

Response to FEC regarding house price projections

Introduction

Section 1 – the role of house price projections at the Reserve Bank

The Reserve Bank pays close attention to developments in the housing market for a number of reasons:

- Wealth is one driver of household spending, and equity in housing represents 55 percent of household net wealth. Rising house prices leads to higher household spending, which in turn influences economic activity, employment and consumer price inflation. Rising house prices also more directly influence a number of components of the Consumers Price Index, such as construction costs and rents. As a result, actual and projected house prices are an important input into monetary policy decisions.
- Housing market outcomes are also important for financial stability, as unsustainable house prices can be an indicator of future financial instability. For this reason, we have been further developing our tools to assess the sustainability of house prices. Our assessment of house price sustainability feeds into decisions on the use of some of our financial stability tools such as loan-to-value ratio restrictions and whether to introduce debt serviceability restrictions.

For both of these purposes, we form projections of the most likely direction of house prices. House prices, as with all asset prices, reflect buyers' expectations of their future earnings. This means that house prices can move rapidly when expectations change, making them inherently volatile.

We update our projections for house prices every six weeks, reflecting the latest developments over that period. This means we can adapt our policy settings as data evolves, thereby avoiding policy surprises.

Section 2 – the role of housing in the Reserve Bank's mandate

The objectives of monetary policy are price stability and maximum sustainable employment. As noted above, house prices have a direct impact on these objectives. In addition, the Remit for the Monetary Policy Committee (MPC) requires the MPC to assess the effect of its monetary policy decisions on the Government's policy to support more sustainable house prices, including by dampening investor demand for existing housing stock, which would improve affordability for first-home buyers.

House prices are also important for the Reserve Bank's financial stability objectives of promoting a sound and efficient financial system. In pursuing these objectives, the Reserve Bank has been directed to have regard to the Government's housing policy as described above.

Table A: Summary of the relationship between housing and the Reserve Bank

	Monetary policy	Financial Stability (Prudential) policy
Objectives		
Primary objective	Price stability Support maximum sustainable employment	Promoting the maintenance of a sound and efficient financial system. Avoiding significant damage to the financial system that could result from the failure of a registered bank.
Other objectives	Have regard to the efficiency and soundness of the financial system Seek to avoid unnecessary instability in output, interest rates and the exchange rate Discount events that have only transitory effects on inflation	Reduce the risk that the financial system amplifies a severe downturn. Have regard to the impact of prudential policy on economic growth.
Housing considerations	Assess the effect of its monetary policy decisions on the Government's policy to support more sustainable house prices, including by dampening investor demand for existing housing stock, which would improve affordability for first-home buyers.	Have regard to the Government's policy to support more sustainable house prices, including by dampening investor demand for existing housing stock which would improve affordability for first-home buyers.
Impact of housing on objectives	MPC take housing market dynamics into account when forming monetary policy, as housing wealth is an important driver of household spending and housing market-related prices are included in the Consumer Price Index.	The Bank takes housing market dynamics into account when assessing financial stability risks and forming prudential policies, as mortgages are the NZ banking system's largest exposure and houses are the largest household asset.
Policy tools		
Tools	The level of retail interest rates as influenced by: Official Cash Rate; Large Scale Asset Purchases; Funding for Lending Programme; and Purchase of Foreign Assets	Capital and liquidity requirements Governance Disclosure Outsourcing Resolution Macro-prudential Supervision
Impact of tools on housing	Monetary policy affects house prices and housing affordability by influencing mortgage and renting costs, economic growth and employment.	Prudential regulation affects the availability and cost of mortgages by placing requirements and restrictions on mortgage lenders.

Our assessment of the current sustainability of house prices is more important than our projections. We have laid out our initial thinking on a sustainability framework that will be refined over time. Table B describes how we define and assess sustainable house prices, and how this relates to housing affordability. We are coordinating with other government agencies on policy initiatives that will support more sustainable house prices.

Table B: What we mean by sustainable versus affordable house prices

	Sustainable house prices	Affordable house prices
Definition	The level that house prices will converge to over several years given the outlook for supply and demand	The international standard is that adequate and decent housing accommodation should not cost the worker more than a reasonable proportion of income (e.g. 30% of their income), whether by way of rent for, or by way of payments towards the purchase of, such accommodation.
Distributional	While house price sustainability doesn't consider who the buyer is, the direction from the Minister of Finance includes dampening investor demand to support affordability for first home buyers.	Majority of households are able to buy their own home, and practically everybody can afford to rent.
Key determinants	Changes to policy settings, the economy, supply and demand impact sustainable house prices. Key drivers of demand are incomes, trends in interest rates, and demographic variables. Key drives of supply include the supply of developable land, construction costs, and the existing stock of residential dwellings.	The price of housing relative to income determines affordability. In an efficient market, the price of housing is set by replacement value (cost of constructing a new house plus land price). In an uncompetitive urban land market, prices are set as the net present value of the future expected income stream.
Metrics	Cost of owning vs renting, housing returns relative to other investments, metrics of new supply and new demand	Home ownership rates, rent to income ratios (distribution as well as central tendency), cost of owning as share of income.

Section 3 – how do we project house prices?

House prices are influenced by a wide range of factors and no one modelling approach is able to capture all of these influences.

Our core projection model assumes that in the long run house prices grow at around the rate of nominal GDP growth (about 5 percent per year). The rate at which house prices converge to this long-run assumption depends on current momentum in the housing market, and forecasts of mortgage interest rates and net immigration. These factors have been shown by our analysis to most reliably explain house prices.

However, there are a range of other important factors that can influence house prices. These include regulatory and tax changes, housing supply developments and changes in employment and income. We have a range of supplementary models and techniques to incorporate the impacts of these factors:

- We analyse a wide range of timely data and engage with real estate and banking industry experts to better understand near-term momentum in the housing market.

- We check the consistency of our house price projections with the outlook for employment and income growth.
- We use investor valuation models and published research to estimate how changes to tax settings, such as removal of interest deductibility, influence cash flow for property investors and the valuation of houses.
- We have research on the impact that macro-prudential tools such as loan-to-value ratio restrictions have had on house prices.
- We assess how current and forecast house building activity compares to population and demographic drivers of housing demand.

This additional analysis is used to adjust the projections from our core economic model.

Section 4 – external validation of forecasts

The Reserve Bank projects house prices independently of any other agency, and for reasons of market sensitivity, these forecasts are not shared with any third party prior to the release of Monetary Policy Statements (MPS).

Nevertheless, there are a range of ways in which our projection methodology is validated:

- We discuss housing market developments and analysis of policy impacts with other housing-focussed agencies (such as Treasury and the Ministry of Housing and Urban Development).
- We compare our projections with those from other forecasters, and seek to understand differences in view. This includes sessions with trading bank Chief Economists to discuss projections after release.
- We regularly evaluate deviations from our projections, and compare this to other forecasters.

Section 5 – explanation of recent Reserve Bank house price projections

Prior to the onset of COVID-19 we observed an increase in house price growth at the end of 2019. Our February 2020 projections were for annual house price inflation to slow in response to projected moderation in net immigration, high residential construction activity, and the effects of past lower mortgage rates fading.

Our baseline scenario for house prices changed materially as a result of the impacts of COVID-19. In May 2020 we assumed that house prices would decline by around 9 percent by the end of 2020. At that time our central projection was for unemployment to rise to 9 percent, and that was expected to exert material downward pressure on the housing market. High levels of unemployment were also expected to lead mortgage lenders to be more cautious in their lending decisions, reducing the availability of mortgage loans.

Over the course of 2020 the economy proved more resilient than we had expected, due to the effective health response and significant fiscal and monetary support for the economy. The much stronger than expected economy, and the associated improvement in job security, has been a key reason for higher house price outcomes. As of the March 2021 quarter, the unemployment rate was 4.7 percent, well below earlier projections.

Demand for housing has also been supported by other unanticipated factors. An initial surge of returning New Zealanders and visitors deciding to stay at the start of COVID-19 led to higher population growth than forecast. Momentum dynamics, which could reflect factors such as expectations of future capital gains have also played a part in amplifying house price

growth. In addition, lower interest rates have lifted housing demand by making mortgages more affordable. Lower interest rates reflect both long-term declines in global interest rates over time and the Reserve Bank's stimulatory monetary policy settings (see chapter 4 of the [May 2021 MPS](#)).

Our most recent projections for house prices in the May 2021 MPS were for a slowing in house price growth. This forecast slowdown reflects much slower population growth over most of 2020 and 2021, tax policy changes, the reintroduction and tightening of loan-to-value ratio restrictions, the waning impact of interest rate declines over 2019 and 2020, and increased supply from strong residential construction.

Responses to FEC questions

1. *Please provide a natural-language explanation of the process undertaken when determine a forecast for house prices.*

Please see section 3 above.

2. *What is the list of inputs the Reserve Bank has used to inform their model for house price changes, and for each input, what is the source of the data?*

The Reserve Bank projects the house price index that is published by Corelogic. Because of publication lags with this series, the timelier house price index produced by the Real Estate Institute of New Zealand (REINZ) is used to estimate more recent moves in prices. Our core model uses migration data from Statistics NZ, and interest rate data we collect from banks. Supplementary models use a wide range of data from Statistics NZ, Corelogic, interest.co.nz, Ministry for Housing and Urban Development, REINZ, and our own data collected from financial institutions.

3. *What are the variables the Reserve Bank has used to inform their model for house price changes in its May MPS?*

Please see answer to question 2.

4. *What process did the Reserve Bank follow to calculate annualised forecast house price changes, as shown in its May MPS?*

The process described in section 3 above was used to generate a forecast for the level of house prices at a quarterly frequency. Annual house price growth forecasts were derived from this.

5. *What data sets has the Reserve Bank used from other government departments to inform their model for house price changes?*

Please see answer to question 2.

6. *What peer review or external audit, if any, does Reserve Bank commission to review its house price forecasts?*

Please see section 4 above.

7. *What data sets does the Reserve Bank refer to determine their model for house price changes?*

Please see answer to question 2.

8. *What data sets, if any, has the Reserve Bank used from third parties (non-Government departments) to inform their model for house price changes, as shown in its May MPS?*

As discussed in the answer to question 2, data from Corelogic, REINZ and interest.co.nz has been used.

9. *Did the Reserve Bank use any external consultants to inform, review or check their house price forecasts or the model that informs them in its May MPS?*

Due to the sensitivity of MPS forecasts, external consultants are not used to review forecasts. The general approach to ensuring the validity of forecasts is described in section 4 above.

10. *What is the variance on the Reserve Bank's model for house price changes in its May MPS?*

Since our projections combine information from models with other relevant information, we assess the variance of our projections by looking at past forecast performance. Since 2010, on average our forecasts for annual house price inflation one year in the future have been out by 5.2 percentage points ('mean absolute deviation'). Excluding the COVID-19 period, the same metric is 3.9 percentage points.

Over the past decade, the key drivers of this deviation have been that migration has tended to turn out higher than forecast, and mortgage interest rates have tended to be lower than our forecasts would imply. Both of these factors have contributed to house price inflation tending to turn out higher than anticipated over this period.

11. *What sensitivity analysis, if any, has Reserve Bank conducted for its house price forecasts and what is the potential variance?*

Through the process of updating our projections with new information, we regularly observe how our forecasts change as our assumptions about key drivers change (e.g. migration, interest rates, and other factors). Our projections are also influenced by the sensitivity of our models and frameworks to these inputs. There is significant uncertainty about both the outlook for the underlying drivers, as well as the sensitivity of house prices to them. Reflecting this, we treat our projections as having significant uncertainty around them, and avoid being overly reliant on them when making policy decisions.

12. *Does the Reserve Bank house price forecast model include an assessment of housing demand and if so how does Reserve Bank assess that demand, please list all factors considered and the data or information used to measure that factor?*

The Reserve Bank's projection approach does not forecast demand and supply separately. Of the factors discussed in section 3 above, migration, interest rates, and changes in tax and regulatory settings are most likely to influence the demand for housing.

13. *Does the Reserve Bank house price forecast model include an assessment of current and future housing supply and if so how does Reserve Bank assess likely housing supply?*

As part of the Reserve Bank's economic projections, we project residential investment, which includes the construction of new houses, alterations and additions to existing houses, and transaction costs associated with the sale of existing houses. The key determinants of this projection are interest rates, house prices, population growth and an assessment of the capacity of the building sector. As discussed in section 3 above, an assessment of new housing supply relative to housing demand is one of the factors considered in setting house price projections.

14. *Does the Reserve Bank house price forecast model include an assessment of the gap between housing supply and demand and if so what does Reserve Bank assess that gap to be now and how does it expect that gap to change over the next twelve months?*

The Reserve Bank does not have a quantitative estimate of the gap between housing supply and demand. Our projections are for building activity to remain at high levels over the next 12 months, while housing demand will be more moderate due to low migration. These projections are consistent with a closing in the gap between supply and demand.

15. *Does the Reserve Bank house price forecast model include a measurement of current housing demand and predicted future housing demand and if so what are those numbers?*

Please see answer to question 12.

16. *Does the Reserve Bank house price forecast model include a measurement of current housing supply and predicted future housing supply and if so what are those numbers?*

Please see answer to question 13.

17. *Has the Reserve Bank ever engaged with Treasury to compare the methodologies used for house price forecasting and if not why not?*

The Treasury and the Reserve Bank produce forecasts independently. The forecasting teams of both agencies regularly engage to discuss the forecasts and forecast methodology of each agency.

In June 2021, the Reserve Bank, Treasury, and the Ministry of Housing and Urban Development established a technical working group to share data and analysis around the

assessment of housing sustainability, and to compare forecasting methodologies and economic modelling.

18. What is the margin of error on the Reserve Bank's model for house price changes, as shown in its May MPS?

Please see answer to question 10 above.

19. What is the table of data behind the Reserve Bank's model for house price changes, as shown in its May MPS? Please provide this data, electronically and in summary form if necessary.

A spreadsheet of the May 2021 MPS projections are attached.

20. What assumptions have been made in order to establish the Reserve Bank's model for house price changes in its May MPS?

Our May projections were for a significant slowdown in house price growth over the course of 2021, followed by a period of modest growth. This forecast rests on assumptions that high construction activity and weaker population growth would result in a gradual alleviation of supply shortages, and that the Official Cash Rate would be gradually increased from the latter-half of 2022. It was also assumed that the re-imposition of loan-to-value restrictions and changes to the tax deductibility of interest would reduce house price growth in the near-term.

In the long-term, house price growth is assumed to converge to around the rate of nominal GDP growth.

21. Which other government agencies, if any, provide input into the Reserve Bank's house price forecast?

Please see answer to question 17.

22. Which other agencies, if any, does Reserve Bank share its house price forecast model with?

Please see answer to question 17.