ANZ Research

# NZ Insight: How does immigration affect the New Zealand economy?

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## How does immigration affect the New Zealand economy?

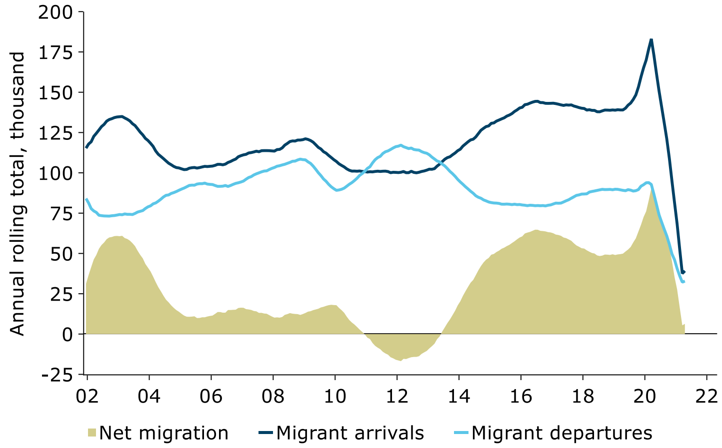
The Government has recently directed the Productivity Commission to conduct an inquiry into what immigration settings could 'best facilitate New Zealand's long-term economic growth and promote the wellbeing of New Zealanders.' But how does immigration actually impact the economy? In this Insight we try and answer that question.

- Immigration has played a big role in New Zealand's economic development over the past decade, with net immigration running at over 50,000 per year in the second half of the 2010s.
- The role of immigration in the economy is controversial – some argue it dampens lower-end wages and boosts house prices, while others focus on the benefits of being able to import skills that are in short supply.
- There are both costs and benefits, of course, and we don't attempt to judge whether a given level of immigration is 'good' or 'bad'. Rather, we use a simple modelling framework to explore the macroeconomic implications of different levels of immigration.
- The results suggest that higher net immigration increases house price inflation and residential consent issuance, boosts GDP growth, but doesn't have a significant impact (up or down) on wages or investment intentions.
- Other research highlights longer-term positive economic impacts from immigration that our modelling framework isn't designed to capture, including that firms with a larger share of skilled foreign-born workers tend to be more likely to export their goods and services.

### Introduction

Immigration has played a key role in New Zealand's economic development throughout its history, including in the past decade. In the second half of the 2010s, net immigration was running around or above 50,000 every year (figure 1), and this naturally provided a big boost to headline GDP figures. Over the period 2010-2020, headline GDP rose 32%, while GDP per capita increased a much more modest 15%.

**Figure 1. Annual net immigration**




Source: Stats NZ, Macrobond, ANZ Research

But the role immigration does and should play in the New Zealand economy remains hotly debated. Recently, the Government has directed the Productivity Commission to conduct an inquiry into immigration settings for New Zealand. Some key questions are around the impact of immigration on housing, aggregate demand, and labour market outcomes for New Zealanders.

These are contentious issues, and there are theoretical arguments both for and against high levels of immigration. For example, it's easy to argue that immigration supports long-term growth by filling key skill gaps in industries that are innovating, driving productivity growth, and adding significant value to New Zealand's exports. Alternatively, one can argue that large-scale immigration is a negative for the wellbeing of existing New Zealanders, because it can drive up house prices and suppress wages in some industries, if firms can hire large numbers of low wage workers, rather than investing in productivity-enhancing technology (which would boost the wages of existing workers).

In practice, the economic impacts of immigration are going to depend enormously on the skills and other attributes of the immigrants concerned, as well as the mix of immigration and emigration that underlies the net figure. We'll leave that magnum opus to the Productivity Commission and wish them luck with it. In this simple exercise, we just crunch the overall numbers to get a high-level overview, and don't attempt to reach any conclusions about whether immigration of any given level is 'good' or 'bad'.

## What happens if immigration is higher (or lower) over the 2020s?

Net immigration tends to be driven primarily by changes to immigration settings and relative labour market conditions between Australia and New Zealand. At the moment, we can add the pace of border opening. With the outlook so uncertain, it's helpful to ask what will happen to the economy if net immigration is stronger or weaker than we expect in coming years.

To answer this question we employ a simple model[1] that estimates the relationships between key variables:

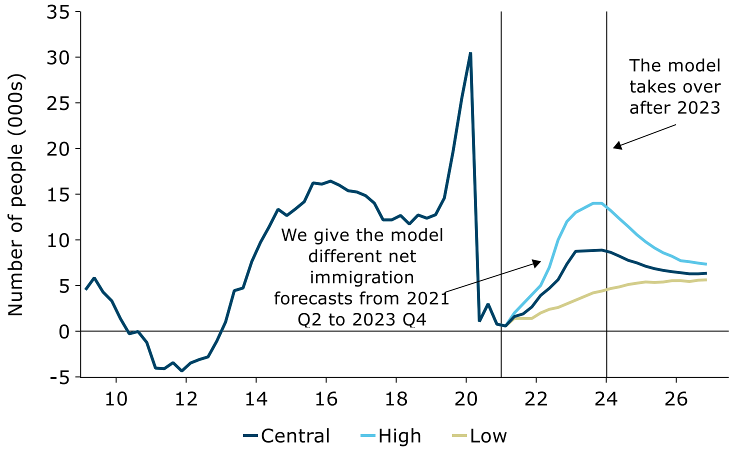
- Net immigration
- Growth in residential building consents
- Investment intentions (from the ANZ Business Outlook)
- GDP growth
- House price inflation
- Growth in labour costs
- The change in the 2-year mortgage rate

[1] For the economists and statisticians out there, we estimate a Bayesian Vector Autoregression (BVAR) with two lags, using the BVAR package in R. Given the small sample (quarterly from 1998 to 2021, using the discontinued PLT immigration data to backdate the new outcomes-based measure), we use Bayesian techniques to help mitigate the parameter proliferation problem associated with larger VAR models. We use the Minnesota Prior and allow automatic selection of the hyperparameters. We follow a similar setup to McDonald (2013), but with tweaks: our VAR is estimated at quarterly frequency, we replace the output gap with GDP growth, and we add investment intentions from the ANZ Business Outlook, as well as the quarterly percent change in the Labour Cost Index (to see whether immigration shocks impact these variables). All variables are seasonally adjusted where appropriate.

The base case we consider is our own net immigration assumption, of a gradual increase from very low levels in 2021, to just under 9,000 per quarter at the end of 2023 (or around 35,000 annually). We then model what happens to the economy if net immigration is higher or lower than we assume (figure 2).  The upside scenario assumes that net immigration essentially goes back to pre-COVID levels (peaking around 14,000 per quarter). The downside scenario assumes that net immigration increases only very gradually over the next few years to around 6,000 per quarter by 2026 – for example because the Government makes immigration settings more restrictive, or if COVID has reduced peoples' willingness to move abroad, or we see considerable outflow to Australia, or some mix of these factors.

We give the model these three different net immigration forecasts out to 2023, and see what happens to the economy out to the end of 2026.[2] These should not be treated as actual forecasts, but rather illustrative scenarios.

**Figure 2. Different quarterly net immigration assumptions**




Source: Stats NZ, Macrobond, ANZ Research

A few results stand out.

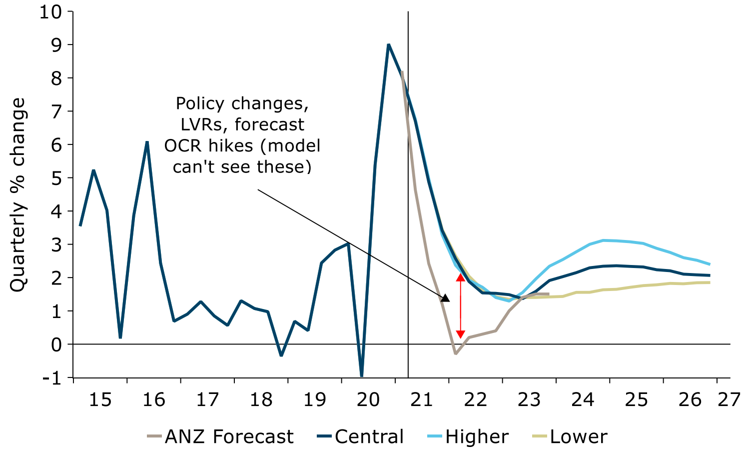
The first is that higher net immigration over the next few years would be expected to generate larger house price rises than otherwise (not a surprise, given the findings of previous research, and an intuitive result). These increases in house price inflation last quite a while too – net immigration peaks in late 2023 in our central and high scenarios, but house price inflation doesn't peak for another year after that.

In figure 3, we plot the model-generated house price forecasts alongside our current forecast. Our forecast immediately stands out as much lower than the model output over 2021 and 2022. But that makes sense – the starting-point level for housing affordability is eye-watering; we've seen a lot of policy changes by the Government; the RBNZ has reinstated and tightened loan to value ratio (LVR) restrictions; and we're expecting the OCR to be hiked from February 2022. These factors are expected to weigh significantly on house price momentum in the coming year, but aren't captured by our model.

[2] For those interested in technical details, we specify three different exogenous paths for net immigration from 2021Q2 to 2023 Q4. The BVAR package in R uses the approach developed in Waggoner and Zha (1999) to create conditional forecasts when restricting endogenous variables in a multivariate model.

Focusing on the different scenarios, annualised house price inflation peaks at about 13% in the high scenario (a total increase of 99% over 5 years) and 7.5% in the low immigration scenario (a total increase of 72% over 5 years). Those cumulative numbers sound massive, but they're well-within historical experiences. For example, house prices increased 57% in the five years to May 2021, and 98% in the five years to June 2007.

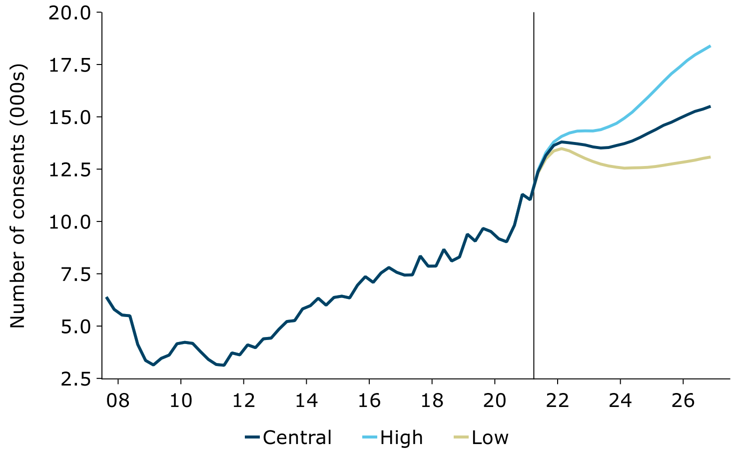
**Figure 3. House price inflation under different net immigration forecasts**




Source: Stats NZ, REINZ, Macrobond, ANZ Research

Secondly, the model implies a pretty strong response from residential building consents when migration is higher (figure 4). Again, not a surprise – people need a place to live! This strong increase in consents mitigates some of the increase in house prices via stronger housing supply. And indeed, as we explored in a recent Property Focus, high levels of building activity combined with a closed border should actually help erode the housing shortage over the next year, contributing to our expectation that house price inflation will ease quite rapidly. Of course, consenting a new build is very different from finding the contractors and building materials to complete it – especially with the supply disruptions and border closure we're experiencing at the moment.  But at least in a model that is not aware of these challenges, higher net immigration implies stronger construction activity.

**Figure 4. Residential consents under different net immigration forecasts[3]**

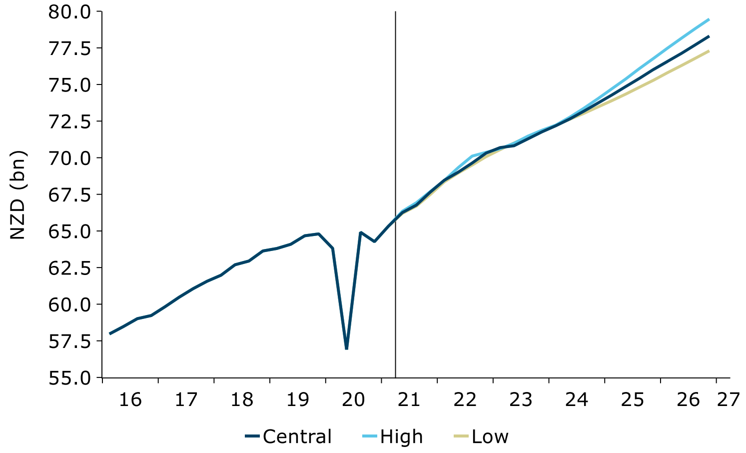



Source: Stats NZ, Macrobond, ANZ Research

[3] We use the quarterly percent change in residential consent issuance in our model, and use the forecasted growth rate to back out an implied level of consents.

This feeds directly into our third result, that higher net immigration is associated with stronger GDP, ie a larger economy (figure 5). The difference in the level of real GDP between our high and low immigration scenarios by the end of 2026 is just over $2bn – no small figure! Part of this increase in GDP will likely be from stronger construction activity, but even simpler than that, more people working and spending in New Zealand raises overall GDP. This is one reason why the size of the working-age population feeds directly into the RBNZ's estimates of the potential level of output in the economy.

**Figure 5. GDP response to different net immigration forecasts**[4]




Source: Stats NZ, Macrobond, ANZ Research

However, it's not really a surprising result to say that a higher population increases GDP. More interesting is whether immigration increases per-capita GDP. This would imply that immigration makes everyone better off in per-capita terms. Our results show a positive impact of immigration on per-capita GDP, but the impact wasn't strong enough to be considered reliable. Over a 5-year horizon, we don't see a significant impact of increased net-immigration on per-capita GDP growth.

We also don't find much of a difference in wage inflation (as measured by the labour cost index) across the different scenarios. While there could well be some selected industries where net immigration impacts wages, at a national level we don't find evidence of any significant impact. We experimented with whether net immigration impacts unemployment or employment rates by adding them to the model, but again found no conclusive results. And that's actually all quite consistent with previous studies on immigration, which find that net immigration doesn't have a significant impact on overall unemployment or wages in New Zealand. However, the aggregate may well hide interesting nuances. The impact of immigration on the New Zealand labour market is an example of a question that is probably best addressed at both a sectoral level, examining different skill/income tranches, an exercise which we will leave to the Productivity Commission.

A common argument against immigration is that businesses that want to expand may choose to hire more workers from overseas, rather than take the risk of investing in expensive new technology to improve the productivity of their existing workforce. However, the forecasts for investment intentions were very similar across our different scenarios. That doesn't rule out that such an effect occurs. But there are other effects that

[4] We use the quarterly percent change in GDP growth in our model, and use the forecasted growth rate to back out an implied level of GDP.

work in the opposite direction – for example, if firms are confident they can access workers, they are more likely to invest in plant and machinery that require those workers. This effect is likely to be most pronounced for jobs that struggle to attract local workers because of their seasonal nature, such as in horticulture.

## Isolating the impact of immigration

While analysing forecast scenarios gives us a flavour for where the economy could go under different net immigration scenarios, they're a hodge-podge of all the multi-directional causalities that are going on between everything that's in the model. To figure out whether an increase in net immigration actually causes higher house prices, we need to hold everything else constant.

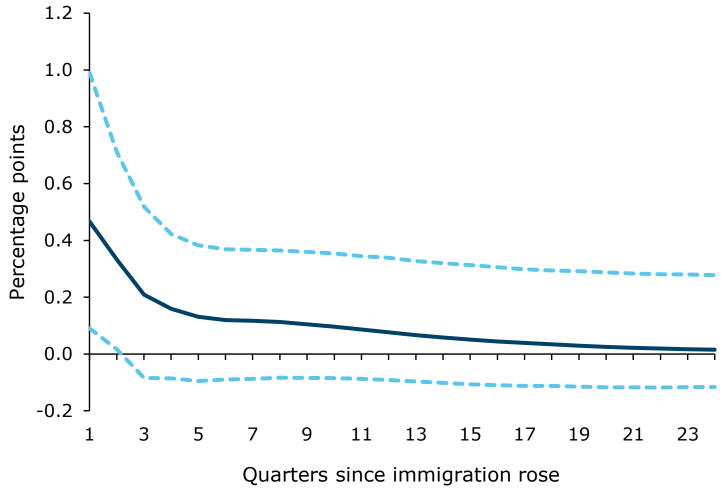
In this section, we make a few tweaks to the model which allow us to be more definitive about the impact of net-immigration on individual variables like wages.[5] We can get the answer to the question: 'what's the impact of an X increase in net immigration on house price inflation, holding everything else constant?'

Overall, our findings are consistent with the forecast scenarios – but with the tweaks we've made, we can say that our model shows that an increase in net immigration *results in* higher house price inflation, rather than saying is *associated with* higher house prices. That might sound like semantics, but it's the difference between correlation and causation.

Figure 6 shows the modelled response of house price inflation to a one-off increase in net immigration. The impact is positive, and since the dotted lines (which represent the uncertainty around this estimate) are above zero for the first 6 months after the increase in immigration, we can be confident that this result is robust. Note that it's a temporary increase in house price inflation, since the increase in net-immigration is assumed to be a one-off also. The results for residential consents showed a strong positive response to higher net immigration. Together, these findings show that higher net immigration generates sizeable upwards momentum in both prices and activity in the housing market.

[5] Technical details alert! Until now we've been working with the reduced-form BVAR. Now, we move to a structural BVAR by imposing an identification scheme – this allows us to generate impulse response functions. Because 2020 was an extremely volatile time, we restrict our sample from 1998 to 2019. We use the BVAR package in R to implement sign restrictions to achieve identification of the net immigration shock. We impose that an increase in net immigration does not result in lower consents, house prices, or GDP growth. These restrictions are based on previous findings for NZ. We also impose a restriction that mortgage rates don't respond contemporaneously to higher net immigration. We leave wages and investment intentions unrestricted, since we don't know whether these effects will be positive, negative, or zero. We initially went with a Choleski identification scheme and got similar results, but since that has some pretty well-documented limitations, we're more comfortable with our results from using intuitive, defensible sign restrictions. Finally, we also estimate the VAR with the change in net immigration (as opposed to the level) as an endogenous variable, and find qualitatively similar results to our main specification.

**Figure 6. Response of house price inflation to an increase in net immigration**[6]

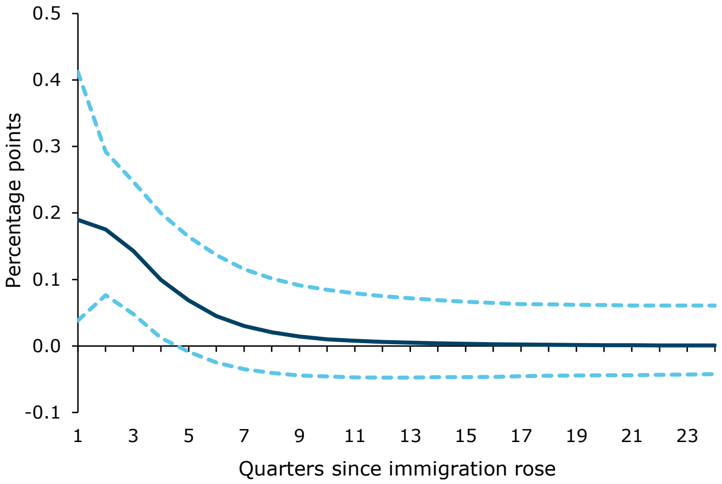



Source: Stats NZ, REINZ, ANZ Research

Figure 7 shows how the increase in net immigration impacts quarterly GDP growth. This is a positive and meaningful impact on the growth rate of the economy. As previously mentioned, the more interesting question is whether net-immigration spills over to higher GDP on a per capita basis. While the response of per-capita GDP growth is positive, it's not quite strong enough to conclude that there's anything going on here (figure 8). Again there could be some industries where being able to fill key skills shortages from overseas generates large spillovers, but for the economy as a whole, we don't find significant evidence of this.

We didn't find significant impacts of net immigration on overall wages or investment intentions – consistent with what our forecast scenarios suggested. This doesn't rule out significant effects on wages and investment in some industries, but at an aggregate level we don't find evidence of any large impact (which could occur for example if higher investment intentions in one industry are offset by lower investment intentions in another).

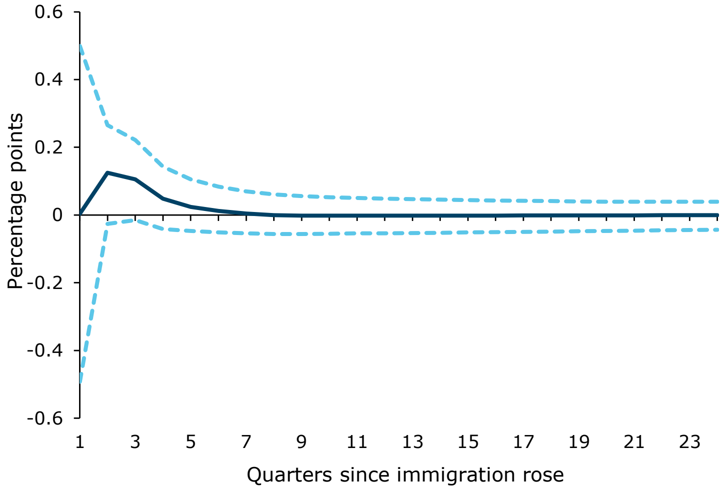
**Figure 7. Response of GDP growth to an increase in net immigration**[6]




Source: Stats NZ, REINZ, ANZ Research

[6] Dashed light blue lines show 90% confidence bands for the impulse responses.

**Figure 8. Response of per-capita GDP growth to an increase in net immigration[7]**




Source: Stats NZ, REINZ, ANZ Research

## A boost in the long run

Overall, our analysis indicates that in the short run, the main impact of net immigration on the New Zealand economy is through the housing market, via both house prices and building consents. The model results suggest that housing supply does respond, but not flexibly enough to keep up with high levels of immigration. GDP growth also rises, which is to be expected when population growth increases, but for per-capita GDP it doesn't look like there's a strong effect (in the 5-year horizon we look at). We don't find any evidence that net immigration significantly impacts wages or investment intentions, at a national level at least.

However, it's important to acknowledge the limitations of our analysis. Not all the pros and cons of immigration are macroeconomic ones – and these won't be captured in our results. We also use a fairly simple short-term model, which can't capture other longer-term positive spillovers that immigration can have on an economy. For example, some research has found that New Zealand firms which employ a larger share of highly skilled foreigners are also more likely to export their products overseas. Given that New Zealand is a small open economy reliant on international trade, that can only be a good thing in the long run. It's also the case that the impact of net migration may well differ markedly between sectors, and/or between different skill and wage tranches of the labour market. And of course, like any model, it's defined as much by what it leaves out as what it puts in. And particularly at the moment, all sorts of weird stuff is going on with the economy distorted by the closed border and last year's immense fiscal stimulus, neither of which are in our model.

To sum up, the clearest macroeconomic impact of net immigration for New Zealand is its impact on the housing market. That highlights the importance of addressing the relatively unresponsive nature of housing supply in New Zealand. We simply don't build houses fast enough to keep up with population growth (particularly following periods of strong net immigration, but also more generally), and that's fundamentally what's impacting the wellbeing of many Kiwis.

[7] Dashed light blue lines indicate 90% confidence interval. We estimate a separate model here with growth in GDP per capita instead of GDP. We don't restrict the response of per capita GDP since the relationship is unclear.

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