

# Analytical Notes

## Monetary Policy Easing and the Distribution of Wealth in New Zealand.

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## Key findings

- The paper investigates the effect of monetary policy shocks on the distribution of wealth using a stylised model of the New Zealand economy. We find that a 50 basis point reduction in the OCR leads to a more equal distribution of wealth in the economy – with the Gini coefficient falling by approximately 0.5 percentage points.
- This drop occurs gradually and reaches its trough after 5 quarters, remaining persistently lower thereafter.
- NB: The key missing channel in the model used in this Analytical Note is asset prices, which may also change following a monetary policy shock - this is the portfolio composition (capital gains) channel. In the New Zealand context there has been a sharp increase in house prices over the past 18 months, in part due to lower mortgage interest rates. This research aims to take initial steps in analysing these distributional implications by building a macroeconomic model that captures changes in savings and income flows of different households. By design this does not capture the impact of capital gains, but that will be investigated in future work.

## Introduction<sup>1</sup>

The high level aim of the Reserve Bank of New Zealand is to promote the prosperity and well-being of New Zealanders. When it comes to monetary policy, the Bank achieves this through setting its policy tools to maintain price stability and support maximum sustainable employment. The Bank's policy tools are the Official Cash Rate, and additional monetary instruments.<sup>2</sup>

Many economists believe that pursuing these goals is the best contribution that monetary policy can make to the wellbeing of New Zealanders. However, monetary policy is a blunt tool. It is calibrated to the economy as a whole, rather than targeted towards certain conditions in sectors of the economy or society. As a result, while monetary policy can improve outcomes for New Zealanders in aggregate, there may be those that benefit more from certain policies settings than others. We term these differing effects on parts of society 'distributional effects'.

More recently, there has been increased interest from the public and Government on the distributional impacts of monetary policy. Nominal interest rates have on average declined over the past few decades. This has seen interest rates fall to very low levels, and have played a substantial role in boosting asset prices, including house prices. At the same time, low interest rates have meant lower returns to savings for many New Zealanders. Given that monetary policy is primarily implemented through changing interest rates (or improving credit availability through alternative monetary policy instruments), the public has rightly questioned the role the Bank has played in these outcomes, and whether these are the best outcomes for society.

<sup>1</sup> The authors would like to thank Fang Yao, Murat Ozbilgin, Robert Kirkby, and colleagues at the Reserve Bank for their input and feedback.

<sup>2</sup> <https://www.rbnz.govt.nz/research-and-publications/reserve-bank-bulletin/2021/rbb2021-84-01>

Disentangling the distributional effects of monetary policy from other drivers of lower interest rates and/or changes in the distribution of wealth is not an easy task. For starters, the Bank does not have absolute control over interest rates. The large decline in the interest rates faced by households and businesses in New Zealand over the past few decades has been driven by a decline in global interest rates (or the global 'neutral' rate). This reflects global structural factors like demographics, savings and investment preferences, government policy settings, and economic development and integration. Lower global interest rates reduce the neutral rate of interest in New Zealand. Monetary policy then refers to policy interventions that lead to changes in interest rates relative to this neutral rate, in order to meet the Bank's dual mandate. Analysing this requires a model that can separate these determinants of a decline in interest rates.

At the same time, monetary policy affects individual New Zealanders through a number of channels. Some are obvious, like a change in mortgage or deposit rates. Some are less obvious but just as important, like a cut in the OCR supporting demand in the economy and in turn potentially preventing job losses or business failures.

This paper is part of a series of work the Bank is undertaking to disentangle these different forces, and build an evidence base on the distributional consequences of monetary policy.

## What is our research question?

Leong (2021) highlights four possible channels through which monetary policy easing can affect wealth inequality.

- **Savings redistribution channel:** Lower official interest rates (monetary policy easing) reduce fixed income returns and debt payments – borrowers are better off, savers are worse off.
- **Portfolio composition channel:** Lower interest rates can boost asset prices – potentially benefiting those with larger asset holdings.
- **Income composition channel:** Lower interest rates support labour and business income, which affect different parts of society in different ways.
- **Earnings heterogeneity channel:** Monetary policy easing supports employment. This leads to some people who would otherwise have been unemployed, or had their hours reduced, staying in work.

In the New Zealand context there is limited household level information available to tease out these channels. Furthermore, even with such data it can be difficult to disentangle the varying channels to understand the role of monetary policy as changes in wealth inequality may themselves influence monetary policy.

To get around these issues we investigate the effect of monetary policy on the distribution of wealth using a model of the New Zealand economy. This model features individuals who make savings and consumption decisions in the face of uncertainty about their future income.<sup>3</sup> Faced with this uncertainty, individuals save a portion of their current income to offset the potential for low earnings in the future ('precautionary savings'), as well as to smooth overall

<sup>3</sup> In the academic literature this is known as a Heterogeneous Agent New Keynesian (HANK) model. The outline of the model is presented in the Technical Appendix. A forthcoming paper will describe the model in detail.

consumption across time. Such a model describes what will happen to employment, incomes, and the accumulation of wealth when new economic events ('shocks') occur (i.e. when monetary policy changes). As a result, such a model allows us to ask "what if" questions about the distribution of wealth if monetary policy was to change. Distributional channels present in the current model include savings redistribution, income composition, and earnings heterogeneity, allowing us to investigate the relative contributions of each of these.

The key missing channel in the model is asset prices, which may also change following a monetary policy shock - this is the portfolio composition (capital gains) channel. In the New Zealand context there has been a sharp increase in house prices over the past 18 months, in part due to lower mortgage interest rates and limited opportunities to spend and invest due to the pandemic. Although this may be an important channel for considering the wealth distribution, it is unlikely to be important when looking at a small temporary change in monetary conditions. This research aims to take initial steps in analysing these distributional implications by building a macroeconomic model that captures changes in savings and income flows of different households. By design this does not capture the impact of capital gains, a channel that will be investigated in future work.

This model is calibrated to match the information we have about the New Zealand economy, using administrative data from Stats NZ's Integrated Data Infrastructure (IDI) - a collection of government information such as tax data. We use earnings data from the IDI to directly tune individual income dispersion in the model, and compare the resulting distribution of wealth with that found in the data to validate the calibration. A model that can match outcomes in the real world makes us more confident in the insights the model provides.

## Does previous work exist?

Leong (2021) gives a summary of international and domestic evidence on the distributional effects of monetary policy, and highlights key channels through which monetary policy is transmitted. Nolan (2021) also provides evidence that relates to one of the transmission channels for New Zealand - the savings redistribution channel which mainly works through household cash flows. This paper indicates that lower interest rates tend to reallocate income towards those with average incomes, especially those who are younger and have a mortgage. However, borrowers and lenders were not assumed to change their savings behaviour in this model, which motivates looking at a structural model of the economy that embeds this type of behaviour.

These papers contribute to the Bank's wider work program on the distributional effects of monetary policy. Our paper expands upon this prior work by incorporating three of the channels identified in Leong (2021) (the savings redistribution channel, the income composition channel, and the earnings heterogeneity channel) into a macroeconomic model. Our research question is then: How does a loosening in monetary policy through lower official interest rates transmit through the savings redistribution, income composition, and earnings heterogeneity channels and what is the overall effect on wealth inequality?

## Method

In order to answer our research question we use a structural model of the New Zealand economy with heterogeneous agents. In contrast to standard representative agent macro models, our model is able to output the entire distribution of accumulated savings across individuals in the economy. Changes to individual savings and consumption behaviour in response to a given economic shock is the main driver of any change in the wealth distribution that is described.

In this model there is a large number of infinitely-lived agents who are, initially, the same. All else equal, the agents in this model would make the same choices. However, as they go about their lives, these agents experience shocks that change their income levels in random ways. Intuitively, an individual may be fortunate and find that they are in a role or job that is progressing quickly providing them a higher wage (a positive shock), or they may instead be in a situation where their hours are being cut or they are being laid off (a negative shock). Since agents can only partially insure themselves against these shocks by accumulating savings, after a period of time they will differ in both income and accumulated savings.

This earnings heterogeneity influences the incentive to save in two ways:

- Those who see themselves as being temporarily lucky will save, while those who are unfortunate (i.e. those who lose their jobs) will make use of prior savings or borrow.
- As each individual knows there is a risk of losing income or losing their job in the future, they will save for precautionary reasons.

This combination of motives leads to different savings rates between individuals. This flow of saving builds up the stock of wealth for those who can save, leading to an uneven distribution of wealth. In this framework people who experience a series of positive shocks accumulate wealth in government bonds, while those facing negative shocks draw down their holdings or borrow up to a fixed limit on debt. Our model closely follows methods described in Ahn et al (2017) and Kaplan et al (2018).

Outside of earnings heterogeneity, the model used follows a typical dynamic stochastic general equilibrium model, which represents an economic environment where distribution over wealth and income arises in equilibrium and monetary policy responds to inflation. Households are subject to uninsurable idiosyncratic labour income risk which leads to diverse employment histories and consequently to diverse wealth holdings. Goods are produced by monopolistically competitive firms which maximise profit subject to price adjustment frictions. To capture the effect of monetary policy in setting price level of consumption, we include nominal rigidities of the Rotemberg (1982) form with quadratic adjustment costs.

Government in the model consists of a central bank and a fiscal authority. The central bank adjusts the nominal interest rate mechanically in response to inflation, and may also make one-off surprise changes to this rate. The fiscal authority taxes labour income at a flat rate, issues bonds (government borrowing), and adjusts lump sum transfers to households to balance its budget.

The earnings shocks faced by agents in the model are drawn from the observed distribution of earnings across wage and salary earners in New Zealand. In that way the model refers to a situation where the key differences between individuals refers to their ability and opportunity to generate income.

In order to ask this model's hypothetical questions about how monetary policy works through the savings, income, and earnings heterogeneity channels, it needs to be calibrated to fit New Zealand data. To do this we use the Employer Monthly Schedule (EMS) administrative job data from the IDI, Stats NZ. This data is used to produce the filled jobs and gross earnings indicator series. We use individual level annual gross earnings from all jobs filled by the wages and salary earners. We also convert nominal earnings into real values using CPI adjustment. Gross earnings correspond to the amount paid to all employees in the reference month. It excludes retirement payments, redundancy payments, and employee benefits.

Following recent literature (Guvenen et al (2015)), we calibrate labour outcomes in the model to match the moments of changes in the logarithm of earnings at one year and five year horizons between 2014 and 2019. We focus on the first four moments of earnings changes over the life cycle, shown in Table 1.

**Table 1: Moments of earnings growth**

<b>moments (t-1) for years 2014-2019</b>				
n = 1769952	mean	SD	skewness	kurtosis
log earnings	0.319	1.283	0.147	9.724
<b>moments (t-1) for years 2018-2019</b>				
n = 2353800	mean	SD	skewness	kurtosis
log earnings	0.074	0.861	-0.278	15.502

**Table 2: Model fit**

	<b>US</b>		<b>NZ</b>	
	Data	Model	Data	Model
Wealth Gini	0.77-0.78	0.76	0.68-0.69	0.6
Income Gini	-	-	0.43	0.54
Wealth quintile 1	(-0.2)-(-0.9)	-0.4	-0.1	0.64
Wealth quintile 2	0.8-1.2	0.4	2.7	3.8
Wealth quintile 3	4.4-4.6	3.5	8.7	11.6
Wealth quintile 4	12.0 - 13.0	14.8	18.7	24.4
Wealth quintile 5	82.5-82.7	81.7	69.9	60

Table 2 shows the Gini coefficient and wealth shares of different quintiles (bottom 20% to top 20% respectively), and how the model outcomes compare to these data in both the United States (Kaplan, Moll, and Violante (2018)) and New Zealand<sup>4</sup>.

This demonstrates that the HANK model is capable of generating a distribution of wealth similar to that in either country when calibrated with the respective earnings process. The Gini coefficient for wealth (a summary measure of the gap in wealth between individuals) is 0.6 in this model, compared to 0.68-0.69 in the underlying data. Furthermore, the wealth share of the top 20% of wealth holders in New Zealand is 60% in this model compared to 69.9% in the data.

## Savings and wealth

Saving in this model is achieved by amassing a stock of government bonds that generate a continuous flow of interest income. Conceptually, this is the same as imagining if everyone held their wealth in bank deposits. Higher or lower official interest rates (monetary policy) could change the distribution of wealth by changing the rate people save at (the inflow to the stock of bank deposits), changing the rate of interest earned, and by changing individuals' incomes by supporting employment and business activity.

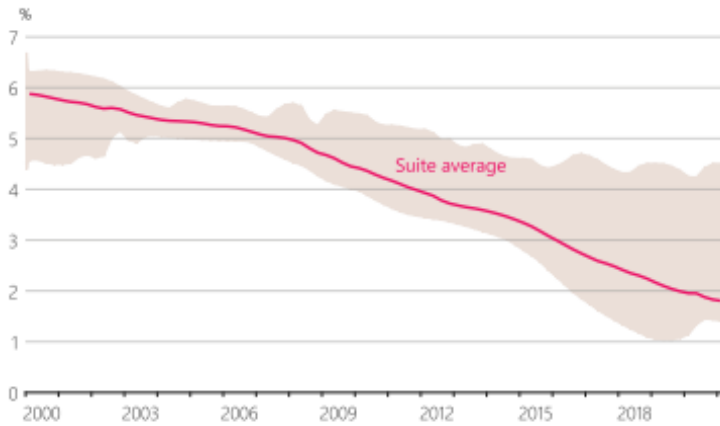
A channel which is not considered here is that through asset prices, which may also change following a monetary policy shock - this is the portfolio composition (capital gains) channel mentioned above. This may appear to be a significant limitation, particularly in light of the substantial increase in house prices we have seen over recent decades in New Zealand, and we plan to conduct future research to quantify this channel in more detail. However, the current analysis provides invaluable understanding of how OCR changes interact with fundamental precautionary and intertemporal savings incentives, which will form the basis for understanding richer environments with varying asset types.

Moreover, to highlight why excluding portfolio composition may not be as big a limitation as it may first appear, it is worth breaking down the components of interest rate movements in New Zealand. Figure 1 below shows the official cash rate (OCR) in New Zealand, and the Bank's estimate of the neutral OCR. The neutral interest rate is the short-term interest rate at which monetary policy is neither expansionary nor contractionary. It is determined by the long-run demand for capital investment and the supply of savings. It is largely out of control of the central Bank, and instead reflects slow moving international structural factors. The Bank, instead, sets the OCR above the neutral rate if inflation and employment exceed the mandate, and vice versa.<sup>5</sup>

### Figure 1: New Zealand neutral interest rate indicator suite (nominal)

<sup>4</sup> Source: Stats NZ, Household Net Worth Statistics: Year Ended June 2018, <https://www.stats.govt.nz/information-releases/household-net-worth-statistics-year-ended-june-2018>

<sup>5</sup> <https://www.rbnz.govt.nz/monetary-policy/monetary-policy-statement/mps-august-2021>



Source: Bloomberg, Consensus Economics, Stats NZ and RBNZ estimates.

The point in this context is to highlight that monetary policy is a cyclical policy, set around the long-run trend interest rate. Temporary shifts in the OCR (which are being modelled here) are likely to have less of a persistent impact on asset prices, relative to these long-run more permanent movements in the neutral interest rate.

## Key results

### Distributional impacts of monetary policy

With the model set up, we can use it to ask a specific “what if?” question. What would happen to the distribution of accumulated savings, and other economic variables, following a surprise 50bp cut in the official cash rate?

In response to the cut, the incentives individuals in the model face will change. In particular, in the presence of inflexible prices, the cut in the central bank rate will result in a reduction in the real rate used by individuals to price consumption today compared to consumption tomorrow, making the latter relatively more expensive. For a typical individual, this makes consumption today more attractive and saving less attractive, resulting in higher aggregate demand. Firms, meanwhile, respond to this demand by increasing supply, which requires higher labour input driven by increased wages, which must be offset by increased prices.

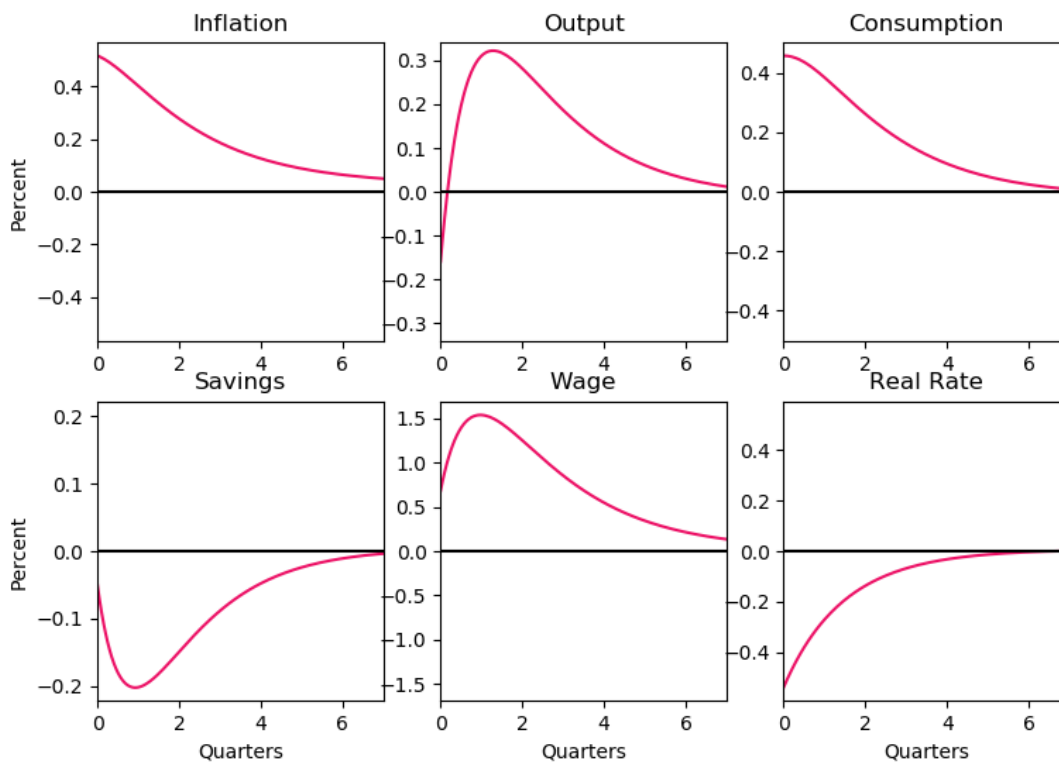
The strength and direction of the incentives on the household side vary significantly with the level of savings held by a given individual. For example, some households in the economy will be net borrowers when the cut happens, and these households will face lower interest payments. In the extreme, a household who is borrowing constrained may have a relatively strong demand response faced with this increase in income than someone with access to liquidity who faces the same income shock. These diverse incentives and optimal responses to the cut, taken together, determine the response of economic aggregates.

Figure 2 shows that the OCR cut has the expected impact on key indicators of the overall economy. The top left graph shows the reduction in interest rates leads to an immediate 0.5% increase in the inflation rate which slowly reduces to 0.05% over 6 quarters. The top middle graphs shows that output initially drops by 0.1% in response to the cut, but that this quickly reverses with output increasing by 0.3% over the first two quarters before declining back to its initial value over a year and a half. The top right panel shows that consumption



increases by 0.4% on impact and declines back to its initial value over 6 quarters. The wage rate increases immediately by 0.75%, as shown in the bottom middle panel, and continues to increase to a peak of 1.5% above its initial value in the first quarter following the cut, before declining to 0.25% over 6 quarters. Importantly, the reduction in the official cash rate reduces market interest rates immediately by 0.4% and generates a decline in savings, initially by 0.05%. The drop in savings peaks at 0.2% after one quarter, but remains lower than it would have been over most of the following two years. Overall, the decline in savings implies that overall wealth is lower than would have been the case without the temporary cut in interest rates. This decline in wealth does not indicate that investment or economic capacity are lower (as both are outside of this current model), just that the overall stock of savings has been reduced as a product of individuals shifting forward consumption.

Figure 2: Impulse responses to a 50bp cut in the OCR



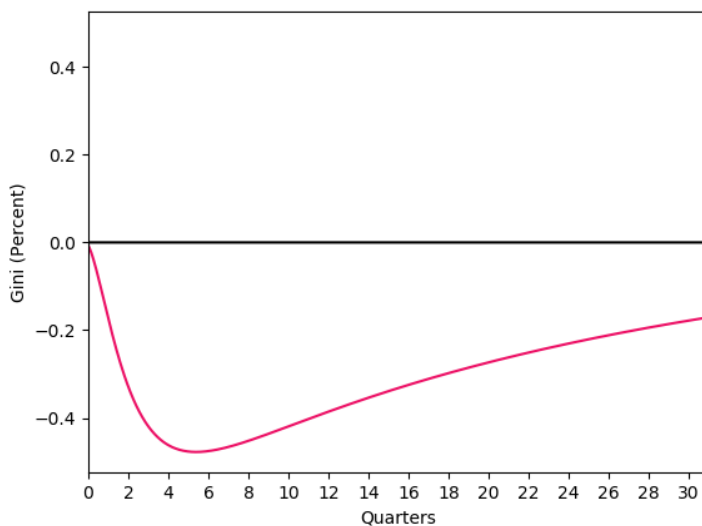
Underlying these aggregate responses output by the model is an abundance of unseen microeconomic effects. While consumption increases in the aggregate, on impact, across the distribution 7% of the population actually decreases its consumption. Similarly, savings increases by 8.5% of the population, driven by borrowers paying off debt. In response to higher wages, only 42% of the population increases the number of hours that they work, while a much larger fraction, 85%, sees an increase in earnings while reducing labour hours.

Figure 3 indicates that the monetary easing leads to a reduction in overall wealth inequality in the model economy, reflected in a decline in the wealth Gini coefficient over the five quarters following the shock. At its lowest, the Gini declines by 0.5% relative to its initial value. After the fifth quarter following the shock, wealth inequality begins to rise back

towards its initial level. However, the decline in the wealth Gini is persistent compared to the impact on other aggregates, with the Gini still 0.2% below steady state 8 years after the shock hits. To sustain the minimum level of the Gini coefficient in the simulation with a direct transfer of savings from the fifth wealth quintile to the first, assets totalling 0.11% of top quintile holdings would need to be transferred. This would increase holdings in the bottom quintile by 10%.

In this context the Gini coefficient measures the relative differences in wealth between the modelled individuals. If wealth rose proportionally across all individuals, the Gini coefficient would not change - even though those with larger amounts of wealth would have a greater absolute amount of wealth. In this way, this measure is focused on the relative inequality in wealth between people - not the absolute magnitude of wealth.

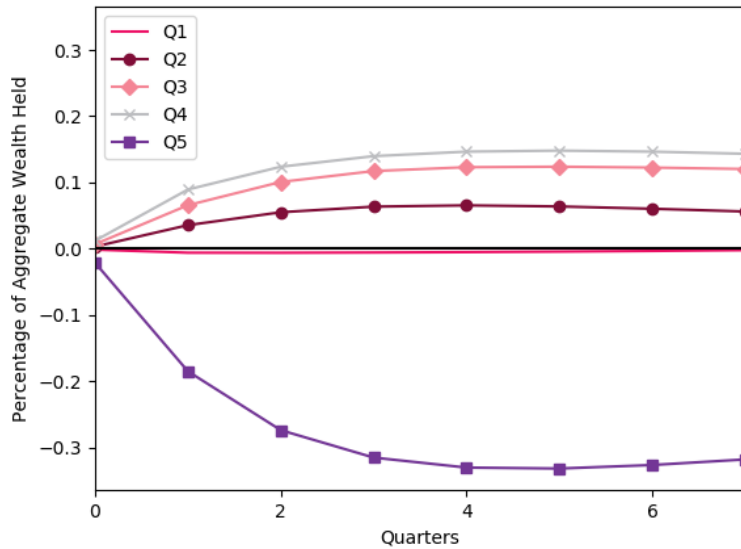
**Figure 3: Change in the Gini coefficient of wealth in response to a 50bp cut in the OCR.**



Although a Gini coefficient is a useful summary of the inequality in a distribution, it can hide important details about certain groups. To further elaborate on the distributional dynamics following the shock, Figure 4 plots the share of wealth held by each wealth quintile.

The model suggests that wealth declines for all groups. However, there are also significant changes in distribution of wealth. The share of wealth held by the wealthiest 20% of individuals in the economy declines persistently by 0.33 percentage points following the easing, while the share held by the poorest 20% remains essentially unchanged. This is because wealth is accumulated in the model precisely as a buffer against adverse shocks. In order to maintain these at an optimal level, wealthy agents are willing to let their level of savings decline relatively rapidly, albeit temporarily, as the effect of the shock will fade out. The share held by all other cohorts increases by 0.07 to 0.15 percentage points, with those with average to above average wealth experiencing the largest increase. Following the fourth quarter this change in the wealth shares stabilises, reflecting the persistence in the Gini coefficient above.

**Figure 4: Change in the wealth share by wealth quintile in response to a 50bp cut in the OCR**

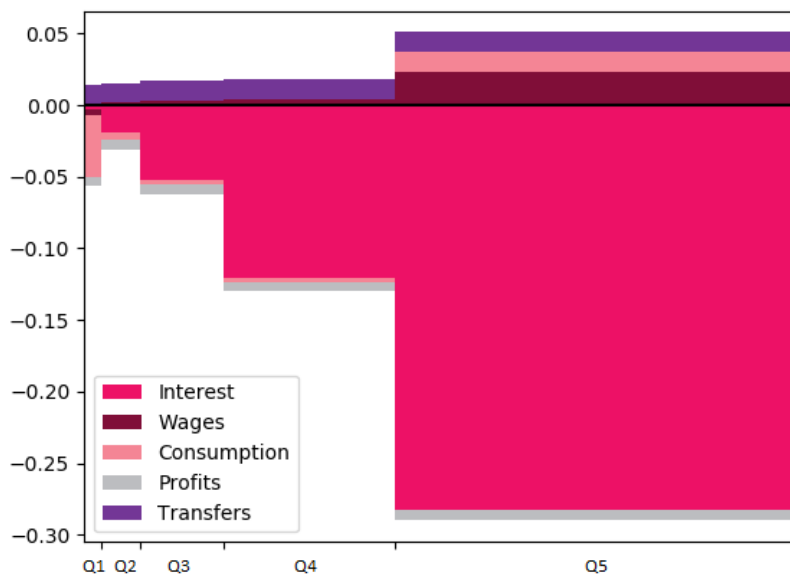


### Distributional transmission channels of monetary policy in New Zealand

In order to better understand the transmission of the monetary shock to inequality in the previous section, Figure 5 breaks down the response in savings behaviour of individuals across the wealth distribution into the components of income and expenditures present in the model. These components include interest received on savings or paid on debt, wages, dividend payments from firm ownership, lump sum transfers from the government, and consumption.

Specifically, the plot breaks down the average change in the level of savings for each quintile of the wealth distribution, following the cut in the official cash rate, into the above components. The level of wealth is displayed on the horizontal axis, with boundaries between the quintiles denoted by tick marks and the quintiles themselves labelled as Q1 through Q5 below the plot. In addition,

Figure 5: Decomposition of the change in household savings rates by wealth quintile



**Table 3: Components of the change in household savings rates by wealth quintile**

Quintile	Interest	Wages	Consumption	Profits	Transfers
Q1	-0.003	-0.003	-0.043	-0.007	0.014
Q2	-0.019	0.002	-0.005	-0.007	0.014
Q3	-0.052	0.003	-0.003	-0.007	0.014
Q4	-0.120	0.004	-0.003	-0.007	0.014
Q5	-0.282	0.023	0.015	-0.007	0.014

The plot shows that savings rates decline for all quintiles. However, the savings rate drops more sharply for high wealth quintiles, which in turn leads to a reduction in wealth inequality.

This reduction in inequality is primarily due to a reduction in interest payments received in the top quintiles (the interest rate channel). This fall in the income from savings is accompanied by a reduction in firm profits and an increase in consumption by all households apart from those in the top quintile. This larger proportional reduction in income for the top three quintiles exceeds any reduction in spending behaviour by this group leading to a net negative relative savings rate - with this effect being strongest for the wealthiest. It's important to note that while the revision to the policy rate temporarily adjusts the relative share of wealth held by each quintile of the distribution, the overall effect of the cut is to support economic activity by making current consumption more attractive for the majority of households. Indeed, while interest payments decline, net income from other sources (wages, transfers, and firm profits) is positive for all quintiles.

While an increase in wages offsets some of the reduction in interest income in the top four quintiles, this indirect effect of policy is small. In the absence of a strong effect from the labour market, the most important positive contribution to household income for the poorest groups is an increase in government transfers, such as benefits, made possible by the decline on interest it has to pay on debt.

The above observations suggest that there are strong savings redistribution and income composition channels of monetary policy in New Zealand which tend to reduce wealth inequality following an expansion. While there is an offsetting contribution from the earnings heterogeneity channel which tends to increase inequality by pushing up wages at the top end, in contrast with international literature (Krueger et al (2016), Kaplan et al (2018)) it is far weaker than the other two, so the net impact is a reduction in inequality.

## Limitations of this analysis

While the above analysis provides an initial assessment of the distributional impact and channels of monetary policy specific to New Zealand, there are a number of caveats to the observations made above.

Firstly, as discussed, while three of the four distributional channels of monetary policy cited in Leong (2021) have been assessed, the asset structure of the current model is not rich enough to evaluate the portfolio composition channel. In particular, households are not able to adjust to monetary easing by taking out long term debt or investing in riskier assets. Furthermore, for existing assets the potential for capital gains to be earned is not included.

Given the importance of the housing market to policy transmission in New Zealand, it is possible that this channel would present a significant offset to the reduction in inequality found in current results. Indeed, the strong savings redistribution channel suggests that there may be a strong incentive for households to rebalance into higher yield assets, where those assets exist. On the other hand, as previously discussed, these incentives may be more influenced by long run trends in neutral rates than by temporary monetary easing. Further work is underway to understand this channel and explain how it may adjust our results.

Secondly, while lower official interest rates appear to have persistent equalising effects on the distribution of wealth, the model prediction is an equally persistent increase in inequality when rates are raised. Consequently, it cannot be concluded that monetary policy unconditionally reduces inequality. Instead, we are looking to understand how periods of monetary easing or tightening through the business cycle affect different groups – that way, if these distributional consequences are undesirable from a social point of view, the wider New Zealand Government can incorporate that knowledge into policy decision making.

Thirdly, a number of other economic channels are missed that may influence the results - physical investment and the exchange rate are two clear areas where there may be additional distributional implications of policy that are not described in this model.

Lastly, the assumptions regarding government spending and income (fiscal policy) used in the above analysis were extremely simple, consisting of a flat labour income tax and lump sum transfers to households by a government passively balancing the budget. There is a growing consensus that assumptions about government spending are key for robustly assessing the effect of monetary policy on inequality, and the above results may also adjust if different assumptions about government spending and taxation are used. This is important, given that many distributional outcomes will be determined by the nature of government spending and tax decisions.

## Conclusion

The paper investigates the effect of monetary policy on the distribution of wealth using a stylised model of the New Zealand economy. Approaching this question through a modelling lens is essential due to the lack of household level wealth data at frequencies relevant for monetary policy.

We find that a 50 basis point reduction in the OCR leads to a drop in wealth inequality (the Gini coefficient) by approximately 0.5 percentage points. This drop, which means wealth is more equally distributed, occurs gradually and reaches its largest after 5 quarters. Although the magnitude declines through time, wealth inequality remains persistently lower thereafter.

In this study, we find evidence of strong savings redistribution and income composition channels in New Zealand driving the response of overall inequality. The earnings

heterogeneity channel through wages and working hours is found to be comparatively weak, in contrast with international literature.

## Disclaimer

### Disclaimer for output produced from the IDI

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit <https://www.stats.govt.nz/integrated-data/>

### Disclaimer for Inland Revenue tax data

The results are based in part on tax data supplied by Inland Revenue to Stats NZ under the Tax Administration Act 1994 for statistical purposes. Any discussion of data limitations or weaknesses is in the context of using the IDI for statistical purposes, and is not related to the data's ability to support Inland Revenue's core operational requirements.

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