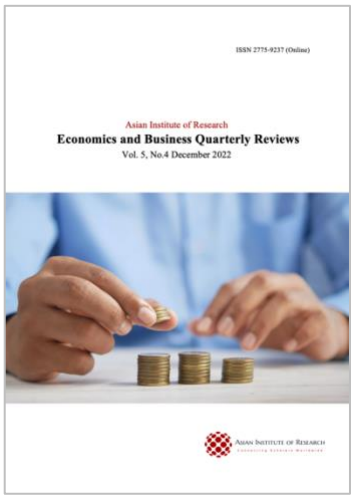

Economics and Business Quarterly Reviews

Kim, J. R., & Lim, G. (2022). The Role of Property Prices in the Conduct of Monetary Policy: Evidence from Down Under. *Economics and Business Quarterly Reviews*, 5(4), 124-132.

ISSN 2775-9237

DOI: 10.31014/aior.1992.05.04.464

The online version of this article can be found at:
https://www.asianinstituteofresearch.org/

Published by:
The Asian Institute of Research

The Asian Institute of Research *Journal of Economics and Business* is a peer-reviewed International Journal. The journal covers scholarly articles in the fields of Economics and Business, which includes, but is not limited to, Business Economics (Micro and Macro), Finance, Management, Marketing, Business Law, Entrepreneurship, Behavioral and Health Economics, Government Taxation and Regulations, Financial Markets, International Economics, Investment, and Economic Development. As the journal is Open Access, it ensures high visibility and the increase of citations for all research articles published. The *Journal of Economics and Business* aims to facilitate scholarly work on recent theoretical and practical aspects of Economics and Business.

ASIAN INSTITUTE OF RESEARCH
Connecting Scholars Worldwide

The Asian Institute of Research
Economics and Business Quarterly Reviews
Vol.5, No.4, 2022: 124-132
ISSN 2775-9237

DOI: 10.31014/aior.1992.05.04.464

The Role of Property Prices in the Conduct of Monetary Policy: Evidence from Down Under*

Jan R. Kim[1], Gieyoung Lim[2]

[1] Professor, Department of International Economics and Law, Hankuk University of Foreign Studies, 270 Imun-dong Dongdaemun-gu Seoul, 130-791, South Korea. E-mail: kjryoul@hufs.ac.kr; Tel: +82-2-2173-3225
[2] Professor, Department of International Economics and Law, Hankuk University of Foreign Studies, 270 Imun-dong Dongdaemun-gu Seoul, 130-791, South Korea. E-mail: gylim@hufs.ac.kr; Tel: +82-2-2173-3207

Correspondence: Gieyoung Lim. Email: gylim@hufs.ac.kr

Abstract
This paper examines link between property prices and monetary policy in New Zealand and Australia. Using an identified VAR model for open economies, we address two questions, i.e., whether a loose monetary policy cause house price appreciation, and whether central banks of the two countries conduct a policy of "leaning against the wind" by responding to house price shocks. Our findings suggest that, following an expansionary monetary policy shock, house prices inflations fall immediately. Yet, we find that the impact of monetary policy shocks on housing is small to modest in both countries. Furthermore, we find that the interest rate does not respond systematically to changes in house prices in New Zealand, whereas the Reserve Bank of Australia do respond systematically to fluctuations in housing price inflation.

Keywords: Property Prices and Monetary Policy, Identified VAR Model for Open Economies, New Zealand and Australia

1. Introduction

The financial and economic turmoil caused by the U.S. subprime mortgage crisis, followed by the steep rebound of asset prices around the globe fueled by the unprecedented monetary easing, has reignited the debate over the importance of housing market for the macroeconomy at large and for the conduct of monetary policy. This is primarily due to the central collateral role of housing prices, which is at the center of the asset prices bursting and having negative real effects in the U.S. Hence, asset prices can be an important source of macroeconomic fluctuations and an inflation targeting which central bank may want to respond to, see e.g., Bernanke et al. (2000) and Bernanke and Gertler (1989). However, working as a store of wealth, housing prices can work as a key transmitter of shocks since they react quickly to news (including monetary policy announcements), as emphasized

* This work was supported by Hankuk University of Foreign Studies Research Fund. We gratefully acknowledge this. We are responsible for errors, if any.

in Rigobon and Sack (2004) and Bernanke and Kuttner (2005). Responding to economic shocks in a timely manner, housing prices can be an important indicator for the stance of monetary policy currently and in the near future. Understanding the role of asset prices in the transmission mechanism of monetary policy is therefore crucial for the implementation of an efficient monetary policy strategy.

In this paper, we analyze the role of house prices in the monetary transmission mechanism in New Zealand and Australia. More specifically, we aim to address the following two questions:
(1) Does a loose monetary policy cause house price appreciation, and if so why?
(2) Do central banks conduct a policy of "leaning against the wind" by responding to house price shocks?

We focus on the two countries for the following reasons. First, both countries have experienced steep rises in housing prices since the early 2000s. The increases in housing prices down under were so fast and steady as to put New Zealand and Australia at the top and 15th places in the Bloomberg Economics' bubble ranking among the OECD countries as of 2021: Q1. Second, the central banks of the two countries have demonstrated, at least officially, different stance toward using housing prices as an indicator for conducting a Taylor rule-like monetary policy. In 2021, the Reserve Bank of New Zealand released an announcement[1] that "Changes have been made to the Bank's Monetary Policy Committee's remit requiring it to take into account government policy relating to more sustainable house prices, while working towards its objectives", and "the Committee …will need to explain regularly how it has sought to assess the impacts on housing outcomes." In contrast, the Reserve Bank of Australia[2] maintained that "monetary policy is not the appropriate tool to address the problem [of runaway property prices], because it is designed to encourage employment and inflation", although the rise in property price "is certainly an issue that needs to be considered at the moment."

In terms of methodology, we follow the identified VAR approach frequently used in the empirical literature on monetary policy, e.g., Assenmacher-Wesche and Gerlach (2008a, b), Goodhart and Hofmann (2001), Iacoviello and Minetti (2003, 2008) and Giuliodori (2005). To address the nature of the two countries as small open economies, we build on the closed economy VAR models by incorporating two variables, foreign interest rates and real exchange rates, which are believed to affect open economies, especially in the course of monetary policy adjusting domestic interest rates.
The paper is organized as follows. Section 2 describes the VAR methodology used in the current study, and Section 3 discusses the empirical results. Section 4 concludes.

2. Model and Data

2.1 The Identified VAR model

We examine the linkage between house prices and monetary policy using a standard identified VAR model augmented with house prices. Assuming the $(n \times 1)$ vector Z_t of system variables to be stationary and invertible, we estimate a reduced form VAR(p) of the form[3]

$$Z_t = B_1 Z_{t-1} + B_2 Z_{t-2} + \cdots + B_p Z_{t-p} + \upsilon_t = B(L)\upsilon_t \,, \upsilon_t \sim i.i.d(0, \Omega) \qquad (1)$$

where the vector υ_t of reduced form innovations is assumed to be an i.i.d. process with a general covariance matric Ω, and the $B(L)$ is the matrix polynomial in the lag operator L which represent Z_t as the moving average of υ_t. Following the literature, we assume that the innovations (υ_t) are linear combinations of the underlying orthogonal structural disturbances (ε_t). More specifically, we rewrite the above VAR(p) as

$$SZ_t = D_1 Z_{t-1} + D_2 Z_{t-2} + \cdots + D_p Z_{t-p} + \varepsilon_t = D(L)\varepsilon_t, \;\; \varepsilon_t \sim i.i.d(0, I) \qquad (2)$$

[1] Reserve Bank to take account of housing in decision making, posted on February 25, 2021, accessed at the link *https://www.beehive.govt.nz/release/reserve-bank-take-account-housing-decision-making.*
[2] Bloomberg (June 3, 2021), accessed at the link *https://www.bloomberg.com/news/articles/2021-06-03/rba-s-debelle-reiterates-policy-isn-t-tool-to-cool-house-prices.*
[3] In equations (1) and (2), any deterministic terms are ignored for the ease of presentation.

where the structural shocks ε_t and the innovations υ_t are related as $\upsilon_t = S\varepsilon_t$ via the matrix S of structural relations. If S is identified, we can derive the structural MA representation in (2) using $D(L) = B(L)S$.

The choice of variables in our VAR model is guided by the strand of New-Keynesian small open economy models, e.g., Svensson (2000) and Clarida et al. (2001). In particular, our VAR model is constructed with the following variables of the two countries: consumer price index (p_t), real GDP (y_t), the short-term nominal interest rate (i_t), the foreign interest rate (i_t^*t), the real effective exchange rates against a basket of trading partners (er_t) and the house prices (ph_t). More detials of the data are provided in the next subsection. For both countries, the nominal interest rate is chosen to capture monetary policy shocks, consistent with the use of interest rates as instruments in the monetary policy setting by the central banks.[4] To ensure stationarity of the system, (p_t, y_t, ph_t, er_t) are transformed into growth rates from the previous quarter.

With six variables in the system, we should identify six structural shocks. If we normalize the structural shocks ε_t to have unit variances, the relation $\Omega = SS$ imposes $\frac{6(6+1)}{2}$ restrictions on the elements in S. The unique identification of S thus requires us to impose $\frac{6(6-1)}{2}$ additional restrictions to uniquely identify the structural shocks. Following standard practice in the VAR literature, we identify the structural shocks mostly by recursive restriction on S. In particular, we consider the following form of S:

$$\begin{bmatrix} i^* \\ \Delta y \\ \pi \\ \pi^H \\ \Delta er \\ i \end{bmatrix} = B(L) \begin{bmatrix} S_{11} & 0 & 0 & 0 & 0 & 0 \\ S_{21} & S_{22} & 0 & 0 & 0 & 0 \\ S_{31} & S_{32} & S_{33} & 0 & 0 & 0 \\ S_{41} & S_{42} & S_{43} & S_{44} & 0 & 0^* \\ S_{51} & S_{52} & S_{53} & S_{54} & S_{55} & 0^* \\ S_{61} & S_{62} & S_{63} & S_{64} & S_{65} & S_{66} \end{bmatrix} \begin{bmatrix} \varepsilon^{i^*} \\ \varepsilon^{Y} \\ \varepsilon^{P} \\ \varepsilon^{PH} \\ \varepsilon^{ER} \\ \varepsilon^{MP} \end{bmatrix} \quad (3)$$

where ε^{MP} and ε^{PH} are the two structural shocks of primary interest, i.e., the shocks to monetary policy and house prices, respectively.

The order of the variables (equivalently, the structural shocks) and the form of the S matrix is justified as follows. The foreign interest rate is placed on the top, since it will be affected contemporaneously by foreign monetary policy which is exogenous to a small open economy. We further follow the standard restrictions in VAR models for closed economy, i.e., the four non-policy macroeconomic variables $(\Delta y, \pi, \pi^H, \Delta er)$ do not react to policy variables contemporaneously. We also assume that real output is not affected by current shocks from aggregate price, house prices, and real exchange rate, resorting to the presence of inertia, adjustment costs, or planning delays that prevent firms to change their output in response to unexpected shocks within the same period. As shown in the third equation of (3), the price level is only affected with the contemporaneous shock to real output. The fourth equation concerns the housing market, where we assume that all currently available information in aggregate output and price contemporaneously affect housing market conditions. We then allow the real exchange rate to be affected by the shocks to all other macro variables including house prices, given the link between international capital flows and house price identified in recent studies[5]. Finally, the stance of monetary policy is gauged by the level of short-term interest rate, and the monetary authority is assumed to respond endogenously to current non-policy macroeconomic variables, i.e., a Taylor rule-like policy reaction function. As shown in the last column of S matrix, this identifying assumption is materialized by putting output, price, house price, and real exchange rate above the interest rate and imposing zero restrictions on the relevant coefficients.

It should be noted that the monetary policy shock is the only structural shock well identified in our stylized structural VAR (SVAR) model of monetary policy and that the non-policy structural shocks to the macroeconomic

[4] This is in line with Rotemberg and Woodford (1997), which find central bank behavior to be well modelled by a policy rule that sets the interest rate as a function of variables such as output and inflation.

[5] In a panel study of OECD counties, Sa et. al. (2014) find evidence supporting that capital-inflow shocks have a significant and positive effect on real house prices. In a similar study, Vásquez-Ruíz (2012) show that capital flows positively and significantly affect house prices, with the magnitude of this effect being large for the portfolio investment category.

variables are loosely identified[6]. It is also worth noting that there are alternative identification schemes for the structural shock. Nevertheless, we believe that the specification enables us to focus on the main questions of interest posited above, and the robustness of these results are confirmed by employing another set of identifying assumption[7].

2.2 Data

We use quarterly data of Australia and New Zealand spanning 1974: Q1 - 2021: Q4. For the foreign interest rate, we use the effective federal funds rate series downloaded from the Federal Reserve Economic Data (FRED) statistics. Real GDP series for income are obtained from the OECD Quarterly National Accounts (QNA) statistics in seasonally adjusted form. The core CPI (i.e., CPI less food and energy) series are used for price level and obtained from the FRED[8]. Nominal house prices[9] are obtained from the Analytical House Prices Indicators statistics of the OECD in seasonally adjusted form. For real exchange rates, we use the real narrow effective exchange rate series obtained from the FRED. Finally, the nominal interest rates are proxied by the 3-month yields of bank bills for both countries, downloaded from the OECD Main Economic Indicators (MEI) database.

In estimating the VAR model, we transform the series of income, price level, house price, and real exchange rate are transformed into the annualized growth rates from the previous quarters for the sake of stationarity. To net out the effects of possible structural changes or economic crises in data, we use two dummy variables: the de-regulation dummy taking the value of one since 1985: Q1, and the global financial crisis dummy taking the value of one over 2007: Q4 to 2009: Q4[10].

Figure 1 plots the data series for house price inflation and short-run interest rates. It is clear that both countries have experienced a house price hike accompanied with declining interest rates since the 1990s, which is why some researchers argue that the low interest rate is one of the main causes of house prices in response to interest rate shocks.

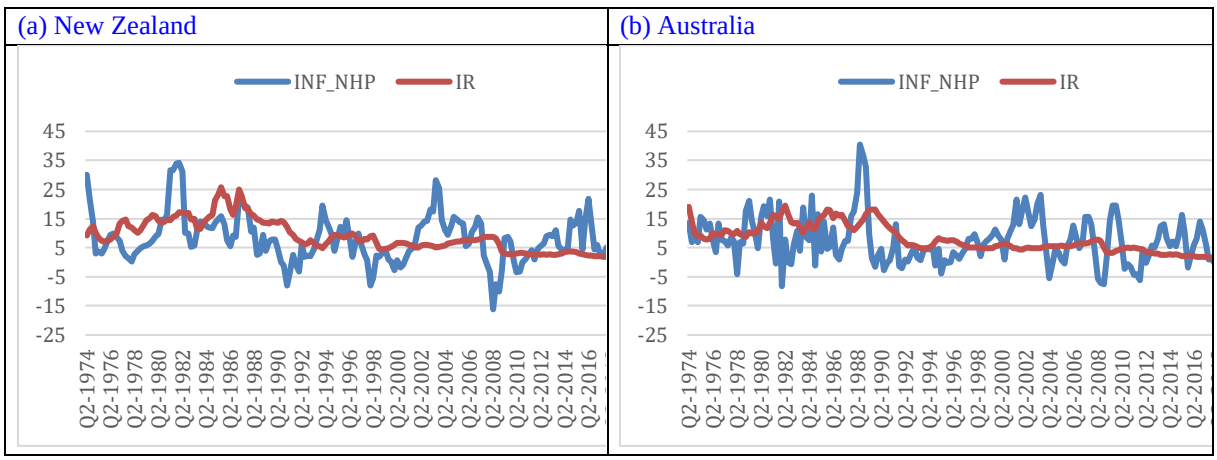

Figure 1: Nominal House Price Inflations and Short-term Interest Rates

3. Empirical Results from the Structural VAR[11]

[6] More specifically, the shock to house price inflation could be a mixture of shocks to housing supply and demand, and CPI shocks may reflect the impacts from commodity prices or pass-through of exchange rates.
[7] The results from a different identification scheme are available from authors upon request.
[8] By using the core CPI, we intent to mitigate the problem of seasonality in the ordinary CPI and to mimic the practice of the central banks in gauging the inflationary pressure by the core PCI.
[9] Alternative series of house price, available from a BIS dataset on residential property prices, are also used in previous studies e.g., Scatigna et al. (2014) and Sutton et al. (2017). In our study, using the BIS series yields qualitatively similar results.
[10] The dummies for the Asian currency crisis and the Covid pandemic are also include initially, but they turn out to be insignificant for both countries.
[11] For both countries, the lag order of the reduced form VAR model is determined to be 2 by Schwarts and Hannan-Quinn information criteria.

3.1 Impacts of Monetary Policy on House Prices

The responses of house price inflation to a one-standard deviation shock to the short-run interest rate are shown in Figure 2, where strong evidence is found that an interest rate hike dampens house prices in both countries. The negative responses last longer than two years, and the maximum responses appear within two quarters of the occurrence of the shock.

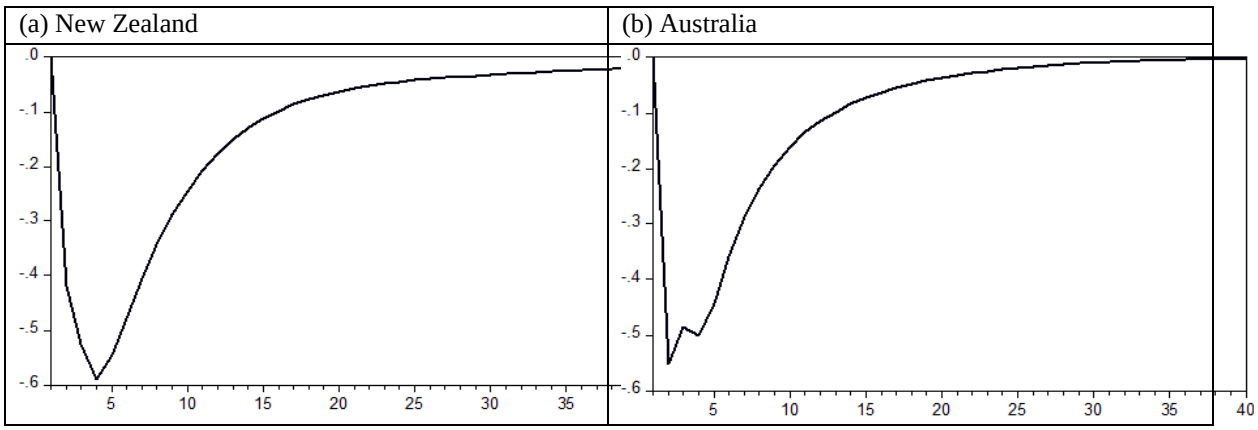

Figure 2: Responses of House Price Inflation to Monetary Policy Shock

Although response analysis provides information about how monetary policy would affect house prices, we attempt to further quantify the contribution (in percentage) of the interest rate shock to the variability in house price inflation. For this aim, we decompose the forecast error of house price inflation on horizons up to ten years, and the results are shown in Table 1. Strikingly, we observe that in the short run (e.g., up to four -quarter horizon) the interest rate shock accounts for less than 2% of the total variation in house price inflation, and that the contributions of the interest rate shock remain insignificant in the long-run as well explaining less than 3% of the total variations in house price inflation.

Table 1: Variance Decomposition of house price inflation (%, attributable to interest rate shock)

	Horizon								
	1	2	4	8	12	16	20	30	40
New Zealand	0	0.415	1.344	2.435	2.725	2.813	2.845	2.871	2.880
Australia	0	0.503	1.086	1.652	1.772	1.804	1.814	1.817	1.817

To see whether the direct link from monetary policy to housing bubbles is weak even during the periods of overvaluation in housing market, we perform historical decomposition of house price inflation. More specifically, we first construct the base projection of house price inflation obtained by the VAR model without any stochastic shocks. Then dynamic simulation of the model is performed with only the realized historical interest rate shocks included and all the others set to zero. Hence, the importance of the interest rate shock can be determined by examining the extent to which the introduction of the interest rate shock in real house prices closes the gap between the base projection and the actual series.

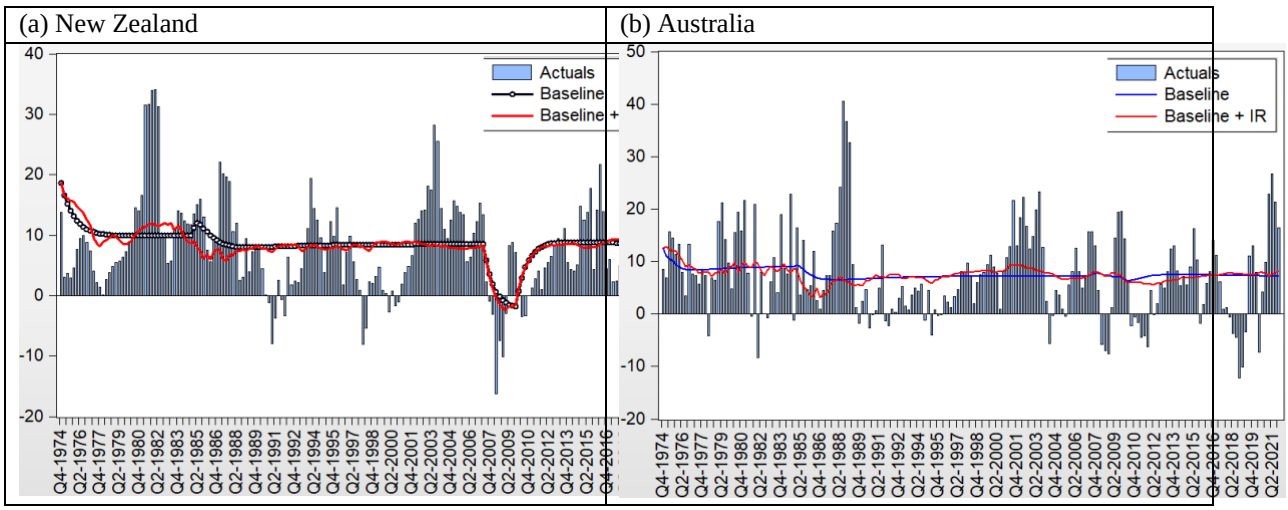

Figure 3: Historical Decomposition of House Price Inflation (attributable to interest rate shock)

Figures 3 plots the contribution of the interest rate shock to house price inflation. For both countries, interest rate shocks barely contribute to house price inflation. More specifically, the projection of housing price inflation inclusive of the interest rate shock is hard to distinguish from the base projection over the whole sample period, and that is still the case even in recent years characterized with continued hikes in house prices. The results of historical decomposition are therefore strongly suggestive of that there is no strong evidence of low interest rate having caused housing market booms in the 2000s and on.

In summary, the weak linkage between monetary policy and housing prices identified for the two countries casts doubt on the traditional belief that in the most recent boom and bust period highly stimulative monetary policy by the central banks first contributed to initial booms in housing market and upward spiral of higher house prices, which are then followed by an abrupt contraction as the yield curve inverted. There are two alternative explanations of our results standing in striking contrast to such belief. The first possibility is, as posited by Mishkin (2007), that the limited ability of standard models such as ours to explain the most recent housing developments emphasizes the uncertainty associated with housing-related monetary transmission channels. Secondly, as Kohn (2007) argues, "… when studies are done with cooler reflection, the causes of the swing in house prices will be seen as less a consequence of monetary policy and more a result of the emotions of excessive optimism followed by fear experienced every so often in the marketplace through the ages. Low policy interest rates early in this decade helped feed the initial rise in house prices. However, the worst excesses in the market probably occurred when short-term interest rates were already well on their way to more normal levels, but longer-term rates were held down by a variety of forces." Of the two, our view is more in line with the latter, in that many studies of housing markets, e.g., Kishor and Morley (2015) and Kim and Chung (2018), identify the expectation of future excess returns and sporadically rational explosive bubbles as the main drive of the housing price hikes in advanced countries.

3.2 The Role of House Price in the Conduct of Monetary Policy

Having examined the response in all variables to a monetary policy shock, we turn to investigate the reverse causation, namely the (systematic) response in monetary policy to a house price shock. Whether the central banks do or should take housing prices into account in conducting monetary policy has been an issue of heated debate, and the views in academics are far from unity. For example, Iacoviello (2005) shows in a DSGE model that allowing the monetary authority to respond to house prices yields negligible stabilization gains of output and inflation. In contrast, Mendicino and Punzi (2014) demonstrate a substantial social welfare improvement by allowing an interest rate response to house price dynamics. An eclectic set of results are found in Gelain, Lansing, and Mendicino (2013), showing that letting interest rate policy respond to house price growth can stabilize some economic variables, but at the cost of significantly magnified volatility of others.

As there do exist some good theoretical reasons for including house prices in monetary rules, we examine empirically whether the central banks of New Zealand and Australia have considered house prices when conducting monetary policy. Using the identified VAR model specifying a Taylor rule augmented with house prices, we examine the role of house prices in the determination of monetary policy via impulse responses, variance decomposition, and historical decomposition.

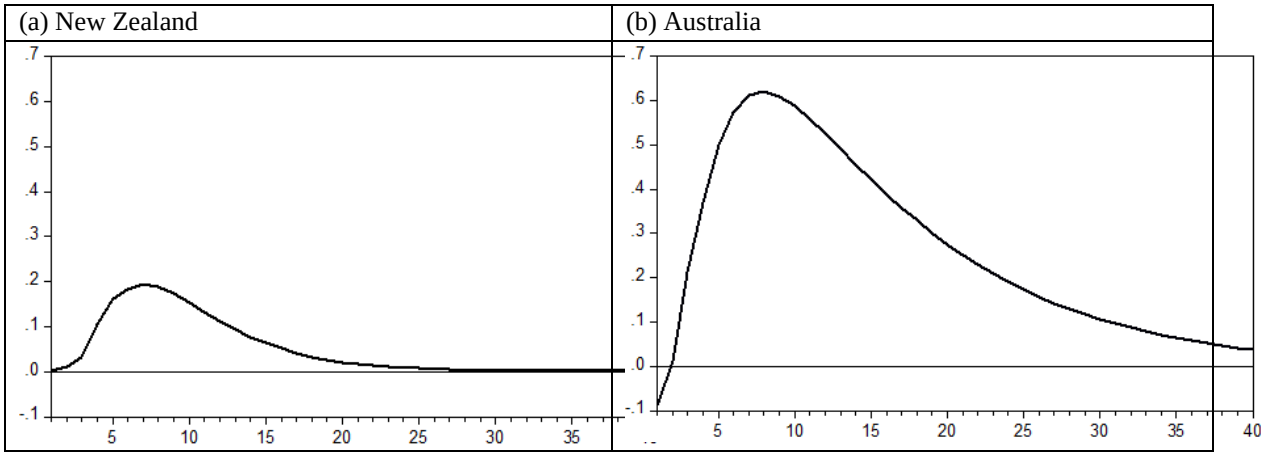

Figure 4: Responses of Interest Rate to a House Price Shock

Figure 4 shows the impacts of an increase in house price inflation on the short-run interest rate. Although both central banks respond to the house price inflation shock by raising the short-term interest rates, the magnitudes of responses are quite different. The Reserve Bank of Australia (RBA) responds by raising the interest rate by more than 0.6 percent point with two quarters following the shock, and the responses of the Reserve Bank of New Zealand (RBNZ) are at most modest if not negligible. Since housing inflation also leads to general inflation, we cannot exclude the possibility that the systematic monetary policy response to innovations in house prices could just reflect that house prices have an impact on less controversial objectives such as inflation, especially in the case of New Zealand. Notwithstanding, the first-hand evidence from impulse responses supports that an unpredicted shock to house prices influences the interest-rate setting of RBA, in that the interest rate rises initially within a quarter or two and remains 2 percent point higher until up to five years.

We also examine the contribution of house price shock to the short-run interest rate in terms of variance decomposition. The results are Table 2, where the importance of the shock in house price inflation is again quite different between the two countries.

Table 2: Variance Decomposition of house price inflation (%, attributable to interest rate shock)

	Horizon								
	1	2	4	8	12	16	20	30	40
New Zealand	0.001	0.004	0.189	1.222	1.505	1.445	1.357	1.239	1.196
Australia	1.113	0.473	5.011	18.604	24.010	25.523	25.821	25.666	25.562

For Australia, the portions of the fluctuations in the interest rate explained by the house inflation shock are smaller within a year following the shock. As the forecast horizon becomes longer, however, the importance of the house price shock rises. In the long run (h = 40) in particular, house price inflation shocks remain a non-negligible source of interest rate movements taking up to 25 percent of the total variations in the interest rate. Given that the fluctuations of the interest rate are dominated by its own shocks, the results of variance decomposition further support that the RBA does take house price into account in conducting its monetary policy. In contrast, the importance of house price inflation is as good as negligible for RBNZ.

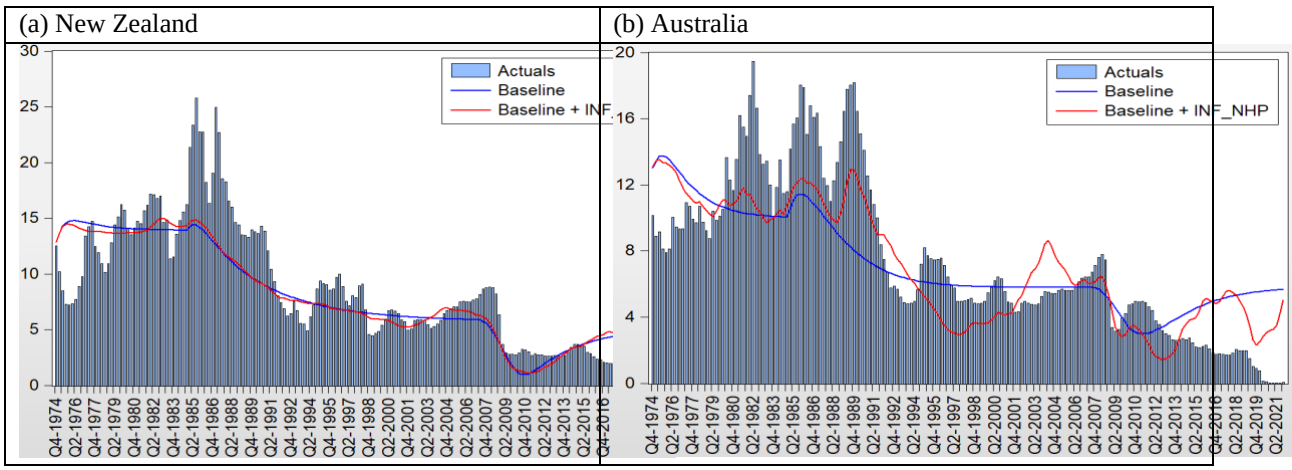

Figure 5: Historical Decomposition of Interest Rate (attributable to house price shock)

The results of historical decomposition of the interest rates are presented in Figure 5, where the findings from the impulse responses and variance decomposition are confirmed. For New Zealand, house price shocks make virtually no contribution to the prediction of interest rate. In the case of Australia, however, including house price shocks as an additional source of information renders the projection of interest rate closer to the actual value, and such informational gains are relatively more conspicuous in the past decade.

In summary, the strength and timing of the response varies between the two countries, indicating that housing may or may not play a key role in the monetary policy setting. Notwithstanding, we should mention that what are measured here is the systematic response to unpredicted changes in house prices. Furthermore, the fact that innovations in house prices also increase inflation, imply that we cannot exclude the possibility that the systematic monetary policy response to innovations in house prices could just reflect that house prices have an impact on general inflation[12].

4. Conclusion

This paper examines the link between house prices and monetary policy using quarterly data of New Zealand and Australia since the mid-1970s. Using an identified VAR model for a small open economy, we address two specific questions: i) Does a loose monetary policy cause house price appreciation? and ii) Do central banks conduct a policy of "leaning against the wind" by responding to house price shocks? From impulse responses analysis, it is found that a monetary tightening in the form of an increase in the short-term interest rate unambiguously results in a fall of house price inflations in both countries, although the magnitudes of the impact detected by variance and historical decompositions are modest. In contrast, the response of house prices to monetary policy shocks varies between the two countries. In Australia, evidence shows that housing price inflation plays a non-negligible role in the conduct of monetary policy by RBA. On the other hand, house price shocks make virtually no contribution in explaining the movements in interest rate, unlike the recent official announcement of the RBNZ that it has included housing price as a key indicator for monetary policy.

References

Assenmacher-Wesche, K. and Gerlach, S. (2008a), Financial structure and the impact of monetary policy on asset prices, Swiss National Bank Working Paper 2008-16.

Assenmacher-Wesche, K. and Gerlach, S. (2008b), Monetary policy, asset prices and macroeconomic conditions: a panel-VAR study, National Bank of Belgium Working Paper 149.

[12] According to the Monetary Policy Committee at the Bank of England in May 2004, "… in presenting a decision to raise the repo rate, it would be important for the Committee to make clear that this did not imply that it was targeting house price inflation, or any other asset price. The significance of the unexpected acceleration in house prices was that it supported a stronger short-term outlook for consumption and output growth, and hence a steeper projected rise in inflation."

Bernanke, B. and Gertler, M. (1989), Agency costs, net worth and business fluctuations. American Economic Review (79), pp.14–31.

Bernanke, Ben, S., Gertler, M., and Gilchrist, S. (2000), The financial accelerator in a quantitative business cycle framework. In: John, B., Taylor, Michael Woodford (Eds.), Handbook of Macroeconomics, vol. 1C. Elsevier Science, New York, pp. 1341–1393.

Bernanke, B. and Kuttner, K.N. (2005), What explains the stock market's reaction to federal reserve policy? Journal of Finance (60), pp.1221–1257.

Clarida, R.m Galí, J., and Gertler, M. (2001), Optimal monetary policy in open versus closed economies: an integrated approach, American Economic Review Papers and Proceeding (91), pp.248–252.

Gelain, P., Lansing, K. J., and Mendicino, C. (2013), House Prices, Credit Growth, and Excess Volatility: Implications for Monetary and Macroprudential Policy, International Journal of Central Banking (9), pp.219−76.

Giuliodori, M. (2005), The role of house prices in the monetary transmission mechanism across European countries, Scottish Journal of Political Economy (52), pp.519–543.

Goodhart, C. and Hofmann, B. (2001), Asset prices, financial conditions, and the transmission of monetary policy, In: Proceedings from Federal Reserve Bank of San Francisco

Iacoviello, M. (2005), House Prices, Borrowing Constraints, and Monetary Policy in the Business Cycle, The American Economic Review (95), pp.739−64.

Iacoviello, M. and Minetti, R. (2003), Financial Liberalization and the Sensitivity of House Prices to Monetary Policy: Theory and Evidence, The Manchester School (71), pp.20–34.

Iacoviello, M. and Minetti, R. (2008), The credit channel of monetary policy: evidence from the housing market, Journal of Macroeconomics (30), pp.69–96.

Kim, J. R. and Chung, K. (2018) Putting the present value model into practice: a comparison of two alternative approaches, Applied Economics (50), pp.4456-4469.

Kishor, N. K. and Morley, J. (2015), What factors drive the price–rent ratio for the housing market? A modified present-value analysis, Journal of Economic Dynamics and Control (58), pp.235-249.

Kohn, D. (2007), Success and failure of monetary policy since the 1950s, Speech at "Monetary policy over fifty years", a conference to mark the fiftieth anniversary of the Deutsche Bundesbank, Frankfurt, Germany.

Mendicino, C., and Punzi, M. T. (2014), House Prices, Capital Inflows and Macroprudential Policy, Journal of Banking & Finance (49), pp.337−55.

Mishkin, F. (2007), Housing and the monetary transmission mechanism, paper presented at the Annual Economic Symposium organised by the Kansas City Fed in Jackson Hole.

Rigobon, R. and Sack, B. (2004), The impact of monetary policy on asset prices, Journal of Monetary Economics (51), pp.1553–1575.

Rotemberg, J.J., and Woodford, M. (1997), An optimization-based econometric framework for the evaluation of monetary policy. In: Bernanke, B.S., Rotember, J.J. (Eds.), NBER Macroeconomics Annual 1997. MIT Press, Cambridge, MA, pp. 297–346.

Sá, F., Towbin, P., and Wieladek, T. (2014), Capital Inflows, Financial Structure and Housing Booms, Journal of the European Economic Association (12), pp.522−46.

Scatigna, M., Szemere, R. and Tsatsaronis, K. (2014), Residential Property Price Statistics across the Globe, BIS Quarterly Review September, pp.61-76.

Sutton, G. D., Mihaljek, D., and Subelyte, A (2017), Interest Rates and House Prices in the United Atates and around the World, In BIS Working Papers, No. 665

Svensson, L.E.O. (2000), Open-economy inflation targeting, Journal of International Economics (50), pp.155–183.

Vasquez-Ruiz, H. (2012), The Link between Foreign Capital Flows and Housing Prices: A Panel Data Estimation, unpublished manuscript, International Department, Central Bank of Dominican Republic.