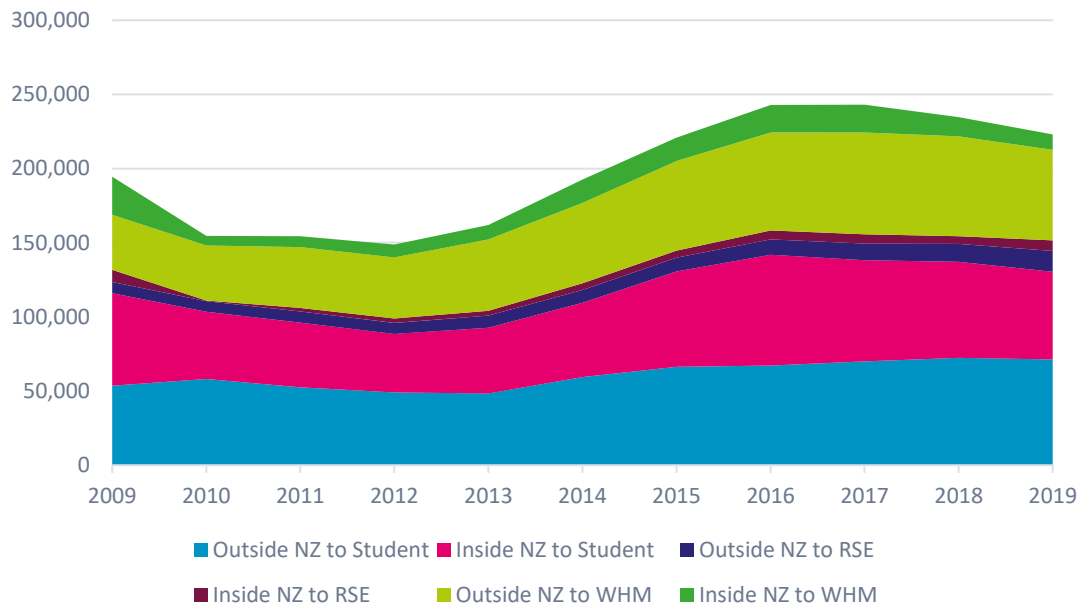
⁵⁰ For fee-paying students, the main condition is that they can only work up to 20 hours per week while studying but can work full-time during holidays. Working holidaymakers generally can work unlimited hours but cannot take on permanent employment. Workers under the RSE scheme, which we discuss in more detail below, have to be employed by a registered employer and can only work for a limited period each year.

⁵¹ This aspect is not transparent in Statistics NZ's migration data, which only classifies migrants by their status when they cross the border. Data from MBIE, however, allows us to examine the population of migrants at a point in time.

⁵² Carey (2019).



Figure 4 Significant increases in numbers of people with work rights



Source: MBIE

3.1.2 High emigration and circular migration

The discussion so far has focused on immigration – that is, on foreigners coming to New Zealand.

People leaving New Zealand, and those who return, also influence productivity.

By OECD standards, New Zealand has a large diaspora. The OECD estimates that in 2015/16, 582,500 New Zealand born people lived in other OECD countries. Trans-Tasman flows dominate.⁵³ Eighty-one percent of expat Kiwis live in Australia, 8.6 percent in the United Kingdom and 5.5 percent in the United States.⁵⁴

⁵³ Arrivals by New Zealand citizens from both Australia and the rest of the world and departures to the rest of the world have been reasonably stable since 1979. What fluctuates is the number of departures from New Zealand to Australia. Over recent years, outflows to Australia have reduced substantially, contributing to high levels of net migration in New Zealand. Increased inflows from Australia may follow Covid-19 job losses there, as New Zealanders who moved to Australia after 2001 are not eligible for income support Love and Klappdor (2020).

⁵⁴ Carey (2019).



3.2 Migration policy and practice in New Zealand

This section briefly examines the evolution of modern migration policy settings in New Zealand. We set out both the underlying intentions of policymakers, and the actual consequences of their decisions, with a focus on productivity impacts.⁵⁵

Prior to 1987, the primary focus of New Zealand immigration policy was on permanent settlers.

After 1899, the right to settle in New Zealand was based on a person's country of origin, not the attributes of the migrant.⁵⁶ With the right to settle came the right to work in any job. Short-term visas were issued to tourists and visitors, few of whom would undertake any work while they were here. An exception to this general approach involved visas allowing entry of workers from Pacific Island countries to help meet labour shortages in horticulture and manufacturing.⁵⁷ In 1987, a new Immigration Act removed country of origin as a basis for permanent migration.⁵⁸ At this time, it was not intended that removal of country of origin would lead to any increase in overall migrant numbers.⁵⁹

3.2.1 A new emphasis on value-added

A new visa system was introduced in 1991, designed to grant entry to people who could contribute more to the New Zealand economy. Bringing in people with skills and experience that New Zealanders did not have, and those with skills that complemented the skills of New Zealanders, both had the potential to boost productivity.⁶⁰

Attributes-based visas with work rights were issued for both permanent residents under the Skilled Migrant Category and for short-term visitors under the Essential Skills visa (sometimes for up to three years, with extension rights).⁶¹ Since research showed people with higher skills had better employment outcomes,⁶² migrants with higher qualifications

⁵⁵ See Chapter 3 of Fry and Wilson (2018) for more detail.

⁵⁶ Fry and Wilson (2018) note that apart from restrictions on Chinese migrants, up until 1899, anyone could enter or leave New Zealand. The Migration Restriction Act 1899 was the first piece of general immigration control legislation passed by the New Zealand Parliament.

⁵⁷ Before the 1960s, the time and cost of sea travel limited Pacific migration to New Zealand. When regular air services between New Zealand and the Pacific islands began in the 1970s, there was a surge in migration, in spite of technical restrictions on the rights of non-New Zealand Pacific people (those outside the Cook Islands, Niue and Tokelau) to reside in New Zealand. Spoonley and Bedford (2012) note that a review of policy and the 'dawn raids' of the late 1970s saw a large reduction in Pacific migration for a time

⁵⁸ The Act implemented changes contained in a report by the Minister of Immigration, released on 5 August 1986 (Burke 1986). For a contemporaneous review, see Bedford, et al. (1987). The Immigration Act 1987 received the Royal Assent on 21 April 1987 and came into effect on 1 November 1987.

⁵⁹ Burke (1986). However, there was no mechanism to ensure this. With no aggregate controls on volumes, slow processing resulted in large queues.

⁶⁰ The New Zealand Residence Programme contains three streams. Actual shares in each category vary from year to year. Carey (2019) reports recent figures. Our focus in this paper is on the Skilled/Business stream, which typically contributes more than half of total residence grants. The remaining residence grants are split between the International/Humanitarian stream (which contributes between 7 and 11 percent) and the capped and uncapped Family streams (which contribute between 30 and 40 percent).

⁶¹ The "Essential Skills" short-term work visa allows entry to migrants in employment categories where workers are in short supply given current wages and conditions. Eligibility for the visa is based on shortages in Australia New Zealand Standard Classification of Occupations (ANZSCO) employment classifications. See Ministry of Business, Innovation and Employment (2013) for more detail.

⁶² Hunt and Hicks (1985) and O'Dea (1987).

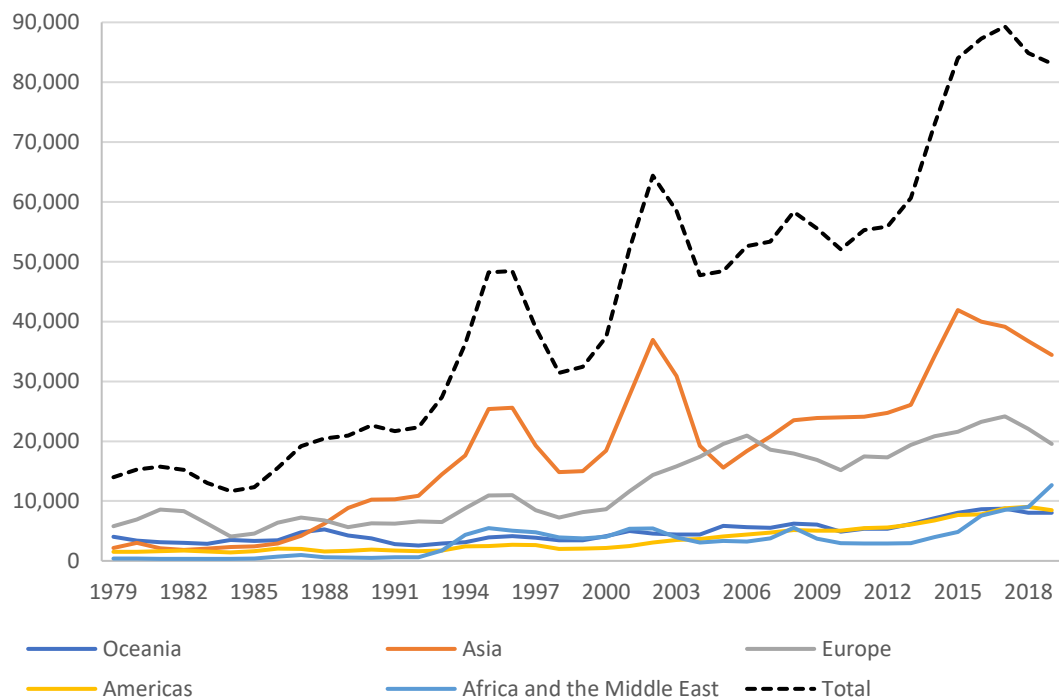


were granted more points under the Skilled Migrant Category. New investor and entrepreneur schemes were also introduced, with the aim of bringing more capital and business skills to New Zealand, despite a lack of evidence that such schemes had been successful in other countries.

The result of these two changes – removal of country of origin restrictions and the new visa system – was both a diversification in migrant source countries and a large increase in immigrant arrivals overall (see Figure 5). Total migrant arrivals have increased from about 21,000 in 1992 to 83,000 in 2019. Migration from both Asia (broadly defined) and Europe have increased over this period.

Figure 5 Many more immigrants, from different places

Permanent and long-term arrivals, intentions based.⁶³ Oceania excludes Australians; Europe includes the UK.



Source: Statistics NZ

3.2.2 Unintended consequences

It soon became apparent that, on their own, qualification levels were a very blunt instrument. Some skilled migrants with high qualifications were not permitted to work in their professions in New Zealand because they didn't meet local licensing requirements, even though they had a visa ostensibly allowing employment. Others were unable to find work commensurate with their skill levels, for reasons that included limited numbers of employers requiring their skills, and a lack of language proficiency. Media reports of engineers and doctors driving taxis were common. Many other migrants also found themselves employed in roles that did not make productive use of their capabilities.

⁶³ Statistics NZ has only calculated the new actions-based series back to 2001.



In response, policy was changed to ensure points were only granted for advanced qualifications that could be used here. The points system was adjusted to give points for a job offer, which greatly reduced the extent of people working in roles for which they were over-qualified. Points were also introduced for English language ability for both skilled migrants and entrepreneurs.

Although intended to be productivity-enhancing, the increased emphasis on job offers, coupled with a reduced supply of migrants following the Global Financial Crisis, significantly changed the profile of incoming migrants. Along with people whose skills complemented those of existing workers, people who substituted for New Zealand workers were increasingly granted entry.⁶⁴

Numbers of investors and entrepreneurs were small and the results never matched claims about the potential benefits. There were concerns about 'buying passports' and investors leaving their required funds in the bank, although it was recognised that people might take a while to figure out the 'lie of the land' before becoming actively involved in the New Zealand economy.

3.2.3 A declining focus on productivity

The focus on bringing in people who might improve New Zealand's productivity performance diminished over time.

As concerns grew over the impacts of rapid population growth in Auckland, additional points were granted to skilled migrants who were prepared to locate elsewhere. While this policy was well-received in the regions, it reduced the overall quality of migrants by bringing in people who would not have met the points threshold had they not been prepared to live outside the main centres.

As policy continued to evolve, work rights were increasingly provided in order to achieve other policy objectives. Increasing numbers of working holiday agreements were negotiated as a means of cementing goodwill between New Zealand and other countries.⁶⁵ International students were given significant work rights and access to post-study work visas as a means of making New Zealand a more attractive place to study.⁶⁶ Non-medical personnel were recruited from overseas to staff care homes in order to keep costs down. The Recognised Seasonal Employer (RSE) scheme was introduced with multiple explicit objectives, including addressing labour shortages in New Zealand and encouraging economic development in labour-sending countries in the Pacific.

⁶⁴ In 2013, MBIE wrote to Ministers noting that the overall level of skills in the Skilled Migrant Category had fallen, and recommending better matching the supply of skilled migrants to skill shortages, in order to reduce the potential for New Zealanders to be displaced - see Ministry of Business, Innovation and Employment (2013). MBIE noted that in 2011/12, only 60 percent of people granted Essential Skills visas were in skilled occupations (Appendix 1, p. 4) and "a high proportion of SMC migrants are not employed in occupations in shortage" (Appendix 3, pp. 5-6). There was a particular concern that Café and Restaurant Managers, Retail Managers, Early Childhood Teachers, and ICT Support Technicians "may be undertaking work for which New Zealanders may be available or would be able to be trained for" (Appendix 3, p. 6).

⁶⁵ Working Holiday agreements were initially very limited in number, with small caps, and reciprocal arrangements. Over time the number of agreements increased rapidly, caps were repeatedly increased and in some cases removed, and reciprocity was no longer required. For more detail, see Fry and Wilson (2018).

⁶⁶ Ministry of Business, Innovation and Employment (2018).



A series of policy changes generated outcomes very different from those originally intended.

Over time, the skill levels of permanent migrants continued to fall. And, rather than bringing in modest numbers of people with the potential to transform the New Zealand economy, temporary visas were increasingly granted to large numbers of people with skills at or below the New Zealand average.⁶⁷

4 What has migration achieved?

Some stylised facts about migration, productivity and frontier firms fall out of this analysis.

4.1 Disappointing results

New Zealand has continued to experience disappointingly low productivity, both when measured using GDP per hour worked and in terms of multi-factor productivity. This is frustrating for policy makers and their advisers, as policy since the mid-1980s has been **explicitly** directed at improving economic growth.

This is especially true when it comes to immigration policy. A long succession of policies has had increasing productivity as an explicit or implicit aim.

But they clearly have had zero net effect.⁶⁸

At a macro level, high immigration has not been accompanied by high GDP per capita. This is not a surprising result, since the international evidence is that immigration, at best, will only have a small positive impact on this dimension.

Down at the micro level, we have also not seen much evidence of high immigration being a factor in driving more firms to the frontier. Again, we have for many years had immigration policies with the aim of allowing highly skilled migrants and entrepreneurs to settle here. The small number of international frontier firms in New Zealand suggests that they haven't come, or at least not in transformative numbers.

So, what has migration actually achieved?

4.1.1 Lots of nice people, relatively few trailblazers

Rather than bringing in top-tier skilled migrants and entrepreneurs, New Zealand has welcomed large numbers of perfectly nice immigrants who, while having very modest impacts on GDP per capita, have contributed to the country's wellbeing in many ways. Our society is richer and more diverse. Many regions have benefited from having young families join them. Firms and institutions that assist immigrants with moving to New Zealand have

⁶⁷ Ministry of Business, Innovation and Employment (2013).

⁶⁸ As we note above, in the absence of a clear test of the counterfactual, it is hard to isolate the effect of migration on productivity. It is always possible that without the substantial level of net migration, New Zealand's disappointing productivity performance would have been even worse.



benefited, as have those that export education services and employ students in part-time jobs.

There have also been wellbeing costs, including impacts on housing costs, urban infrastructure costs, congestion, and displacement of low-skilled New Zealanders from jobs. Due to restrictions on family migration, many migrants have had to choose between settlement in New Zealand, isolated from their natural support networks, and staying at home.⁶⁹ It is debatable whether migration policy has been consistent with the Crown's obligations under the Treaty of Waitangi.⁷⁰

To date there is no evidence that attempts to attract highly entrepreneurial migrants to New Zealand have been successful.⁷¹

Although New Zealand's current policy settings would allow them to enter, relatively few top-tier skilled migrants and entrepreneurs with global ambitions are looking to move to a small country a long way from the centres of the international economy. It is not surprising that there are no New Zealand entries in Forbes Global 2000 list.⁷²

Like many other countries, New Zealand has tried to mimic the components that have supported high-impact migration in other locations. Calls to create a New Zealand Silicon Valley are frequent. NZ Growth Capital Partners and Callaghan Innovation have the potential to increase the impact of migrants, both through assisting migrants to form new frontier firms and in allowing existing firms to use migrants to move closer to the frontier. The structure of the New Zealand economy influences the potential contribution migrants can make to existing firms: we have a relatively narrow range of industries in which we are global powerhouses, at least in terms of size. There is, of course, always the possibility that migrants could bootstrap a whole new industry in New Zealand.

The potential contribution individual migrants can make will depend on the specific industries and jobs they enter.

Paul Conway has identified the "prevalence of farmer-owned cooperatives and partly-privatized state-owned enterprises" amongst firms with turnover greater than a billion dollars as a particular problem in New Zealand. These firms tend to be strongly risk averse, and reluctant to provide capital for expansion, particularly into overseas markets. More generally, Conway says relatively high government involvement in the business sector risks crowding out private investment.⁷³

Migration is unlikely to be a primary route to increased productivity for many existing large New Zealand firms. General migration has tended to do little to improve the overall skill set of the population. And firms that are unlikely to be looking overseas for new ideas and

⁶⁹ Fry and Wilson (2018).

⁷⁰ Rata and Kukutai (2017) and Fry and Wilson (2018).

⁷¹ Fry and Wilson (2018).

⁷² Skilling (2020).

⁷³ Conway (2018), p. 50.



opportunities will probably not be looking to hire foreign experts to assist in business transformations.

4.1.2 Reinforcing a low-wage, low-skill, low-growth economy

While it is difficult to know what would have happened without large levels of migration, especially the classes of visas allowing short-term visitors to work, there is little evidence to suggest that migration has helped New Zealand move away from a low-wage, low-skill, low-growth economy.

In New Zealand, capital shallowness has contributed to relatively poor productivity performance.⁷⁴ We can see two reasons why migration may have been a factor in employers not seeking to invest in productivity-enhancing automation.

Putting downward pressure on wages

The ongoing arrival of significant numbers of migrants with skills that are on average similar to or lower than those of locals is likely to have reduced wages for both migrants and locals.⁷⁵

This change in relative prices means that the returns from investing in capital are lower than they otherwise would be. Thus, ready access to low-cost, low-skilled immigration has biased investment toward low-skilled, labour-intensive production, away from high-skilled, capital-intensive approaches.

The classic international example of this phenomenon is the Australian wine industry, which has adopted more capital-intensive production techniques than the Californian wine industry, in response to relative differences in the availability of low-skilled labour.⁷⁶ Similarly, steady increases in visas granted under the Recognised Seasonal Employer scheme have underpinned labour-intensive business expansions in horticulture and viticulture in New Zealand.⁷⁷

The effect of immigration on wages has likely been greater in areas like hospitality, retail, tourism, and horticulture, where the significant increase in students with work rights and working holidaymakers has created a large supply of highly educated people who are here not to earn a living, but to train or have a holiday. For these people, being employed in low-paid roles for which they are over-qualified is perfectly acceptable, and indeed for some is probably part of the 'New Zealand experience' they are seeking.

Even in areas like construction, where more highly skilled immigrant workers are employed, New Zealand has continued to use labour-intensive techniques, rather than move to more

⁷⁴ Nolan et al. (2019).

⁷⁵ The impact of immigration on wages has been the subject of ongoing debate in the literature. The general consensus is that migration leads to lower wages in the short term for people who compete with immigrants, and, after a period of adjustment, a larger economy overall. Fry and Glass (2016) explain that this is because migrants increase the demand for goods and services as well as the supply of labour. Episodes of large inflows of immigrants, such as New Zealand experienced in the ten years prior to Covid-19, lead to repeated downward wage pressure and ongoing economic adjustment.

⁷⁶ Fry (2014).

⁷⁷ Bailey (2019), p. 5. Richard Bedford says that some of the larger growers that recruit labour under the Recognised Seasonal Employer scheme have been able to expand their operations and to consider funding the high capital cost of robotics and automation in several areas of production longer-term. The increased profitability of a number of orchards that has come with the reliable, relatively skilled returning seasonal workers has enabled a number of innovative enterprises to experiment with automation in picking and a lot of automation in packing (personal communication, 2 September 2020).



machine-based methods, like pre-fabrication. In the face of a shortage of trained locals, migrant labour has been preferred over investment in automation.

Increasing the supply of workers

New Zealand does not have a population shortage. There are many people who could potentially be trained to work in roles currently filled by immigrants.⁷⁸ But each year, thousands of New Zealanders leave formal education and training without the skills they need in order to live a good life.⁷⁹

When locals do not have the skills they need, many New Zealand employers prefer to employ immigrants. For example, research looking at the dairy industry reported farmers preferred to hire migrants rather than the available untrained locals.⁸⁰

While hiring immigrants may be rational for individual employers, particularly in the short term, locals can face increased labour market insecurity and unemployment, and decreased wages and employment.⁸¹ When ongoing increases in migration are coupled with education and training failures, these impacts can be long lasting.

4.1.3 Impeding macroeconomic adjustment

In some cases, immigration can be a tool to support appropriate macroeconomic settings. One example is how after the Christchurch earthquakes, bringing in immigrants to help with the rebuild reduced the need for economy-wide tightening of monetary policy to reduce wage pressures.

In contrast, Michael Reddell has argued that repeated high levels of migration have prevented the macroeconomic adjustment needed to improve New Zealand's productivity performance.

His thesis is that in an economy with a modest rate of national saving, ongoing high levels of inward migration create persistent excess demand.⁸² Absent excess demand, the large productivity gap that opened up between New Zealand and other advanced countries should have led to a fall in the real exchange rate.⁸³

While plausible, Reddell's hypothesis has not been tested empirically. However, it is possible that the natural experiment provided by the Covid-19-induced border closure will enable more solid conclusions to be drawn.

4.1.4 A diaspora clustered in familiar places

Most of New Zealand's diaspora live in locations where we already have strong trade and other connections. There are relatively few expats in areas of potential economic expansion, like Asia, South America and Africa.⁸⁴

⁷⁸ Not all vacancies will be in the same location as potential workers, which would require people to make a potentially expensive move to take up employment. Experience suggests that location preferences are often sticky.

⁷⁹ OECD (2013).

⁸⁰ OECD (2013). In part, this is because employers perceive migrants to be more reliable.

⁸¹ The migration of workers who are close substitutes for local workers can lower wages for incumbent locals Edo (2019).

⁸² Reddell (2013).

⁸³ Note, however, that the Reserve Bank's firm policy of holding interest rates high because of demand pressures helped resist exchange rate reductions - see McDermott (2013) for more detail.

⁸⁴ Law et al. (2009).



Increasing access to more diverse locations could lead to greater productivity benefits from emigration and circular migration.⁸⁵ But we cannot unilaterally change where New Zealand citizens are allowed to go – or where they want to live.

5 What needs to change?

Previous Productivity Commission work has set out a clear path for what needs to happen to improve our productivity performance:

- Better public services, both government-provided services like education, health and welfare, and also public goods and regulation, like urban planning.⁸⁶
- Innovation and technological adaptation and adoption, especially within existing firms.⁸⁷
- Capital deepening: more investment in capital (both physical like machines, but also intellectual property – ways of doing business).⁸⁸

Migration policy only has a limited direct role to play in increasing productivity across the economy. But in each of these three areas, there are promising indirect effects that are worth exploring.

5.1 Better public services

The New Zealand public sector has long used migrants to fill skills gaps. For example, there is a worldwide shortage of skilled health professionals that New Zealand can neither correct nor be isolated from.⁸⁹ We therefore expect that migrants will continue to be a necessary addition to the public sector workforce.

More generally, New Zealand has a long tradition of recruiting overseas workers to fill gaps in the labour market, some caused by departing New Zealanders, which the local education system cannot supply.⁹⁰

Migrants are, however, not perfect substitutes for locals and evidence shows that it can take time for migrants' wages to reach that of comparably trained locals.⁹¹

Reducing the ability of firms to employ migrants to do the jobs that would normally be undertaken by qualified school leavers may increase pressure on the education and training system to improve.⁹² This may, however, take some time.

⁸⁵ Law et al. (2009) report that a 10 percent increase in migration from a particular country is associated with a 0.6 percent increase in merchandise exports to and a 1.9 percent increase in merchandise imports from that country.

⁸⁶ Productivity Commission (2017a), Productivity Commission (2017b) and Productivity Commission (2018).

⁸⁷ Productivity Commission (2020b). We note, however, that work by Clifford Winston in the context of deregulation in the United States shows the importance of increased competition from higher productivity new entrants on overall economic performance. See Winston (1998).

⁸⁸ Nolan et al. (2019).

⁸⁹ Fry and Wilson (2017).

⁹⁰ Burke (1986).

⁹¹ Borjas (2018) and Fry (2014).

⁹² We acknowledge that there are far stronger direct reasons for wanting to improve the performance of the public education system.



5.2 Innovation and technological adoption

We have policy settings that allow frontier firms – existing and potential – to hire the best people from around the world who will support innovation, if that is the route a firm wants to take. But despite numerous policy changes, to date there is no evidence that attempts to attract significant numbers of highly entrepreneurial migrants to New Zealand have been successful.⁹³ In saying this, we acknowledge that the causality may run the other way: if the presence of innovative and dynamic areas of research and commercialisation attract talent, New Zealand’s lack of highly innovative and dynamic firms may itself be a cause of the apparent lack of success in these types of visa schemes.⁹⁴

Designing and managing entrepreneurial visa schemes is challenging and there are few international examples of success on which to draw. Immigration officials are not adept at ‘picking winners’ (spoiler alert: no-one is). A desire to avoid the potential for corruption and nepotism can lead to plausible-sounding box-checking requirements – such as capital requirements, or a minimum number of new people employed – that have little connection to likely success. Fraud (especially in the form of ‘copy and paste’ applications and recycling funds) is not uncommon, and the tendency for people who are unable to gain entry through other means to apply for entry under entrepreneur visas can overwhelm processing capacity. And success rates are always going to be extremely low. Analogous to venture capital investing, ten percent would be considered spectacular.

The New Zealand government’s flagship Global Impact Visa – which uses networks in order to try get around many of these issues – is presently being evaluated. Even if reported results are positive, international experience suggests that periodic refreshing of the policy may be needed to ensure that it continues to meet its objectives.

5.3 Capital deepening

Our policy settings are probably already world-class when it comes to allowing firms to recruit migrants who are going to drive firms to use capital, rather than labour, as a source of growth. We have done all the things that a small, distant country can do to put out the welcome mat for skilled and entrepreneurial migrants.⁹⁵ The stark reality is that very few people are ever going to want to run a global firm from New Zealand. This applies to locals as well as foreigners.

The change to migration policy that is most likely to boost productivity in New Zealand via capital deepening is to close the door to people whose contribution to New Zealand’s productivity is the same, or lower, than that of people already here. Here, there is potentially very significant upside productivity potential.

The area of greatest concern is the extent of relatively cheap imported labour available to undertake low-wage, low-capital intensity jobs in the hospitality, tourism, and agricultural sectors.

⁹³ Fry and Wilson (2018). More generally, Maré et al. (2011) found little empirical support for a relationship between the number of migrants living in an area and firm performance

⁹⁴ We thank Geoff Lewis for this point.

⁹⁵ As officials have repeatedly advised, however, programmes need to be monitored regularly and adjusted to changing circumstances and unintended consequences. See Ministry of Business, Innovation and Employment (2018) and Ministry of Business, Innovation and Employment (2013).



5.4 Managing conflicting objectives

The three primary sources of low-cost migrant labour in New Zealand are working holiday makers, international students with work rights, and the Recognised Seasonal Employer scheme.

If the government's sole objective was to improve productivity, there would be a strong case for eliminating these sources of imported labour entirely. When other objectives are considered, these decisions become more complex, as our case study of the RSE scheme in section 6 illustrates.

Even taking into account other objectives, there is still a strong case for removing work rights for international students and reducing numbers of working holiday visas.

International students

A recent Cabinet paper on stabilising the international education sector in the aftermath of Covid-19 expressed a desire to step back from low-value, high-volume business models which have generated quality issues and financial risk.⁹⁶

A key driver of those business models has been the rapid expansion of work rights, combined with the prospect of residence. Although less than a fifth of foreign students eventually attain New Zealand residence, many families go into debt in the hope that they will be among the lucky ones.

Ending the practice of allowing international students to work, and raising the skill thresholds for progressing from student to work visas, would reduce the demand for student places, reduce the attractiveness of marginal providers, and, through reducing access to low-cost labour, help raise productivity over time.⁹⁷

Working holidaymakers

Very large increases in grants of Working Holiday visas with unconstrained work rights have occurred without any meaningful assessment of their impacts on locals, particularly those who are still developing skills.

Limiting the numbers of working holiday visas granted would raise productivity over time. Rather than engaging potentially over-qualified working holidaymakers to continue to operate low-wage, low-skills business models, employers would have an incentive to look for less labour-intensive practices.⁹⁸

Working holiday visa agreements have been signed to promote goodwill between countries.⁹⁹ Many of these visa schemes are reciprocal, and cutting back might reduce

⁹⁶ Hipkins (2020).

⁹⁷ While we can see little case for subsidising international education through preferential access to permanent residence, we do acknowledge that students will form relationships and so the migration system will need to accommodate these cases.

⁹⁸ It may be that many working holidaymakers are working in industries – particularly hospitality and tourism – where it is not easy to substitute capital for labour under existing business models and with existing technology. Part of the point of these services is to provide person-to-person interactions and they may, therefore, be subject to Baumol's cost disease, where labour-intensive human interactions cannot be engineered to perform more efficiently or accurately via mechanisation. So restricting access to such visas might imply wage increases, a reduction in production and fewer choices available to domestic consumers in the short term. There is, however, evidence that technology can improve efficiency even in highly labour-intensive person-to-person services: see Triplett and Bosworth (2003). For example, waiters can use electronic devices to take orders that are sent direct to the kitchen, rather than having to use notepads and walk repeatedly from tables to the kitchen to deliver orders, thus increasing the number of tables they can attend to without reducing the quality of service.

⁹⁹ New Zealand Ministry of Foreign Affairs and Trade (n.d.).



access to other countries for New Zealand citizens. It is obviously not simple to unilaterally change a bilateral agreement. Covid-19, however, has created an opportunity for dialogue with the countries with which we have working holidaymaker agreements: they too may be looking to restrict inflows of foreign workers and so may welcome the opportunity to change current arrangements.

6 A case study: The fruit industry

The fruit industry provides a good example of the challenges and opportunities facing frontier firms in New Zealand and how migration policy may have unintended consequences for productivity.¹⁰⁰

The horticulture and fruit growing sector is a small but growing part of the New Zealand economy. The value of the sector's output in terms of real GDP has doubled since 1991.

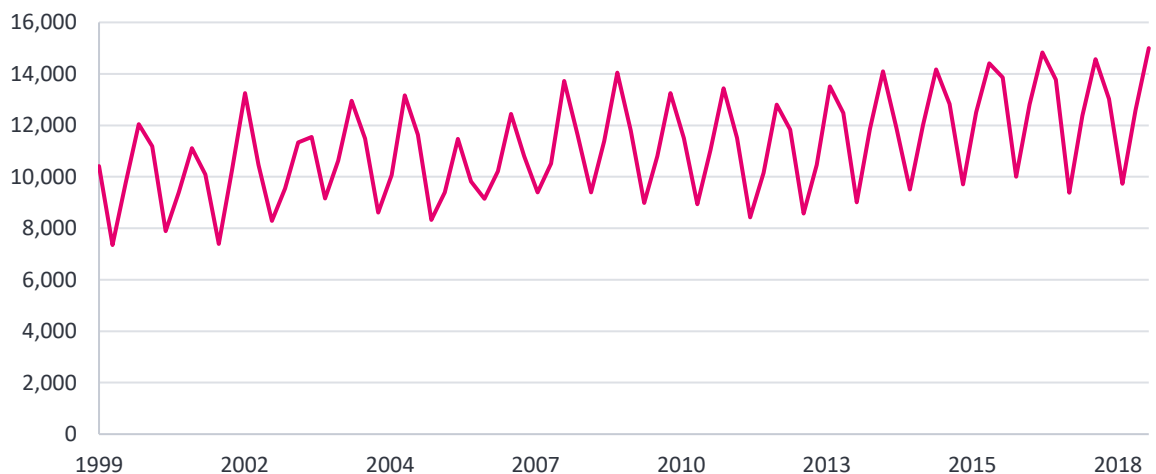
An important context to fruit growing is the seasonal nature of activity. Pruning, picking and packing need to happen at the right time to maximise the value of production, although the development of cool stores means that fruit picked at one time can be sold many months later, with little reduction in quality.

6.1 Labour supply has changed over time

Employment in the fruit and nut growing sector reflects the highly seasonal nature of production.

Figure 6 Highly seasonal employment

Total employees by quarter, fruit and nut growing



Source: Statistics NZ

¹⁰⁰ Our analysis is somewhat constrained by the way Statistics NZ reports different parts of the economy. Under the Australian and New Zealand Standard Industrial Classification 2006, there is no separate classification at any level for 'horticulture', which is the generic term for the branch of plant agriculture dealing with garden crops, generally fruits, vegetables, and ornamental plants Synge (1998). In various datasets, Statistics NZ reports result by type of plant (e.g. apples and kiwifruit) or by broad class (e.g. 'horticulture and fruit growing' in GDP data).



In recent years, horticulture has become a high-profile user of imported labour. Richard Curtain and his co-authors note that estimating the size of the migrant workforce in the fruit industry is difficult, due to the complexity of the sector and its high reliance on temporary workers. They suggest that the horticultural workforce in New Zealand was around 60,000 in 2016 and that just over half of these workers were New Zealanders. They provide some evidence that the share of foreign workers is increasing, which would be consistent with pre-Covid increases in visitor numbers.¹⁰¹ New Zealand Kiwifruit Growers Incorporated suggest that in the 2018 season, New Zealanders made up about 54 percent of the combined orchard and packhouse workforce.¹⁰²

Rupert Tipples has noted that prior to 2000, migrant labour had formed a limited part of the farm labour force.¹⁰³ The genesis of the use of imported labour was a marked increase in plantings in the horticultural sector in the early part of the 21st century.

Before then, the traditional supply of labour to fruit growers was internal migration of students, retirees and some international visitors. People would come from the cities and pick fruit for part of the summer. Turnover was high and there was little emphasis on training or retaining staff from one season to the next.

This business model could not, however, withstand the increase in production and initially, growers resorted to seeking what labour was available. Illegal immigrants working under poor conditions became both common and noticeable.¹⁰⁴

6.2 Why not increase wages?

A fundamental principle of economics is that scarcity is a key determinant of price. If labour, in this case, fruit pruners, pickers and packers in New Zealand, is scarce, then wages should increase, and more people would be attracted into the industry.¹⁰⁵ This provides an important incentive to employers to seek productivity improvements that will allow them to profitably employ more expensive labour.

The New Zealand horticulture sector developed an alternative response. Bringing in seasonal workers from Pacific Island countries has enabled the sector to hire more people to work without increasing wages.¹⁰⁶

New Zealand is not the only place where this approach has been followed. Seasonal work has a very long history and is still widespread in Europe and the United States.¹⁰⁷

While it is undoubtedly true that any grower would benefit from using lower cost migrant labour in the short term, this does not mean that lowering labour costs would be beneficial for the economy as a whole, or over time.

¹⁰¹ Curtain et al. (2018).

¹⁰² New Zealand Kiwifruit Growers Incorporated (2019).

¹⁰³ Tipples (2017).

¹⁰⁴ Tipples (2017), p. 12.

¹⁰⁵ Edo (2019).

¹⁰⁶ Wages will, however, be subject to wider labour market conditions and government policy, such as the current Government's policy of increasing the minimum wage through time to \$20 per hour.

¹⁰⁷ Lucassen and Lucassen (2009), Zahniser et al. (2018) and Rutledge and Taylor (forthcoming).



6.3 Why not invent machines instead?

Economic history is replete with examples of the problem of labour shortages being solved by mechanisation.

One theory of why these developments happen is known in the economic literature as the ‘induced innovation’ theory and was first proposed by Sir John Hicks in 1932:

*A change in the relative prices of the factors of production is itself a spur to invention, and to invention of a particular kind—directed to economizing the use of a factor which has become relatively expensive.*¹⁰⁸

Under this theory, a shortage of labour should have induced New Zealand fruit growers to develop labour-substituting alternatives. But developing or applying alternative techniques is never risk free. While an employer can usually hire and fire migrant workers relatively readily, capital is a fixed charge. If a squeeze on profits emerges, the capital-intensive route turns out to be much riskier.¹⁰⁹

Labour-saving techniques in horticulture, as in many other areas, are being developed all the time and will be adopted when it makes economic sense to do so.¹¹⁰

6.4 Potential for automation

Mechanical fruit picking and pruning machines are starting to be developed and used internationally and in New Zealand, and automation of packing is widespread.¹¹¹

Not all production processes can be mechanised given existing technology. For example, kiwifruit are currently meticulously pruned by hand. But the development of robotic pickers able to pick individual fruit suggests robots capable of performing delicate pruning tasks may well be possible in future.

Whether mechanical approaches will become economic is still to be demonstrated. With expensive newly-developed technology, the seasonal nature of production can be a barrier to capital investment. It is challenging to achieve an acceptable return on investment when expensive equipment is in use for only a few weeks of the year. And when all growers need to prune, harvest or pack at around the same time, there is limited scope to share expensive capital equipment locally. Spacing out the timing of planting annual crops, and planting different varieties of perennial crops with different maturity times can extend the period of equipment use somewhat. International circulation of some expensive machinery is also possible. For example, picking machines can be hired for the period required to meet the seasonal need and then shipped on to a country with a different growing season.¹¹²

Automation also requires changes in management practices. Growers will need to become skilled not only at using machines themselves, but they will increasingly be employing and managing technologically sophisticated workers.¹¹³

¹⁰⁸ Hicks (1932).

¹⁰⁹ Taylor and Charlton (2019).

¹¹⁰ Charlton et al (2019).

¹¹¹ Charlton et al (2019), Chapman (2019) and Bogue (2020).

¹¹² We thank Richard Bedford for this point.

¹¹³ Charlton et al. (2019).



Early adopters of new technology can face high initial investment costs and experience frustrating performance glitches.¹¹⁴ But over time product performance often improves and costs fall, making widespread adoption possible.

While the technology is still developing, it is clear that there is potential for increased automation in New Zealand's fruit industry. Firms will, therefore, have a range of options regarding the timing and extent to which they continue existing practices or modernise.

6.5 The Recognised Seasonal Employer Scheme

One unique aspect of the fruit industry in New Zealand is the Recognised Seasonal Employer Scheme.¹¹⁵

6.5.1 History and objectives

The Recognised Seasonal Employer scheme was developed by the New Zealand government in close collaboration with the World Bank, the Pacific Island Forum and Pacific Island countries.¹¹⁶ It was introduced on 30 April 2007, following many previous seasonal work schemes.¹¹⁷

The scheme has at least three separate objectives:

- to address seasonal labour shortfalls in the horticulture and viticulture sectors in a way that increases employer compliance with employment and migration law
- to provide access to an increasingly skilled pool of seasonal labour that returns each year, and
- to promote economic development in the Pacific region, primarily via remittances sent home.¹¹⁸

The RSE scheme has expanded over the years, growing from 5,000 places initially to 14,400 in 2019.¹¹⁹

6.5.2 Details of the scheme

Prior to Covid-19, visas were granted for a maximum of seven months in any eleven-month period (or nine-month period for residents of Kiribati or Tuvalu). As part of the New Zealand Government's pandemic response, RSE visa-holders in New Zealand when the country went into lockdown had their visas automatically extended.¹²⁰

Potential RSE workers must meet health and character requirements, and have a job offer. Accredited RSE employers must be financially sound, with good workplace and human resources practices, and be committed to training and employing New Zealanders. They

¹¹⁴ Because of this, early adopters provide positive learning externalities for which they are not rewarded. Hausmann and Rodrik (2002) argue that this justifies some form of subsidy.

¹¹⁵ Barker (2010) says the RSE scheme is one of the few examples internationally of a guest work scheme that has not resulted in problems with overstayers.

¹¹⁶ Winters (2016) and Barker (2010).

¹¹⁷ Ramasamy et al. (2008).

¹¹⁸ Gibson and McKenzie (2013).

¹¹⁹ Curtain et al. (2018) report that the RSE scheme supplies about 16 percent of horticultural workers, while backpackers and migrant workers are 29 percent, leaving 55 percent of the workforce as locals.

¹²⁰ Lees-Galloway (2020).



must provide guaranteed hours of work, and, under the Pastoral Care policy, suitable transport, accommodation and onsite facilities, personal protective equipment, access to medical insurance and banking services, translation services (e.g. for health and safety) and opportunities for recreation and religious observance.

In return, employers gain access to a ‘reliable, compliant, immobile’ labour force.¹²¹ Over time some employers have engaged the same workers each year, which leads to improved productivity and profitability.¹²² RSE workers make much more money than they can back home. When they return home, their savings are used to fund businesses, including cattle farms, shops and transportation services; to pay for school fees; to purchase land; and to build houses.¹²³

6.5.3 A very good development scheme

Sankar Ramasamy and his co-authors talk about the RSE scheme achieving a ‘triple win’ for migrants, their countries of origin and the destination countries.¹²⁴ The scheme has been much praised in development and migration literature as an exemplar of how to design a guest worker scheme.¹²⁵ Rochelle-Lee Bailey’s ten-year appraisal of the RSE scheme suggests, however, that the scheme has had some adverse effects on both participants and their communities at home.¹²⁶

We are not convinced that the scheme is a win for all New Zealanders. It continues to be a short-term win for growers accessing cheap seasonal labour,¹²⁷ and increased profitability has led some employers to experiment with automation. But what about local workers, who continue to get paid low wages?¹²⁸

6.5.4 Wider objectives

The Recognised Seasonal Employer scheme is an important part of New Zealand’s development obligations to Pacific island countries. If automation takes off in the New Zealand fruit industry, then the demand for migrants as a pool of reliable labour may be much reduced. New Zealand may need to look to other avenues to aid development in the Pacific, including through helping to develop Pacific frontier firms.¹²⁹

¹²¹ Bailey (2014).

¹²² Barker (2010) and Nunns et al. (2019).

¹²³ Bedford et al. (2020).

¹²⁴ Ramasamy et al. (2008).

¹²⁵ Barker (2010), Gibson and McKenzie (2013), Gibson et al. (2014), Winters (2016) and Curtain et al. (2018).

¹²⁶ Bailey (2019) and Bedford et al. (2020) report that some RSE participants have been overcharged for transport and placed in overcrowded, sub-standard accommodation, and some Pacific communities have struggled with a lack of practical and emotional support. There has also recently been a case of a person being convicted of slavery and people trafficking in relation to seasonal workers - see *R v Matamata* [2020] NZHC 1829. In response to rising concerns about exploitation, the government has recently announced changes in policy and procedures designed to reduce exploitation of temporary migrant workers. See Ministry of Business, Innovation and Employment (2020).

¹²⁷ Tipples (2017).

¹²⁸ There is no shortage of seasonal horticultural work available for locals. But, if growers had, rather than continuing with the low-wage, low productivity status quo, faced no alternative but to increase productivity, some of these workers would now be enjoying higher wages and better conditions. Of course, some may have been displaced by technology, but that is part of the wider issue of the effect of automation on workers that has been controversial since at least the first industrial revolution.

¹²⁹ Note that the RSE scheme is only one small part of New Zealand’s aid programme in the Pacific. In several source countries (the Solomon Islands, Fiji, and Papua New Guinea), the scheme makes a very small contribution to providing employment for locals. This is true even in some of the smaller countries such as Kiribati and Tuvalu as well. We thank Richard Bedford for this point.



6.6 Where does this leave us?

Innovation certainly has the potential to increase the productivity of New Zealand's fruit industry. We are already seeing frontier firms experiment with automation of hitherto manual processes like picking fruit, some by importing new technologies from overseas, and some by working with local researchers.

Migration policy is, however, probably applying a brake on innovation, especially of the type induced by changes in relative prices.

7 Frontier firms and migration policy

Frontier firms, by definition, are good for productivity and have the potential to improve wider wellbeing as well.

Migration policy has a role to play in expanding the contribution that such firms can make. But it is a role commensurate with the likely number of global frontier firms in New Zealand and New Zealand's size and distance from the rest of the world.

There are two links between migration, productivity and frontier firms.

7.1 Migrants as employees and firm owners

First, it is likely that current and potential frontier firms will benefit from being able to employ foreigners. Some migrants will also want to come to New Zealand to establish, or lead, frontier firms.

This means that migration policy needs to be responsive to requests by firms to employ migrants and will also need to identify frontier firm owners and grant them the appropriate entry and work rights. Identifying current frontier firms is possible, while looking for potential frontier firms is far harder. All entrepreneurial firms operate in areas of high risks and high potential return. Failure of individual enterprises is always to be expected. Differentiating between a potential frontier firm that would benefit from employing migrants and a potential business failure will always be challenging.

We consider that the current immigration rules cater for this possible link as well as is possible, given the real information constraints that public officials operate under. As always, policy should be kept under review and adapted when circumstances change.

7.2 The rest of the economy

Second, excessive low-skilled migration is likely to depress productivity, by reinforcing low-wage, low-productivity business models; hampering the development of human capital by New Zealanders, especially those facing other challenges to employment (social disadvantage, low school achievement); and suppressing the gains from automation and other capital investment.



Together, these factors suggest frontier firms would be better supported by a more selective migration system focused on a smaller number of high-potential migrants. This sort of migration system is difficult to operate. New Zealand is a very small country and the number of people who would settle here, if given the opportunity, is large, especially if cheap international transport resumes after Covid-19.

For many people in developing countries in the Asia Pacific region (think those one non-stop flight from New Zealand), employment in a minimum wage job in the service sector here is likely to be far more attractive than staying home. Experience has suggested, however, that large-scale migration of people who can fill these sorts of jobs does little to improve productivity in New Zealand. And, as noted earlier, we should be alert to the potential for exploitation.

Firms make the best of the circumstances they face. If cheap labour is available, rational profit-maximising firms will use it. The policy challenge for the government is to constrain migration in areas where, with innovation, investment and changed business practices, firms can be profitable without cheap foreign labour and move closer to the frontier.

At the same time, we have international obligations to meet. If we do what is best for productivity, we will need to find other ways to fulfil those commitments.

7.3 Responding to Covid-19

Covid-19 has done the unthinkable when it comes to migration policy: we have closed the border to all but returning citizens and permanent residents and a few essential workers.¹³⁰

The capacity of New Zealand to accommodate those with rights to return in suitable managed isolation and quarantine (MIQ) facilities, plus a lack of international flights, constrains the numbers that can return. While there are frequent calls for expansion of New Zealand MIQ capacity, to date the government is taking a very cautious approach.

The early signs are that the economy is responding positively to Covid-19 constraints. The New Zealand Activity Index (NZAC), a composite measure of near-term economic activity developed by the Treasury, the Reserve Bank of New Zealand and Statistics New Zealand was, in June 2020, one percent below last year. Electronic card spending, heavy traffic movements and manufacturing activity were all up on June 2019 levels.¹³¹

New Zealand firms are responding to the changed situation and finding new ways to carry on doing business. The tourism industry is targeting locals. The GoDairy advertising campaign sought local replacements for migrant workers who are unable to enter the country.

While Covid-19 is clearly an economic and health disaster, it shows New Zealanders can adapt to adversity.

¹³⁰ In the June quarter this year, there were 21,100 arrivals, of whom two-thirds (14,300) were New Zealand citizens. About half of those New Zealanders had lived overseas for more than 12 months prior to returning, while the other half were returning from a short-term trip of some sort. See Statistics NZ (2020).

¹³¹ The Treasury (2020).



We should not, therefore, be rushing to reopen the border and welcome migrants just because that is what we did before Covid-19.¹³² We have time to pause and reset policy.

However, claims that the pandemic will suddenly make New Zealand a haven for highly productive people need to be treated with caution. Covid-19 may have made New Zealand a slightly more attractive small, middle-income country a long way from centres of world commerce and enterprise, but in terms of attracting truly top-level migrants, the disadvantages of size and distance have proved to be remarkably hard to overcome at anything other than a niche scale.

7.4 Doing better

We end by returning to Paul Krugman. Productivity isn't everything. Every New Zealand government will be balancing multiple objectives when it comes to setting migration policy. In doing so, governments should always be clear about what outcomes they are seeking and be alive to unintended consequences and the tendency for policies to depart from their original objectives and to expand in scope through time.

While some, if not all, migration programmes might be 'meeting their objectives', in terms of allowing entry to a specified class of people at or close to target levels, this does not mean that those programmes are all necessarily increasing productivity.

Post-1987 migration policies – ostensibly directed at lifting economic performance – have brought thousands of people here who have contributed to New Zealand, as well as finding a better life themselves. But the hoped-for boost to productivity hasn't been realised. In resetting policy after Covid-19, the next government should try and do better.

When the border is re-opened, we suggest that the government:

- Keep current provisions for top-end skilled and entrepreneurial migrants, but substantially reduce flows of people with skills that are the same or lower than the average of the local population.
- Reduce inflows of low-cost imported labour by eliminating generous employment rights for fee-paying students and working to reduce the current number of working holidaymaker visas.
- Review the Recognised Seasonal Employer scheme with a view to better balancing productivity and humanitarian objectives.
- Use the skills, experience and connections of the Kiwi diaspora and new migrants to improve the productivity of actual and potential frontier firms and leverage potential growth markets for New Zealand goods and services.

¹³² There are currently 192,000 people in New Zealand (33,000 students; 117,000 visitors and 41,000 workers), whose visas would have expired, but cannot leave of Covid-19 (due to a lack of flights or entry restrictions in their home countries). The government has granted them temporary permits to stay.



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