Time to build: the compelling case for constructing more homes after COVID-19

Report for Master Builders

August 5 2020

SENSE PARTNERS

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Context

The COVID-19 pandemic is causing an unprecedented recession. Stimulus measures are crucial to reduce the shock by boosting spending and employment, deal with underlying issues like housing and infrastructure shortages, and lock in long term social and economic benefits. Because large infrastructure projects take time to scale up, these projects should be complemented with residential construction, which is faster to deploy and supports many jobs for each dollar of spend. We estimate each additional $million dollars of new work would support 12 jobs across residential construction and the economy more broadly. The last recession showed clear risk that without support we may lose significant capacity – both in terms of jobs and firms – from the construction sector, the housing shortage will get worse, and it will be hard to scale up once the economic recovery takes hold.

Key points

The post COVID-19 economy needs fiscal stimulus

- The COVID-19 pandemic has punched a $64 billion hole in the New Zealand economy – equal to all the economic activity produced in the last quarter of 2019.
- Interest rates are close to zero. Unlike past recessions, monetary policy can't do much more, fiscal policy must lead.
- Huge fiscal stimulus is underway. But we need to ensure spending is used to maximise the economic impact, in terms of jobs and dealing with long-standing economic issues like deficits in infrastructure and housing.

Standard frameworks show building more homes would be effective

- Governments usually step up infrastructure investment during recessions. That makes sense, because construction activity leads to a lot of jobs for each dollar of spend, much more effectively than a tax cut for example.
- Construction activity leads to more jobs not just in construction, but many related industries. For example, building a new house support jobs in industries like construction services (plumbing, plastering, etc.), manufacturing, architectural services and banking and finance.
- Every $1 million spending on house building supports $2.58 million dollars in other parts of the economy. Or, every $1m of additional spending supports 3.5 jobs in residential construction, and 7.5 jobs in supporting industries. Income effects support an additional 1-2 jobs.

Stimulus needs to be quick, flexible and address long-term needs

- In recent times, monetary policy has taken the lead, so we have limited practical experience of using fiscal stimulus.
- We argue any fiscal package needs to meet three criteria:
  1. Implemented quickly delivering stimulus immediately
  2. Flexible, with the ability to scale up when needed
  3. Aligned with the long-term needs for local communities
- But building out of recessions is not just hypothetical. We can learn from countries such as Australia and the United States that fared better by building infrastructure rather than repaying debt during the last recession following the Global Financial Crisis.

…but the details are critical – getting underway early matters

- One repeated message from past experience is the need to get underway quickly. Otherwise jobs and business capacity are lost. Once lost, they take time to recover.
- This means we should include mid-size residential building projects in the mix with larger heavy and civil projects, which can take time to start up. There is a record number of residential housing projects consented but may not go ahead due to the recession. Together, they ensure the fiscal stimulus is both timely, and effective.
- It is the right time to build. investing in infrastructure alone will be too lumpy and face delays. Residential building is the ideal candidate to make fiscal stimulus more effective.

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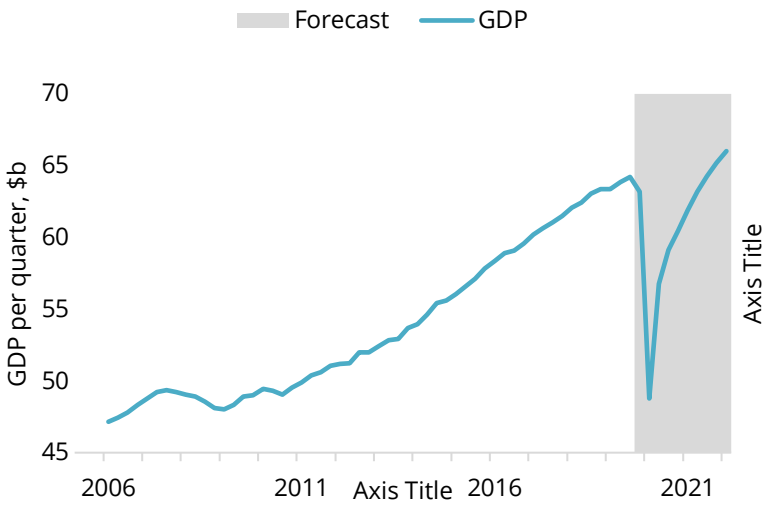
1. Post-COVID repair needed

COVID-19 pandemic smashed the economy…

The COVID-19 pandemic has taken a big toll on the economy. While New Zealand had stricter restrictions than elsewhere, restrictions have now largely been removed within our own borders. But the economy slowed sharply during the period of the lockdown according to Treasury (Figure 1).

Wage subsidies averted many job losses and business closures. But many jobs were still lost, and many more will be lost unless the economy can be nursed back to health (see Figure 2).

FIGURE 1: ACTIVITY IS EXPECTED TO FALL ABOUT 22% IN Q2
Treasury BEFU 2020 forecasts, (adjusted for Q1 actual)



Fiscal policy is the right tool to stimulate the economy. Monetary policy, the policy of choice since the 1990s, is maxed out with interest rates near zero and quantitative easing under way.

However, as temporary support measures are eased back, firms need sales to return to some kind of norm. Many businesses do not have enough cash and liquid assets to survive a long period with low sales.

Treasury forecasts the economy and the unemployment rate will improved relatively quickly. This is really predicated on the huge fiscal stimulus being both timely and effective.

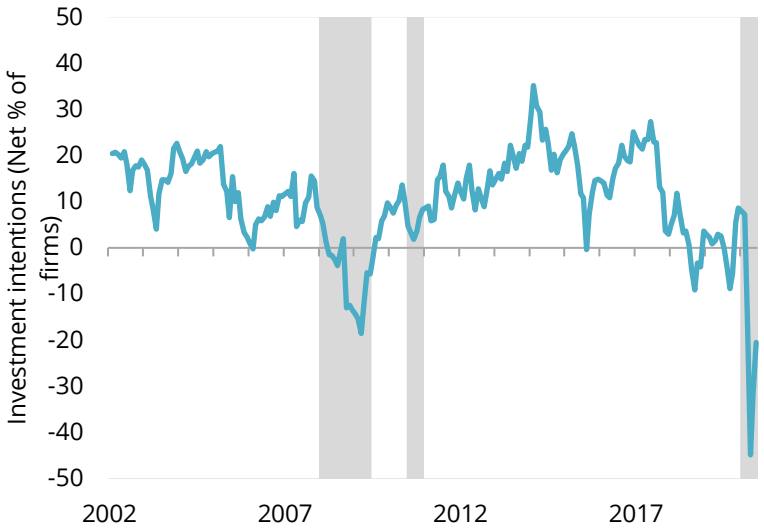
FIGURE 2:DECLINING ACTIVITY WILL BRING MORE UNEMPLOYMENT
Treasury BEFU 2020 forecasts, (adjusted for Q1 actual)

The recovery phase is crucial

Although the border remains closed to most international travel, affecting tourism and international education, the economy is moving from an initial impact phase of COVID-19 to the recovery phase. But the economic shock means that some parts of the economy will take longer to recover.

There is ongoing uncertainty on the path of the pandemic, with further waves of infections and restrictions increasingly likely in our major trading partners. In particular, an uncertain outlook is holding back investments. The timing of an effectively and widely administered vaccine also remains uncertain. This uncertainty is weighing on investment decisions by households and firms (Figure 3).

FIGURE 3: UNCERTAINTY IS LOWERING INVESTMENT INTENTIONS
ANZ Investment Intentions, (Jan month interpolated)

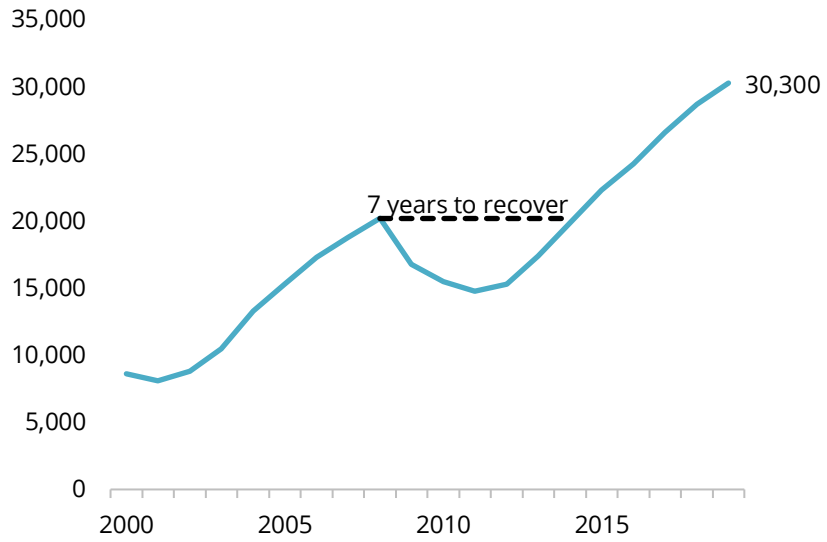


This uncertainty will hurt not just the economy but risks residential building activity too. Many homes that are consented may not be built. In the mid-2000s, 10%-15% of consents were not realised. The appetite for new builds is also blunted.

The GFC hit the residential building sector particularly hard Figure 4. Employee levels recovered to pre-recession levels after seven years.

But at least for now, residential construction has more capacity than ever. Building consents and employment are at record levels. But if we experience a slump in house building as did during the GFC, then much of this capacity may be lost for many years. Using and nurturing this capacity will both help soften the recession and help drive the recovery.

FIGURE 4: RESIDENTIAL CONSTRUCTION SLUMPED AFTER THE GFC
Residential construction, Employee count, SNZ Business Demography data



What could government do?

The government is looking to do more than simply plug the hole in the economy. There is already substantial fiscal stimulus in table, so it's not so much a question of if or how much, but what kind of stimulus will deliver the most bang-for-buck and generate the right kind of outcomes.

To date, Budget 2020 lay out $3 billion for infrastructure projects. This allocation includes:

(i) Housing and urban development: $464m

(ii) Environmental: $460m

(iii) Community and social development: $670m

(iv) Transport (cycleways, walkways, ports and roads): $708m

Construction activity – including non-residential building and heavy and civil engineering – have long been targets for governments looking to stimulate the economy. Stimulus packages through infrastructure make sense for at least three reasons:

(i) Each individual project is typically large,

(ii) Infrastructure spending has high fiscal multipliers – creating more jobs for every dollar of spent.

(iii) Infrastructure spending is generally supportive of future growth connecting more people to labour markets.

Any package needs to be:

(i) Implemented quickly delivering stimulus immediately

(ii) Flexible, with the ability to be scaled up when needed

(iii) Aligned with the long-term needs for local communities

Immediate stimulus

But fiscal multipliers need some nuance. Large scale infrastructure takes time to get off the ground.

Delays are costly. Timeframes to get started can mean a series of smaller projects, perhaps most closely characterised by residential construction projects, produce a timely boost to the economy just when it is needed.

Some construction jobs are highly specialised. But during boom times, 19 percent of the work force for construction firms are new labour. Workers are brought into employment from elsewhere in the sector and the broader economy in roughly similar numbers.[1]

Large scale projects are needed to give certainty of outlook and maintain resource in the affected industries, but will not deliver immediate stimulus unless complemented by more agile and smaller projects too. It is imperative to ensure there is a sequencing of projects that are good for the community (where the benefits outweigh the costs), maintain capacity in the sector, and is part of a suite that delivers ongoing, timely support.

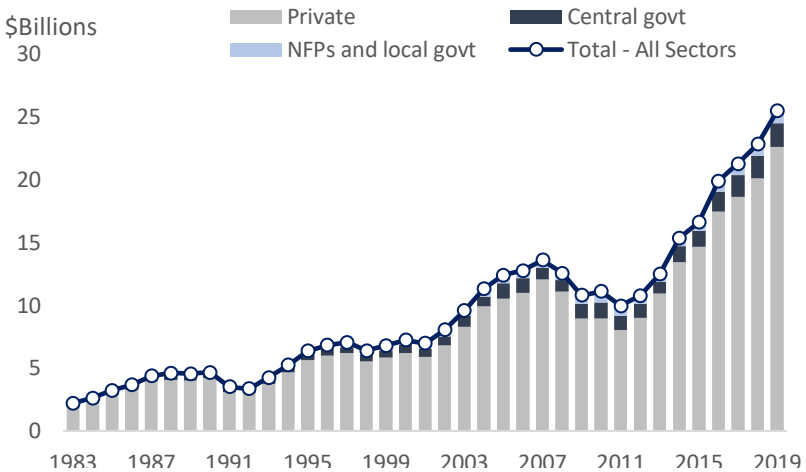
With existing capacity in the residential sector, it makes sense to protect exiting projects already consented and ready to go, preserve jobs and eat away at our long-standing housing shortage.

[1] See Chappell et al. 2018.

What does implementation look like?

Perhaps the key feature of the sector is the dominance of the private sector in driving activity for the sector. Figure 5 shows the non-for-profit sector, local and central government combine to provide only 11 percent of the value of consented builds and alteration at the end of 2019.

FIGURE 5: PRIVATE SECTOR DOMINATES RESIDENTIAL ACTIVITY
Residential construction, Value, new builds and alterations, SNZ

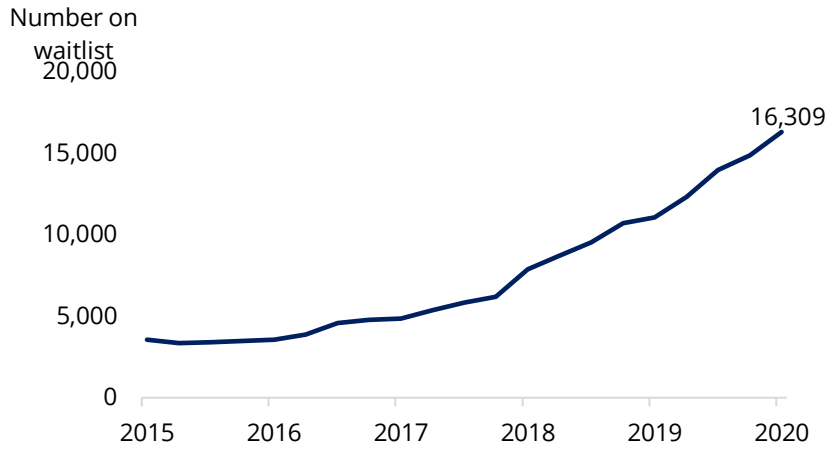


There are two approaches government could take: (i) build more housing to address long-term social need; and (ii) incentivise the private sector to stimulate demand.

Building more social housing

New Zealand has an undeniable housing crisis. Not only do we have extremely unaffordable house prices relative to incomes, there are also record levels of people on the wait list for social housing (Figure 6).

FIGURE 6: PLENTY OF PEOPLE NEED SOCIAL HOUSING
Housing register, MSD



The housing market is complex, and the crisis has proven difficult to solve, both here and internationally. Increasing housing supply, particularly of social and affordable housing, will help tackle homelessness and growing demand for public housing.

But Figure 5 makes clear there is upside room on ambition. Taking up the slack in residential construction capacity we saw after the-GFC requires an ambitious build programme. Many more homes are needed.

Incentivising the private sector

One alternative approach is to provide incentivises to the private sector to ramp up home building. In normal times, this approach is not warranted – without targeting, the costs of the programme would be eroded by applying the scheme that that would otherwise be built.

But right now the outlook for the sector is bleak. Without a change in fortunes far fewer homes will be built in the next 2-3 years and the sector will lose capacity when many workers and apprentices exit the sector.[2]

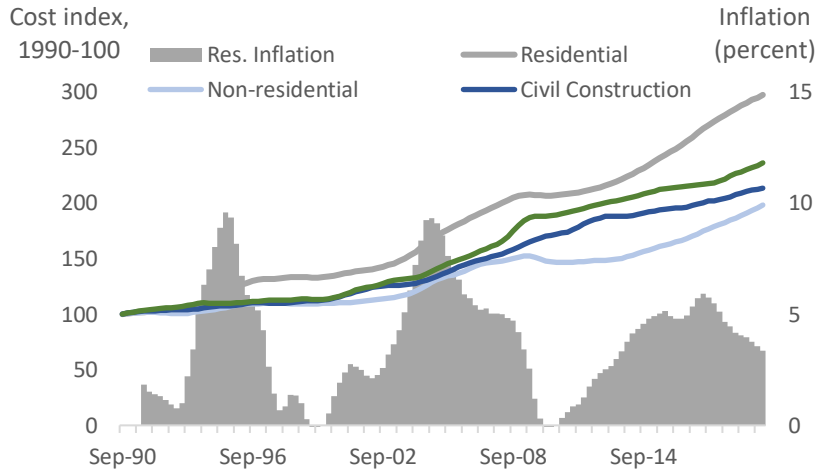
Under these conditions it makes sense to think about stimulating private sector demand by providing financial incentives to households to build. An Australian scheme provides an example of the type of programme that could stimulate demand. And if the right types of build are promoted, increase the housing stock available for social housing.

No doubt, these incentives can be costly. But the cost to sector long-term – and ultimately to the consumer – could be higher.

For too long, a punishing boom-bust cycle has worked against investing in skills and technology that increase productivity and lower costs over time. Instead, extended periods of weak demand and competitive pressures have destroyed capacity at critical times. Figure 7 shows residential construction costs have outstripped the broader economy.

Residential build costs have tripled since 1990 and are 25 percent higher in the past 5 years. The pronounced cycle in residential inflation associated with boom-bust dynamics is clear: when demand for housing increases, the capacity is not there and does not increase fast enough to keep up.

FIGURE 7: HOUSING COSTS REFLECT BOOM-BUST DYNAMICS



Flexibility

Relative to large scale infrastructure projects, smaller residential construction projects also have flexibility and can fill the books for several firms rather than securing a long pipeline of work for a smaller number of larger firms. Smaller projects have flexibility to be spread across regions.

Since residential building can have shorter times to get started, it is worth looking closely at how residential building can provide an immediate and effective stimulus to the economy.

There is an opportunity to transform how residential building operates.

[2] For example, the Reserve Bank expects the sector to lose $6.6 billion of activity over the next three years.

2. Building homes provides effective economic stimulus

Assessing efficacy

Residential construction directly employs many people…

To test the efficacy of spending more on residential homes relative to other sectors, we need to understand both the span of residential construction activity and linkages across industries.

Residential construction directly employed 41,700 people across New Zealand in the March 2020 year. Most activity is conducted by small businesses with some 21,687 firms in operation in 2019. And growth of the sector has been rapid – employment doubled in the 7 years from 2012.

Output also has been high. Spending on residential buildings totalled $23.3b in the March 2020 year. Over 37,000 new houses were consented and 26,422 altered. Prior to COVID-19, Government expected $26 billion of residential construction in 2020.[3]

…and relies on suppliers from many sub-industries

Residential construction requires inputs from many supporting industries from architects and engineers to suppliers of materials. 84% of the spending on residential construction is spent on purchases from suppliers, compared to 68% for heavy and civil.

These connections are important since industries with many supporting sectors, that provide intermediate inputs to final production, have high multipliers: any increase in output spill-over to the supporting industries.

These are first-round impacts. But supporting industries also employ other supporting industries to produce outputs. And the spending from income that accrues from economic activity also matters for estimating stimulus.

We estimate stimulus from each industry from input-output tables

The foundation of our analysis starts with the *input-output matrix* that matches outputs supplied by each industry in the economy (the rows of the matrix) with the users of the outputs (the columns of the matrix).

This matrix shows the linkages between industries and show which industries need to increase inputs to support an increase in the output of a certain industry. We then construct the impact of an increase in activity throughout the economy from additional demand for a specific industry in the economy. Our Appendix provides additional technical details.

Constructing multipliers from input-output tables comes with caveats. The multipliers implicitly assume inputs can be scaled linearly to produce outputs – economics (or diseconomies) of scale are ignored. Relative comparison is more useful in these types of analysis.

Construction supports more activity than other industries

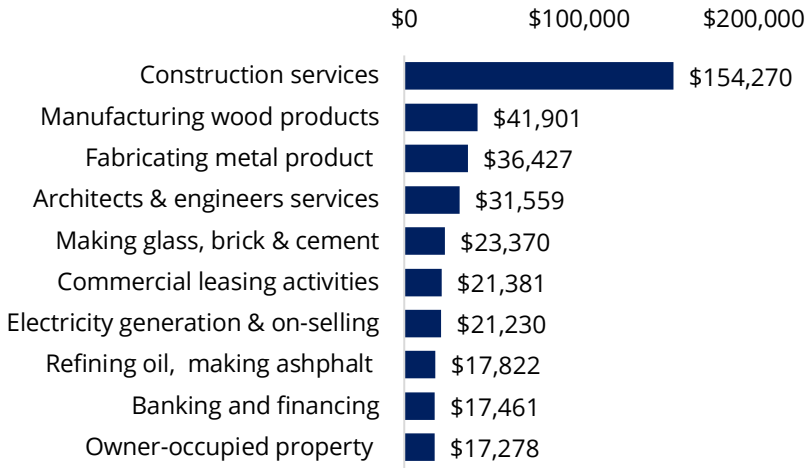
We find the construction sector – including residential construction, non-residential construction, and heavy and civil engineering – all have above

[3] See MBIE's National Construction Pipeline report, 2019.

average multipliers. Fiscal stimulus targeted towards these sectors will have larger impacts on economic activity than stimulus pushed towards the other sectors that make up New Zealand's economy.

Figure 8 shows the interactions that underpin the strength of the multiplier we find for residential construction. Any increase in residential construction pulls in inputs from many subsectors.

FIGURE 8: BUILDING MORE HOMES LIFTS SUPPLIER INDUSTRIES
Residential constructions linkages for every $1m of spend, constructed from SNZ '13-14 IO tables



In fact, residential construction has a multiplier of 3.58, suggesting every million dollars of output from the sector generates a little over 3.5 million dollars of activity through the economy.

For residential construction, this consists of three components:

$$\text{Total impact} = \text{Initial impact} + \text{Industry effects} + \text{Income effects}$$
$$3.58 = 1.00 + 2.07 + 0.51$$

But rather than focus too much on the absolute multiplier we look at the relative size of multipliers across all 106 industries.

Figure 10 on the following page shows residential building clocks in with the 7th highest multiplier. Non-residential construction has the highest multiplier of any industry - 3.6. Heavy and civil-engineering also has a high multiplier – 3.4, the 18th highest multiplier.

When we combine this multiplier with the number of jobs produces by all the supporting sectors, we find a million dollars of activity supports 12.5 jobs across the economy, similar to infrastructure (see Figure 9).

FIGURE 9: BUILDING MORE HOMES LIFTS SUPPLIER INDUSTRIES
Jobs per $1million dollars of new work

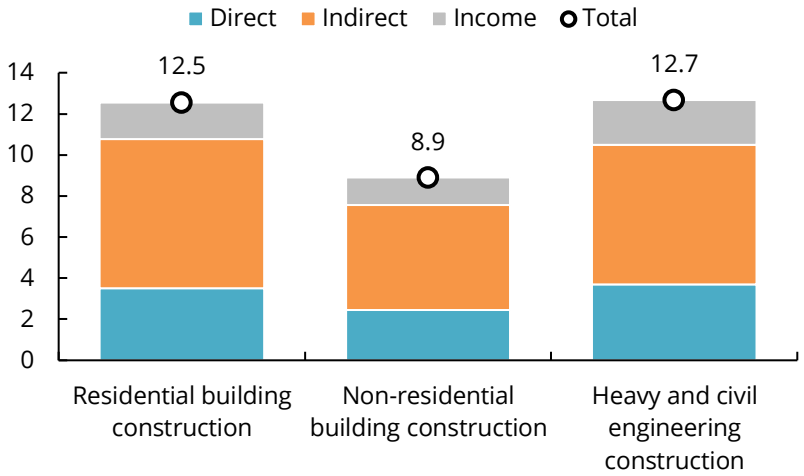
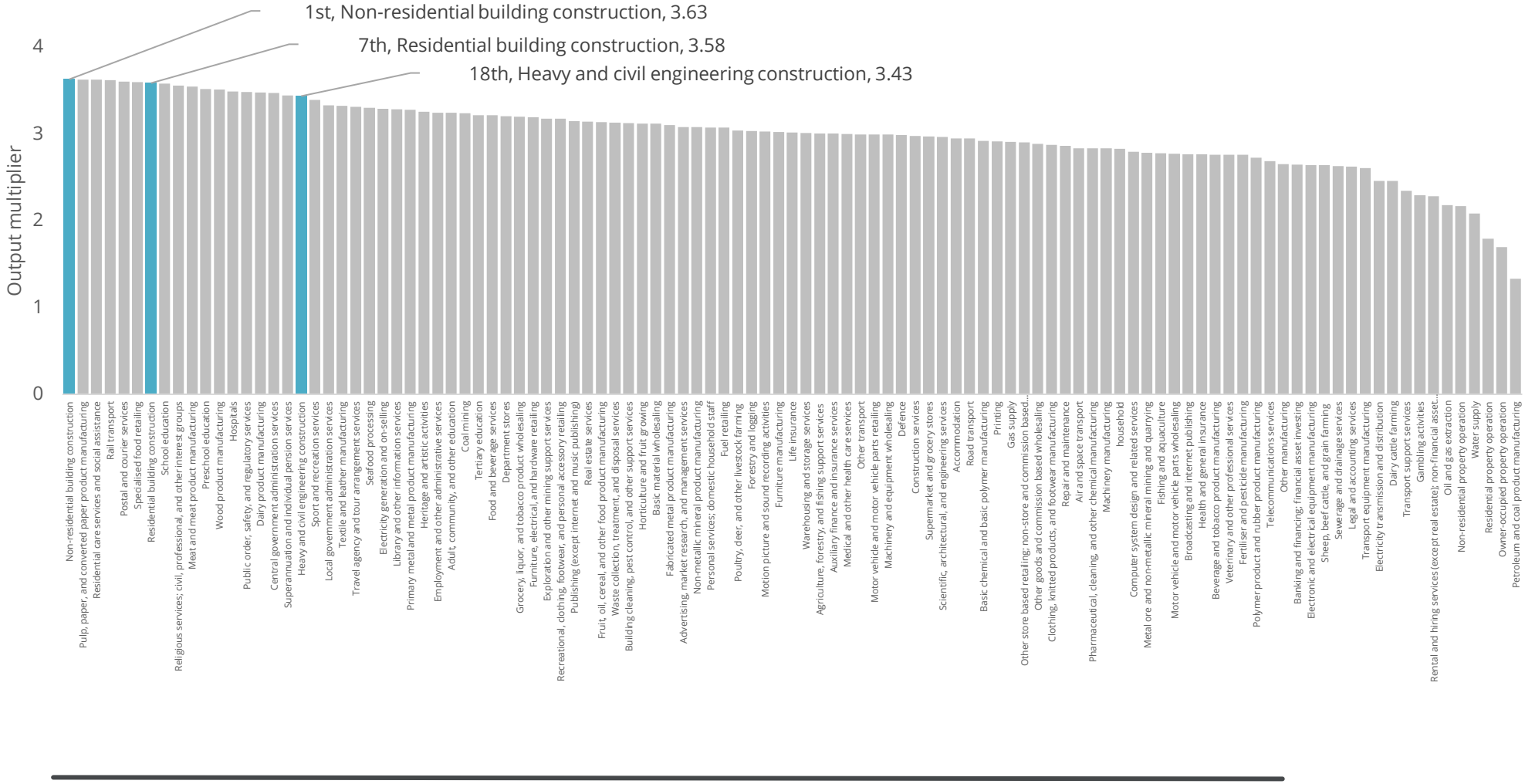


FIGURE 10: BANG FOR BUCK –MULTIPLIERS FOR NEW ZEALAND'S SUB-INDUSTRIES

Fiscal multipliers constructed from Statistics New Zealand's 2013-14 Input-Output tables



3. Learning from the past

International experiences

Austerity didn't work after the GFC…

Perhaps the largest single lesson from what to do with fiscal policy comes from the Global Financial Crisis. Countries that pursued austerity measures to pay down debt generally fared worse than countries that continued to support the economy with expansive fiscal policies.

Research shows that UK GDP might have been expected to be 3 percent after the GFC has austere policies been dropped.[4]

Other factors matter, including a decline in oil production and a credit crunch that was deeper in the UK than the US,[5] but the message is clear: austerity needs to be left to boom times not to the crisis and recovery.

… infrastructure spending can help

While much of macroeconomics focusses on general fiscal, relatively little focusses makes concrete which types of fiscal stimulus programmes are likely to prove most effective.

But we can learn from the 2009 American Recovery and Reinvestment Act.

This stimulus package provided about $800 million of stimulus after the GFC to help save jobs and create new opportunities. For comparison, the IMF estimates the Coronavirus Aid, Relief and Economic Security Act to provide about $2.3 trillion (11% of GDP) stimulus.

The magnitude (but not the direction) of the impacts of the programme are varied. But in 2015 the CBO estimates a reduction of 1.1 to 4.8 percentage points in the unemployment rate.

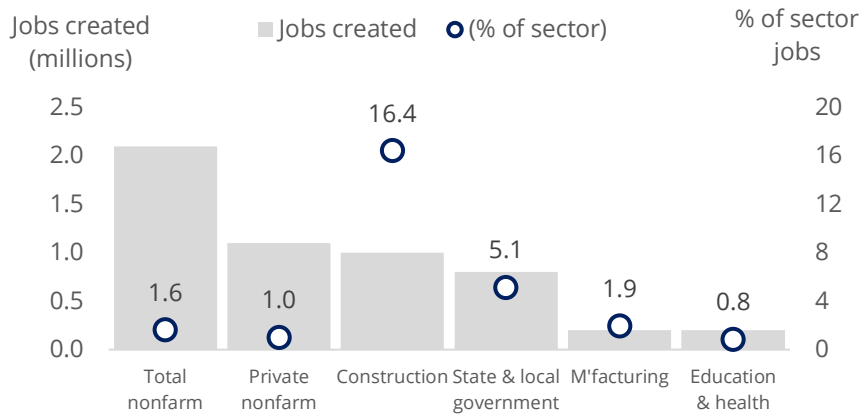
Other research estimates the impacts of specific components of the ARRA stimulus package.[6] Spending on infrastructure and housing (about $15 billion USD) provided an additional million jobs in the sector – about 16% of total construction sector employment (see Figure 11).

The ARRA was unusual relative to previous US stimulus programs by focussing on infrastructure spending and fiscal aid to state governments. The programme was also instituted at a then unprecedented time - underutilisation of labour likely made the stimulus more effective.[7]

[4] See Taylor 2013.
[5] See Davies 2012. Research also suggests material difference across whether austerity measure are implemented via taxes or reductions in spending (see Alesina et al. 2019).

[6] See Wilson 2012.
[7] Multipliers are likely higher in downturns (Auerbach and Gorodnichenko 2012, although this is disputed by Ramey and Zubairy 2012).

FIGURE 11: US ARRA ACT SHOWS CONSTRUCTION BOOSTS ACTIVITY
Estimates from Wilson 2012

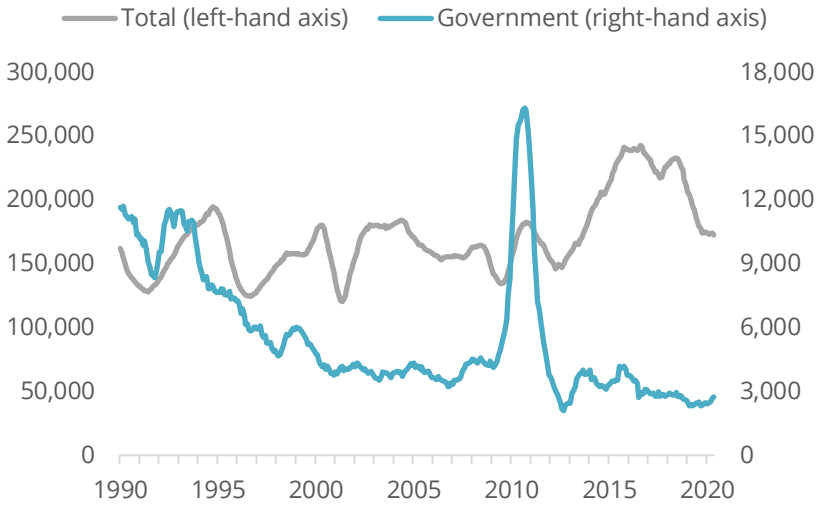


Australia also issued fiscal stimulus rather than adopt austerity. Several packages worth around 4% of GDP were adopted. Remarkably given the extent of the GFC, Australia was able to avoid a technical recession.[8]

One of the GFC packages was the Social Housing Initiative, which built 19,500 social housing units and refurbished another 80,000 units at a cost of A$5.2 billion.[9] Rather than central government build the units, state governments contracting community housing providers to build the units.

Figure 12 shows the initiative was able to be implemented quickly with government consented units providing a much-needed boost to total consents in the recovery from the GFC.

FIGURE 12: SOCIAL HOUSING BOOSTED AUSTRALIA'S GDP POST-GFC
Building consents by sector



[8] See Economist 2020

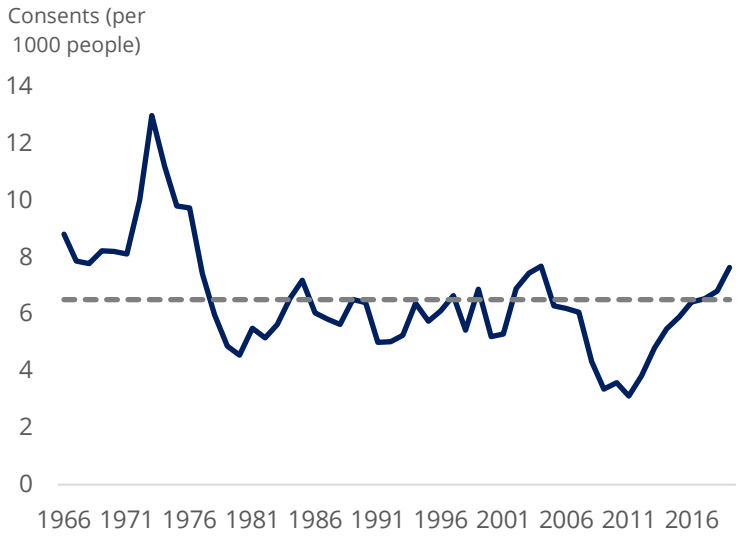
[9] See Coates 2020 who argues Australia should repeat the Social Housing Initiative considering COVID-19.

Let's not repeat our past

Residential construction has much higher volatility in employment and output than other sectors. Avoiding boom-bust cycles would promote and develop skill retention and lift productivity.

Right now, capacity to build within the sector is high – filling the hole in activity left after the GFC (see Figure 13). But post-COVID uncertainty threatens investment in hiring and training of apprentices and investing in new technology like pre-fabrication. A clear building pipeline would reduce uncertainty, retaining jobs and lifting performance of the sector.

FIGURE 13: THE BUILDING RATE EXCEEDS THE HISTORICAL AVERAGE
Building consents per 1000 residents (new builds)



4. Conclusion

The COVID-19 pandemic has punched a hole in the economy. Fiscal stimulus is needed more than ever to repair and rebuild the damage. Stimulus has been forthcoming, now it is about making sure we get the best bang-for-buck.

The case for building more homes is compelling for many reasons:

- Construction relies on many suppliers to make housing and other infrastructure projects happen. This means any additional demand for construction outputs lifts jobs through the economy.
- Compared to large scale infrastructure projects, building homes can be brought on-line quickly and with the flexibility to shore up a pipeline of projects for several firms across multiple regions, rather than a single supplier in one region alone.
- The long-term proposition is also compelling – it is hard to escape the housing crisis despite the capacity that has been developing in the sector.
- But a post-COVID slowdown risks repeating the boom-bust cycle that prevents the sector tooling up with new skills and new technologies, perpetuating a cycle of low productivity and high costs.

More than ever the time to build is now.

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Appendix: Input-output multipliers

Overview

Multipliers from Input-Output tables are a standard technique in the economic toolkit with a long history of providing broad estimates of the economic impacts from industry specific activity.

Input-output tables assume marginal changes to activity are reflected in industry inputs and outputs across the entire sector. This means there are no economies (or diseconomies of scale) and every firm in the sector is assumed to operate the same production techniques.

The basic foundation of input-output tables starts with a matrix that matches outputs supplied by each industry in the economy (generally the rows of the matrix) with the users of the outputs (generally the columns of the matrix). This matrix can be used to show the linkages between industries and show which industries need to increase inputs to support an increase in the output of a particular industry.

Obtaining output multipliers

To obtain our initial output multiplier we first construct the Leontief inverse matrix:

$$L^1 = (I - A)^{-1}$$

where A is the input-output table that capture linkages between sectors and I is the identity matrix. Summing the columns provides our estimates of the multipliers associated with each sector:

$$O_j^{m1} = \Sigma_i L_{ij}^1$$

These are the first round, direct (or Type I) impacts associated with an increase in output in a sector.

We also construct multipliers that include the induced demand effects that include the spending impacts from income accrued to households from additional activity. To construct these second round or induced effects (Type II) multipliers we append a household sector to the input-output table by adding a row with compensation of employees and a column with final consumption expenditure, that is:

$$L^2 = \begin{bmatrix} L^1 & C \\ W & 0 \end{bmatrix}$$

where L^1 is the Leontief matrix from the direct impacts, C is a vector that capture household consumption expenditure and W is compensation of employees (built relative to total household income). We also obtain the second round multipliers by summing the Leontief matrix columns:

$$O_j^{m2} = \Sigma_i L_{ij}^2$$

The basis for our input-output tables

We use the latest available input-output tables from Statistics New Zealand that relate to the 2013/14 fiscal year. To obtain estimates of the impact of changes in sector activity on employment we use disaggregated employment data from the business demography database to relate the 106 New Zealand Input-Output Classification sub-industries to jobs.

As a cross-check on our computations, we check our code replicates the presentation of multipliers in D'Hernoncourt et al (2011). This is consistent with Eurostat 2008 and others.