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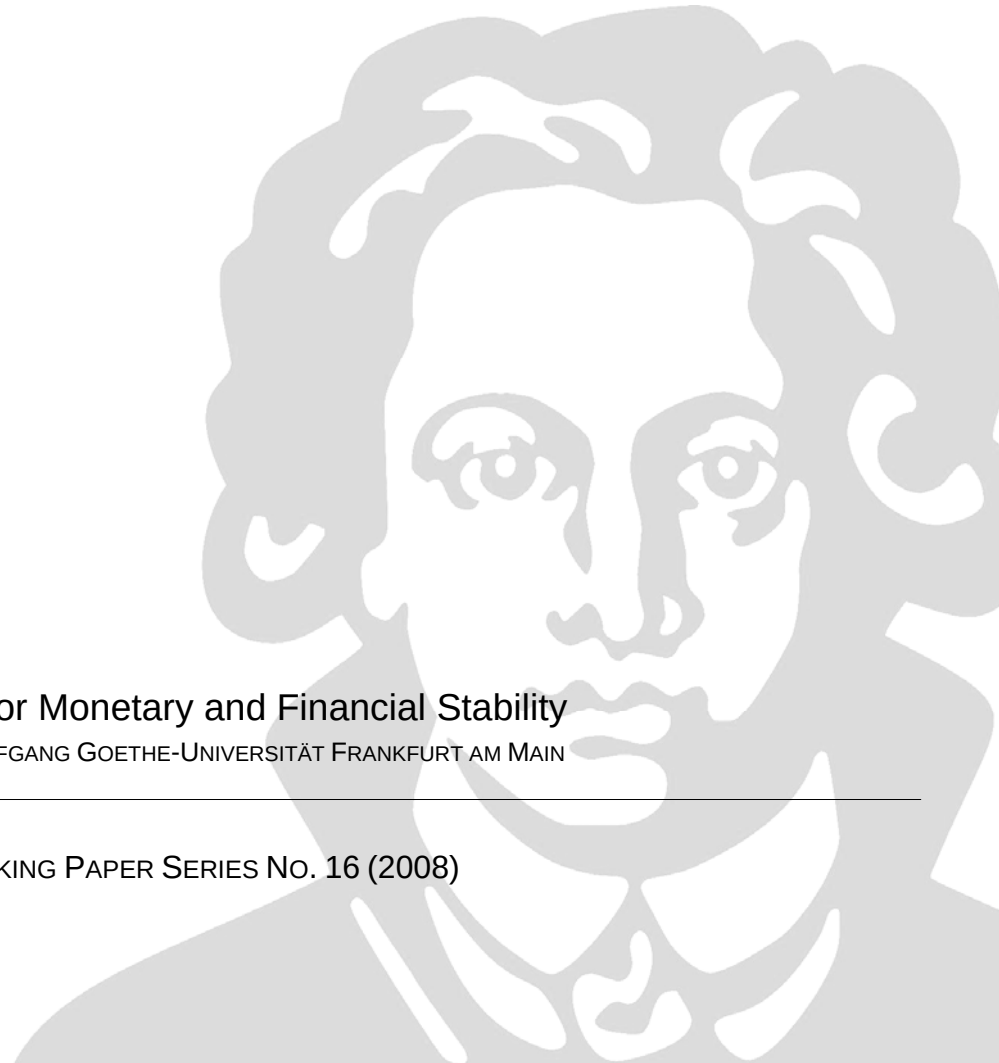
ENSURING FINANCIAL STABILITY: FINANCIAL STRUCTURE AND THE IMPACT OF MONETARY POLICY ON ASSET PRICES



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Ensuring Financial Stability: Financial Structure and the Impact of Monetary Policy on Asset Prices

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Abstract

This paper studies the responses of residential property and equity prices, inflation and economic activity to monetary policy shocks in 17 countries, using data spanning 1986-2006. We estimate VARs for individual economies and panel VARs in which we distinguish between groups of countries on the basis of the characteristics of their financial systems. The results suggest that using monetary policy to offset asset price movements in order to guard against financial instability may have large effects on economic activity. Furthermore, while financial structure influences the impact of policy on asset prices, its importance appears limited.

Keywords: asset prices, monetary policy, panel VAR.
JEL Number: C23, E52

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1. Introduction

There is much agreement that asset prices, in particular residential property prices, provide a crucial link through which adverse macroeconomic developments can cause financial instability.[1] Episodes of asset price "booms" are seen as raising the risk of a sharp correction of prices, which could have immediate repercussions on the stability of financial institutions. Indeed, many observers have argued that property-price collapses have historically played an important role in episodes of financial instability at the level of individual financial institutions and the macro economy (e.g. Ahearne et al. 2005, Goodhart and Hofmann 2007a).

Not surprisingly, this view has led to calls for central banks to react to movements in asset prices "over and beyond" what such changes imply for the path of aggregate demand and inflation (Borio and Lowe 2002, Cecchetti et al. 2000). Proponents of this policy emphasise that episodes of financial instability could depress inflation and economic activity below their desired levels. Consequently, they argue, central banks that seek to stabilise the economy over a sufficiently long time horizon may need to react to current asset price movements (Bean 2004, Ahearne et al. 2005). Importantly, they do not argue that asset prices should be targeted, only that central banks should be willing to tighten policy at the margin in order to slow down increases in asset prices that are viewed as being excessively rapid in order to reduce the likelihood of a future crash that could trigger financial instability and adverse macroeconomic outcomes.

While seemingly attractive, this proposed policy has implications for central banks' understanding of economic developments and for the effectiveness of monetary policy (Bean 2004, Bernanke 2002, Kohn 2006). First, central banks must be able to identify in real time whether asset prices are moving too fast or are out of line with fundamentals. Second, changes in policy-controlled interest rates must have stable and predictable effects on asset prices. Third, the effects of monetary policy on different asset prices, such as residential property and equity prices, must be about as rapid, since stabilising one may otherwise lead to greater volatility of the other. Needless to say, if these criteria are not satisfied simultaneously, any attempts by central banks to offset asset price move-

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[1] The chapters in Hunter et al. (2003) provide an excellent overview of the interlinkages between monetary policy, asset prices and financial stability.

ments may simply raise macroeconomic volatility, potentially increasing the risk of financial instability developing. Fourth, the size of interest rate movements required to mitigate asset price swings must not be so large as to cause economic activity and, in particular, inflation to deviate substantially from their desired levels since, if this were to be the case, the resulting macroeconomic cycles could lead the public to question the central bank's commitment to price stability. Fifth, the effects of monetary policy on asset prices must be felt sufficiently rapidly so that a tightening of policy impacts on asset prices before any bubble would burst on its own (since policy should then presumably be relaxed to offset the macro economic effects of the collapse of the bubble).[2]

Of course, it is by no means clear that central banks are better able to judge the appropriate level of asset prices and the risk of future sharp price declines than agents transacting in these markets. It is equally unclear whether monetary policy has predictable effects on asset prices and, if so, whether these effects occur at about the same time horizons for different asset prices, whether they are large relative to the effects of monetary policy on inflation and economic activity and whether they occur faster. Thus, it is not clear that any of the five criteria are satisfied. In this paper we attempt to shed light on these issues by exploring the responses of residential property and equity prices, inflation and output growth to monetary policy shocks for a panel of 17 OECD countries using quarterly data for the period 1986-2006.

The analysis proceeds in three steps. Following Iacoviello (2002) and Giuliodori (2005), we first estimate vector autoregressive models (VARs) for individual countries and study the impact of monetary policy on the economy.[3] Not surprisingly, the resulting estimates are imprecise, leaving considerable uncertainty about the quantitative effect of changes in interest rates on asset prices relative to their impact on economic activity and inflation, as would seem to be an important precondition for monetary policy to be used to mitigate asset price movements. To raise the precision of the estimates, we thus follow Goodhart and Hofmann (2007b) and estimate a panel VAR incorporating real residential

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[2] Bean (2004) and Kohn (2006) discuss the implications of lags for the use of monetary policy in the face of asset price bubbles.

[3] Sutton (2002) and Tsatsaronis and Zhu (2004) also estimate VARs incorporating residential property prices for a range of countries. The focus of their studies, however, is on which factors explain movements in residential property prices and not on whether monetary policy is able to stabilize asset price movements.

property and real equity prices. Our results show that while monetary policy does have important effects on asset prices, those effects are not particularly large relative to those it has on inflation and output. This suggests that attempts to stabilise asset prices by using interest rate policy are likely to induce pronounced macroeconomic fluctuations.

However, while the panel estimates confirm that monetary policy has predictable effects on residential property prices, by construction these estimates disregard all country specific information. Since a number of authors have asserted that the transmission mechanism of monetary policy depends on the institutional characteristics of the financial system, we go on to split the sample of countries into two groups depending on their financial structure.[4] We then estimate a panel VAR for each group and explore whether the impact of monetary policy on asset prices, inflation and output differs between the two groups. We use several measures proposed in the literature to capture differences in financial structure, including the importance of floating rate lending; whether mortgage equity withdrawal is possible; the loan-to-value ratio for new mortgages; the mortgage-debt-to-GDP ratio in the economy; the method used to value property; whether mortgages are securitised; and the share of owner occupied dwellings. To preview briefly the results, we find that the financial structure does condition the responses of asset prices to monetary policy but also that the differences between country groups are less important than commonly thought.[5]

The paper is organised as follows. The next section contains a discussion of the data and Section 3 presents the results for the VARs estimated for individual countries. In Section 4 we first briefly discuss panel VARs before discussing the estimates. Section 5 focuses on the importance of financial structure and provides panel-VAR estimates when the countries are divided into two groups on the basis of financial structure. Finally, Section 6 concludes.

2. Data

The econometric analysis below is conducted on quarterly data on equity and residential property prices, consumer price indices (CPIs), real gross domestic

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[4] The importance of financial structure of the economy is emphasized by so many authors that it is impossible to provide a full overview here. See, among others, Maclennan et al. (1998), Giuliodori (2005), Tsatsaronis and Zhu (2004), CGFS (2006) and Calza et al. (2007).

[5] See Maclennan et al. (1998) for a dissenting opinion.

product (GDP) and interest rates.[6] Much of the interest in the behaviour and determination of asset prices stems from their role in episodes of financial instability. Since there is a natural tendency to focus on data from countries that have experienced pronounced asset-price swings, there is a risk of sample selection bias which can be mitigated by using data from a broad cross-section of countries. We therefore study 17 countries for which we could obtain both equity and residential property price data: Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Norway, Spain, Sweden, Switzerland, the UK and the US.

The sample starts in 1986 in order to avoid the more turbulent, higher inflation period that ended in the first half of the 1980. Moreover, and as noted by Ahearne et al. (2005) and Girouard and Blöndal (2001), many countries deregulated their mortgage markets during the early to mid-1980s, suggesting that estimates relying on older data are unlikely to be representative for modern economies. The data set ends in 2006. Goodhart and Hofmann (2007b) in their panel VAR analysis also study, as a part of their robustness analysis, a subsample spanning these years and find that this later period indeed differs from the earlier part of their sample (although their data definitions are somewhat different).

Residential property prices are from the data base of the Bank for International Settlements (BIS). Quarterly data over the whole sample period are available for Australia, Canada, Switzerland, Denmark, Finland, France, the Netherlands, Sweden, the UK and the US. [7] For, Belgium we link an older series for small and medium-sized houses to the residential property price series for all dwellings from 1988 on. For Spain we link the residential property prices of existing dwellings with those of owner-occupied homes in 2005. For Ireland and Norway we interpolate annual data with the Chow-Lin (1971) procedure, using a rent index and an index of residential construction cost as reference series, and link the resulting series to the BIS quarterly data that start in 1988 and 1991, respectively.[8] The same interpolation procedure is applied to annual property

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[6] All results are obtained with the software RATS 7.0.

[7] For Australia, missing values for the first two quarters of 1986 were generated using the growth of residential construction cost.

[8] Annual data for Norway are from Eitrheim and Erlandsen (2004).

price data for Germany and Italy.[9] For Japan the semi-annual series on residential land prices is interpolated.[10]

Figure 1 shows the resulting residential property price series.[11] Interestingly, many economies experienced a sharp rise in residential property prices in the second half of the 1980s, in many cases associated with liberalisation and deregulation of the housing finance sector. Residential property prices were subsequently weak or fell in the 1990s, following the US recession in 1990-1991 and the episode of high interest rates in many European countries after the turmoil in the European exchange rate mechanism (ERM) in 1992-93 which was triggered by the adoption of tight monetary policy in Germany to offset the aggregate demand effects of German Reunification.

The figure indicates that following the collapse of the "bubble economy" in Japan around 1990, residential property prices fell continuously until the end of the sample. In Germany residential property prices started falling in 1994 and declined until 2006, vividly indicating the depth of the "German crisis."

It should be emphasised from the outset that data on residential property prices are not necessarily comparable across countries. The main differences concern the type of housing that is included (single family houses, flats or all types), whether existing dwellings or new dwellings are considered, whether prices are per dwelling or per square meter, and the region (urban, non-urban or both) where the data is collected. While price developments vary between types of housing reflecting supply and demand conditions in different market segments, the most noticeable differences arise with respect to the area where the data come from. Property price booms generally occur in metropolitan areas, and are often less pronounced if data for the whole country are considered. The impact of this, however, is difficult to assess since only few countries have series covering these different categories. As an example, Figure 2 shows the annual increase in nominal UK residential property prices for the whole country and the greater London area. While the greater-London prices seem more volatile, both series share the same main features (their correlation is 0.82). The left hand

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[9] Annual property price data for Italy are taken from Cannari et al. (2006).

[10] In Japan, a market for old homes practically does not exist and houses are normally torn down after a few decades. As a consequence, land prices determine the value of housing, see the Economist (2008).

[11] We note that despite the difference in data sources, the patterns are comparable to those reported in Tsatsaronis and Zhu (2004) and Ahearne et al. (2005).

panel shows the annual increase in prices for single-family houses and flats in Switzerland. Again, the year-to-year changes differ somewhat but generally convey the same information (the correlation is 0.86). For our study we use whenever possible the broadest residential property price index available in order not to capture regional booms. Nevertheless, great care needs to be exercised when comparing property-price developments across countries.

Turning to the sources of the other data, the CPI (all items) and share price indices (all shares) are from the OECD Main Economic Indicators (MEI) data base. Real GDP data were taken from the BIS data base and supplemented with data from the International Financial Statistics (IFS) data base of the IMF.[12] For Ireland annual GDP data before 1997 were interpolated with the Chow-Lin (1971) procedure using industrial production as the reference series. We use a three-month interbank rate for Denmark, Switzerland, Spain, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway and the UK, a three-month Treasury bill rate for Belgium, Sweden and the US, and a three-month commercial paper rate for Australia, Canada and Japan.[13] All interest rates are from the OECD's MEI. For Finland and Denmark missing data for 1986 were replaced with data from the IFS (call money rate). For the euro-area countries we use the three-month EURIBOR rate after 1998. Except for interest rates and equity prices all data are seasonally adjusted.

3. VARs for individual economies

We start by estimating VAR models for individual countries, following the approach taken by Giuliodori (2005), Iacoviello (2002) and Neri (2004). We include five variables: the CPI (*p*), real GDP (*y*), the three-month interest rate (*i*), real residential property prices (*rhp*) and real equity prices (*rsp*), with the real variables being obtained using the CPI. Except for the interest rate, all variables are in logarithms. Before we turn to the econometric analysis it is useful to investigate the time-series characteristics of the data. Since we take a panel approach below, we perform panel unit root tests, using the test statistics suggested by

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[12] For the Netherlands the IFS data apparently contain an error in 1998. We therefore used real GDP from the MEI data base.

[13] To eliminate a large spike during the ERM crisis we regressed the three-month interest rate for Ireland on a dummy, which is unity in 1992Q4 and zero elsewhere, before conducting the analysis.

Pedroni (1999).[14] The results in Table 1 indicate that all variables are nonstationary in levels, but stationary in first differences.

Next we test for cointegration between the variables.[15] When using a common lag length of four for all countries, the existence of at least one cointegrating vector could not be rejected except in Japan, Sweden and the US. When using fewer lags, however, also for these countries the existence of cointegration could not be rejected. We therefore specify the VAR models in the level of the variables. Nevertheless, we neither impose the number of cointegrating relations on the systems nor do we attempt to impose overidentifying restrictions on the cointegrating vector.

For an individual country n, n = 1, … , N, the reduced form of the VAR thus can be written as $Y_{n,t} = \mu_n + A_n(L)Y_{n,t} + \varepsilon_{n,t}$, where $Y_{n,t} = (p_{n,t}, y_{n,t}, i_{n,t}, rhp_{n,t}, rsp_{n,t})$, μ_n is a constant, $A_n(L)$ is a matrix polynomial in the lag operator and $\varepsilon_{n,t}$ is a vector of normally, identically distributed disturbances. For each country the number of lags included in the VAR is chosen by the Akaike information criterion, considering a maximum lag length of four.

To identify the shocks, we use a Choleski decomposition, with the variables ordered as above, which is standard in the monetary transmission literature (see Christiano et al. 1999). This triangular identification structure allows output and the price level to react only with a lag to monetary policy shocks, whereas property and equity prices may respond immediately. We thus assume that central banks react to current output growth and inflation when setting interest rates, but not to current property and equity prices.[16]

While this last assumption may seem controversial in that few observers would doubt that central banks react to changes in asset prices since these influence aggregate demand and inflation pressures, barring exceptional circumstances one would not expect any reactions to be instantaneous but rather to occur if asset prices rise or fall for some time. By contrast, asset prices react immedi-

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[14] We also studied the time series properties of the data for individual countries, which were generally compatible with the panel results discussed in the main text. However, given the sheer amount of test results, we refrain from commenting on them.

[15] Iacoviello (2002) argues that a long-run relation between GDP and real residential property prices should exist.

[16] To identify the monetary policy shock it is sufficient to determine the position of the monetary policy instrument; the ordering of the variables in the groups before and after the interest rate does not matter.

ately to changes in monetary policy. Thus, it seems sensible to attribute the contemporaneous correlation between interest rates and asset prices to reactions by the latter to the former rather than conversely. We have explored whether the results are sensitive to this assumption. Not surprisingly, for equity prices the ordering does matter but for residential property prices it does not. However, the alternative assumption that the contemporaneous correlation between innovations in interest rates and equity prices is due solely to reactions by monetary policy is not only implausible for the reasons mentioned, but also leads to counterintuitive results. For instance, equity prices start to increase after a contractionary monetary policy shock.[17] It therefore seems appropriate to order the interest rate before the asset prices in the system.

Figure 3 shows the bootstrapped impulse responses to a monetary policy shock of 25 basis points in the single-country VARs.[18] Since these models involve the estimation of a large number of parameters, impulse responses are imprecisely estimated. Many analysts therefore use plus/minus one standard-error (i.e., 68%) confidence bands. We therefore do so too. However, the impulse responses arising from the panel VARs are more precisely estimated since the data are pooled. To take that into account when conducting inference, we use plus/minus two standard-error (i.e., 95%) confidence bands in this case. In order to permit comparison with the single country VARs, we show plus/minus one and plus/minus two standard-error wide bootstrapped confidence bands in all graphs. Given the large number of impulse responses generated by the estimation process, we focus on the general features of the results.

As a preliminary, note that the impulse responses are frequently statistically insignificant even when the 68% confidence bands are used. After a monetary policy shock the CPI falls, though in most countries it takes about 15 to 20 quarters before the maximum effect is felt. Nevertheless, in some countries the CPI rises in the short run, indicating the presence of a "price puzzle."[19] Because of the wide confidence bands, however, this effect is significant only in Australia,

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[17] This is also inconsistent with results obtained with structural identification assumptions relying on the long-run effects of monetary policy, see Lastrapes (1998).

[18] The bootstrapped confidence bounds are obtained using the methodology proposed by Sims and Zha (1999) and are based on 1000 replications.

[19] The price puzzle arises because central banks change interest rates in response to predicted future changes in inflation, that is, information that the econometrician does not incorporate in the analysis. See Walsh (Chapter 1, 2003) for a discussion.

Switzerland and the UK. Real GDP declines after a monetary policy shock in all countries, and significantly so in about half of them. It is notable that GDP reacts much faster than the CPI to a monetary policy shock.

Of particular interest is the reaction of asset prices. Except for Germany and Spain, residential property prices fall in reaction to monetary policy shocks. Furthermore, there appear to be interesting differences across countries: the fall of residential property prices is significantly different from zero even at the 95% level in Canada, Finland, the Netherlands, Norway, Sweden, Switzerland, the UK and the US. Moreover, while in some countries, (including Finland, the UK and the US) residential property prices respond immediately to a monetary policy shock, in others, (e.g., Belgium or Spain), the responses are much slower and more persistent. However, the confidence bands are wide and it is hard to tell whether the responses differ systematically across countries. For equity prices the reaction to monetary policy shocks is generally negative and significant on impact but typically becomes insignificant after two quarters.

Since the results for the single-country VARs are inconclusive and frequently insignificant, we go on to estimate a panel VAR (PVAR) under the assumption that pooling the data is likely to sharpen the estimates.

4. Panel VARs

There is a large literature on the estimation of panel regressions and the inconsistency that can arise in that context. Much of that literature deals with the bias of the fixed effects estimator in dynamic homogeneous panels that results from the inclusion of lagged endogenous variables (Holtz-Eakin et al. 1988). This bias is particularly severe if the time dimension is small but can be overcome by using GMM or instrumental variables estimators. Since we are in the fortunate position of having a rather long sample period, we need not be overly concerned about this source of bias.

However, our main interest in this paper concerns the dynamic effect of monetary policy in a group of countries that have widely different financial structures. Unfortunately, it is well known that the standard fixed effects estimator is inconsistent in dynamic panels even if the time dimension is large if the coefficients on the lagged endogenous variables differ across groups, which is likely in our case. The reason is that restricting the slope coefficients to be the same across groups induces serial correlation in the residuals when the regressors are auto-

correlated. This serial correlation does not vanish when instrumental variable estimation is applied (see Pesaran and Smith 1995). We therefore follow Pesaran and Smith's recommendation and estimate the PVAR by the mean group estimator.[20] This estimator averages the coefficients across groups and provides a consistent estimate of the average effects. As we found evidence of fixed effects in the GDP and equity-price equations, we estimate the VAR with country-specific intercepts.

The panel VAR thus can be written as $Y_{n,t} = \mu_n + A_n(L)Y_{n,t-1} + \varepsilon_{n,t}$, where $Y_{n,t}$ is a $N \times 1$ vector containing the observations for the *N* countries, *n* = 1, … *N*; μ_n is a country-specific intercept and $A_n(L)$ is a lag polynomial with the VAR coefficients. The disturbances, $\varepsilon_{n,t}$, have zero means and a country-specific variance, σ_n^2. We assume that the coefficients in $A_n(L)$ vary randomly across countries, i.e., that the typical element $a_{n,i,j}^p$ in $A_n(L)$ can be written as $a_{n,i,j}^p = a_{i,j}^p + \eta_{n,i,j}^p$, where *n* is the country index, *p* = 1, …, *P*, the lag order of the VAR and *i*, *j* = 1, … *K* the number of variables in the VAR.

Figure 4 shows the impulse responses to monetary policy shocks as implied by the panel regression. Not surprisingly, the large increase in information that comes from using the panel approach generates impulse responses that typically are significantly different from zero at the 95% level.

Again, we consider the responses to a 25 basis point increase in the interest rate. After a monetary policy shock the price level takes six quarters before it starts to fall, with the effect becoming significant only after about two years. This slow response may be a consequence of some countries showing a “price puzzle” in their reaction to a monetary policy shock.[21] Furthermore, the results indicate that output falls for about six quarters in response to the monetary policy shock before recovering slowly. Residential property prices reach their trough somewhat earlier after three quarters but take even longer to recover. By contrast, equity prices, which are eminently forward-looking variables, fall immediately following the increase in interest rates and have returned to the original

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[20] The persistence is indeed larger if the PVAR is estimated by conventional fixed effects. Assenmacher-Wesche and Gerlach (2008b) provide a discussion of this issue.

[21] While our results do not indicate the presence of a price puzzle, we nevertheless believe that the estimates underpredict the impact of monetary policy on the level of prices since we do not include indicators of future inflation in our VAR system.

level by the time output and property prices have returned about half way to their initial levels.

These findings warrant several comments. First, the reactions of prices and output to the shocks are similar to those found in the literature based on single-country studies (see, e.g. Christiano et al. (1999) for the US and the VAR studies in Angeloni et al. (2003) for the euro area). Second, the responses of residential property prices lead those of real GDP by about three quarters. This suggests that changes in property prices influence GDP via their effects on wealth and consumption demand. Third, the width of the confidence bands indicates that the responses of residential property prices are, statistically, about as well defined as the impact on real economic activity. Fourth and most importantly, the point estimate shows that after about one year residential property prices have fallen about three times as much as the level of real GDP, that is, by 0.375% rather than by 0.125%. Taken at face value, this three-to-one estimate suggests that while monetary policy could in principle be used to offset swings in residential property prices that are seen as causing a threat to financial stability, it would induce potentially large swings in real economic activity: To offset a 15% rise in residential property prices, which is not an unusually large increase by the standards of many recent property price booms, the central bank must be willing to depress real GDP by 5%, a substantial amount.[22] Moreover, while the impact of monetary policy shocks on equity prices is about as large as the peak effect on residential property prices, the marked difference in timing implies that monetary policy cannot be used to target or influence both. Overall, the results in this section suggest that gearing monetary policy to asset prices is likely to generate pronounced swings in economic activity and to stabilise some asset prices at the costs of inducing more instability in others.

5. How important is financial structure?

One problem with the panel VAR estimates is that they mask any potential heterogeneity across the 17 countries in our sample. This is unfortunate since many authors have argued that the impact of monetary policy on the economy

[22] See also Assenmacher-Wesche and Gerlach (2008a). Proponents of using monetary policy to mitigate swings in asset prices, such as Borio and Lowe (2002), do not seem concerned by the impact of such a policy on economic activity. By contrast, opponents, such as Kohn (2006), do worry about the effects on output and inflation. Interestingly, experimental evidence also shows that interest rate policy is not effective in dealing with asset price bubbles, see Becker et al. (2007).

varies across countries depending on the financial structure of the economy (Cecchetti 1999, Ehrmann et al. 2003, Giuliodori 2005). Moreover, it is well documented that the financial structure differs significantly between the countries we consider (Maclennan et al. 1998; Calza et al. 2007). However, little quantitative evidence on the importance of these characteristics has been presented in the literature.[23] One problem with doing so is the nature of the available data. Institutional characteristics change little over time, so that time series analysis with such data is precluded. Moreover, while there are several characteristics that might influence the effects of monetary policy on financial stability, there is no agreement on which characteristics are most important and how best to measure these.

With these caveats in mind, we selected a number of potentially relevant criteria from the literature, divided the countries in two groups on the basis of these criteria and estimated a panel VAR for each group in order to assess the importance of financial structure.[24] We emphasise that in compiling information on financial structure from different sources comparability is a readily apparent issue. One example is the loan-to-valuation (LTV) ratio, where some studies quote the maximum, while others refer to the average, LTV ratio. In addition, a considerable judgement is required when grouping countries according to these criteria. Consider, for instance, the classification of countries as having fixed or flexible mortgage interest rates. While a majority of mortgages with an interest-rate adjustment at three months' notice certainly classifies as flexible, it is much more difficult to decide whether interest rates that are fixed between one and five years (e.g., Italy; see Calza et al. 2007) should be regarded as fixed or flexible. Any grouping of countries is therefore subjective and disputable.

We deal with this problem in two ways. First, we analyse a broad range of indicators to ensure that we capture as many as possible aspects of the structure of mortgage financing. Second, for the quantitative characteristics, such as the LTV ratio, mortgage-debt-to-GDP ratio and owner-occupation rate, we group

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[23] An exception is Calza et al. (2007) who compute correlations between the peak effect of a monetary policy shock and mortgage market indicators. Of course, there is no lack of cross-country studies that find differences in monetary transmission and attribute these to differences in financial structure. However, the estimated impulse responses may differ for many other reasons, including the conduct of monetary policy and other differences in economic structure that are not taken into account. Here we investigate the effect of financial structure more directly.

[24] We let the lag length in the VARs be determined by the AIC.

the countries according to whether they are above or below the median value of the respective criterion. Since the data quoted in the literature differ with respect to the methodology used and change over time, we emphasise that our method is robust if the ranking of the countries is stable.

When interpreting the results, it is important to verify that the criteria are not leading to the same allocation of countries to the two groups. We therefore computed the correlations between the different criteria and found that they are close to zero.[25] With this as a preliminary, we turn to a discussion of the seven characteristics in Table 2, their presumed influence on the effects of monetary policy shocks and the results in Figure 5 to 12.

The first is the importance of floating rate financing. It is commonly believed that in economies in which mortgage rates are tied to short-term interest rates, changes in monetary policy has relatively large effects on residential property prices, and therefore on the economy, since the interest rates on all loans are reset at the same time. In contrast, in the case of fixed rate lending, only new borrowers are affected by changes in interest rates.[26] It is therefore sometimes argued that fixed-rate mortgages are less risky than floating-rate mortgages. However, an unexpected fall in the steady-state inflation rate exposes fixed-rate borrowers to an increase in the real interest rate. This effect may have been a factor contributing to the fall in residential property prices and the generally weak economic performance in the 1990s in Germany and Japan, both of which rely predominantly on fixed-rate financing.

In Figure 5 we present the results obtained when we distinguish between countries depending on the prevalence of fixed- versus variable-rate mortgages. As one would expect, the effects of monetary policy on GDP and residential property prices are large when variable-rate mortgages are prevalent. Surprisingly, the reaction of equity prices to monetary policy is almost twice as large. In addition the reaction in the fixed-rate group seems to be more persistent, which is compatible with the idea that in economies in which fixed-rate financing is important, higher short-term interest rates will only over time become embedded in

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[25] The only significant correlation, 0.65, is that between mortgage equity withdrawal and the mortgage-debt-to-GDP ratio. The other correlation coefficients lie between -0.03 and 0.44. Interestingly, a low share of owner-occupied homes is correlated with a correlation coefficient of about 0.4 with a low LTV ratio, no securitisation and the use of historical mortgage valuation practices.

[26] See Maclennan et al. (1998). Calza et al. (2007) present a model which implies that the sensitivity of consumption to monetary policy shocks is higher with variable-rate mortgages.

mortgage interest rates and therefore impact on GDP and property prices with a delay.

The second feature we consider is the importance of housing equity withdrawal. If households are able to withdraw equity, one would expect them to do so in response to rising residential property prices. This would boost consumption spending and aggregate demand, and might further increase residential property prices. The process will also work in reverse: a tightening of monetary policy that triggers declines in residential property prices is likely to have a greater impact on residential property prices and GDP than if mortgage equity extraction is not possible.

Figure 6 shows that the ability to withdraw mortgage equity influences the timing, but less so the size, of the reactions of GDP to monetary policy shocks. In economies where equity withdrawal is possible, GDP shows an immediate decline after a monetary policy shock, which is less significant and shorter-lived than the GDP decline in the other group. The reactions of the other variables to a monetary policy shock are essentially the same.

A third important characteristic of the financial system is the LTV ratio. A high LTV ratio means that households can relatively easily obtain financing to purchase property, suggesting that the effects of changes in interest rates are likely to be marked. Furthermore, interest rate increases may be more contractionary since households have less equity and thus may be more prone to default in conditions of economic hardship. Figure 7 shows that the reaction of property prices in the high-LTV group is slightly larger but that the differences between both groups are negligible.

The fourth characteristic is the mortgage-debt-to-GDP ratio. Since data on the average LTV ratio are difficult to obtain and banks presumably apply different criteria to different borrowers, the ratio of mortgage debt to GDP provides an alternative measure for the responsiveness of the housing market to interest rate changes. Figure 8 shows that real GDP falls more quickly and for a longer period in reaction to monetary policy shocks in countries with high mortgage-debt-to-GDP ratio. Contrary to our expectation, however, the response of residential property prices is larger in the group with the lower mortgage-debt-to GDP ratio.

The fifth characteristic is the valuation method that is used in different countries. If banks base lending decisions on the current, as opposed to the historical,

valuation level, households' ability to borrow will be more sensitive to current economic conditions and monetary policy. Thus, Tsatsaronis and Zhu (2004) hypothesise that residential property prices fall faster and by more in economies in which properties are valued using their current market prices. According to Figure 9, however, there are no differences in the mean responses of residential property prices and GDP but the responses are more precisely estimated in economies in which properties are valued using their current market prices.

The sixth characteristic we assess is whether it matters if mortgage loans are securitised. It has been argued that the increased reliance on capital markets for mortgage funding associated with securitisation implies stronger effects of monetary policy on the economy and on residential property prices (CGFS 2006). On the other hand, Tsatsaronis and Zhu (2004) conjecture that the prevalence of securitisation should reduce the sensitivity of residential property prices to monetary policy shocks since it allows banks to transfer the credit risk associated with mortgages to the capital market. Without securitisation the risk of credit crunches would therefore be commensurately larger, implying that the effects of monetary policy may be more pronounced in economies in which mortgage loans are not securitised.

Figure 10 suggests that residential property prices in countries in which securitisation is not common fall by more in response to monetary policy shocks than in countries in which securitisation plays an important role. This may be because if banks hold mortgages on their balance sheets, weak residential property prices impact on their willingness to lend. By contrast, GDP falls by more in economies where securitisation is frequent; indicating that the fall in residential property prices impacts more on the overall economy in these countries.

Finally, we consider whether the share of owner-occupied housing matters. With high owner-occupancy rates, the wealth effect of monetary policy should be important and one would expect a larger impact of monetary policy shocks on GDP (see Maclennan et al. 1998). On the other hand, landlords or institutional investors owning rental housing also will experience a wealth effect and the argument rests on their wealth effect being smaller than that for the owner occupiers. Figure 11 shows that, contrary to our hypothesis, the effect on real property prices is smaller if the share of owner-occupied housing is large. This can be the case when house owners do not regard their house as a liquid asset, or when the possibility of equity withdrawal does not exist.

In sum, we find that differences in financial structure do not seem to matter much for the impact of monetary policy on residential property prices and the economy more broadly. This may be either because we miss important characteristics that influence the responses to monetary policy shocks, such as the structure of the pension and the tax systems, or because the indicators used to group countries are poor.[27] It may also be that the characteristics of the mortgage finance system interact with each other, and that their effect can only be detected when they are considered jointly. For that reason we explore whether the countries where the criteria generally suggest a large impact of monetary policy on residential property prices and economic activity indeed show a larger reaction to monetary policy shocks.[28] However, Figure 12 shows that the responses of residential property prices to monetary policy shocks do not seem to depend significantly on the criteria we investigated. A possible explanation is that some characteristics that make residential property prices more sensitive to monetary policy typically come together with other characteristics that have a partially offsetting effect. For instance, it may be that the ability to take a second mortgage dampens the responses of households in economies in which floating rate lending is prevalent. While the reaction of residential property prices seems not to depend strongly on the characteristics we investigated above, the reaction of equity prices and GDP are indeed larger and more persistent in countries in which we expect the monetary transmission mechanism to be stronger.

6. Conclusions

In this paper we have studied the impact of monetary policy stocks on inflation, output and asset prices, using VARs and panel VARs estimated on quarterly data spanning 1986 to 2006. The analysis suggests several tentative conclusions regarding the ability of using monetary policy to “lean against” residential property price and stock price booms.

First, the panel VAR results indicate that monetary policy has large and predictable effects on residential property prices, and that these effects are roughly

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[27] This is suggested by the fact that they vary considerably between studies.

[28] For each of the seven criteria listed in Table 2, we assigned a value of unity to those countries where we expected a large reaction to monetary policy shocks on the basis of this criterion. We then constructed an index of the expected effects of monetary policy by summing the entries for each country. We expect large effects of monetary policy when a country exceeds the median value of the index.

coincident with its effect on real economic activity. More precisely, 25 basis points increase in short-term interest rates depresses real GDP by about 0.125%, and real residential property prices by about three times as much, or 0.375%, after one or two years.

While these results suggest that monetary policy could potentially be used to slow down property price booms, the estimates imply that substantial interest rate increases would be necessary to do so and that these increases would depress real GDP considerably. For instance, a 250 basis point increase in interest rates would depress residential property prices by about 3.75% and real GDP by about 1.25%. Given that episodes of property price upswings have generally been associated with movements in prices of 15-20%, one is led to conclude that the cost of using monetary policy to slow down asset-price movements in order to reduce threats to financial stability might be large in terms of real output.

Of course, these estimates may well be wrong and it is possible that the impact on real property prices might be larger relative to real GDP than the three-to-one ratio we estimate here. But even if they are much larger, say five-to-one, the impact on real economic activity of an attempt to depress residential property prices are nevertheless likely to be pronounced.

Second, the estimates also indicate that monetary policy shocks depress equity prices by about as much as they depress residential property prices. However, equity prices decline immediately in this case and are back to the initial level by the time residential property prices reach their through. As a consequence of this difference in timing, it is not possible to use monetary to stabilise both residential property and equity prices.

Third, the individual-country VAR estimates are highly imprecise. This may reflect an inherent shortcoming of VAR analysis: with a large number of parameters the estimates are necessarily subject to considerable uncertainty. If so, a central bank that is persuaded that policy can and should be used to influence asset prices could proceed despite the evidence to the contrary. Another interpretation, more plausible to us and compatible with the arguments of Kohn (2006), is that the impact of monetary policy on asset prices is in fact highly uncertain, suggesting that central banks might wish to refrain from attempting to steer asset prices.

Fourth, our panel VAR analysis of the different subgroups of countries indicate that while the effects of monetary policy on residential property prices do appear influenced by an economy's financial structure, the differences are not large. It is possible that better data on financial structure may lead us to have to revise this conclusion. But it is also possible that such data will lead us to conclude that that one aspect of financial structure that seems to increase the economy's sensitivity to monetary policy may be partially offset by another, reducing the overall differences between economies.

Overall, we therefore interpret our results as suggesting that the proponents of using monetary policy to lean against asset-price fluctuations in order to ensure financial stability may have been too hasty to conclude that this is a sensible strategy.

References

Ahearne, Alan G., John Ammer, Brian M. Doyle, Linda S. Kole and Robert F. Martin (2005), "House Prices and Monetary Policy: A Cross-Country Study," Board of Governors of the Federal Reserve System, International Finance Discussion Papers No. 841.

Angeloni, Ignazio, Anil K. Kashyap and Benoit Mojon (2003), Monetary Policy Transmission in the Euro Area, Cambridge University Press, Cambridge.
Assenmacher-Wesche, Katrin and Stefan Gerlach (2008a), "Can Monetary Policy Be Used to Stabilise Asset Prices?," mimeo, Institute for Monetary and Financial Stability, University of Frankfurt.

Assenmacher-Wesche, Katrin and Stefan Gerlach (2008b), "Asset Prices in Monetary Policy: The Empirical Dimension," paper in progress, Institute for Monetary and Financial Stability, University of Frankfurt.

Bean, Charles (2004), "Asset Prices, Monetary Policy and Financial Stability: A Central Banker's View," Speech given at the American Economic Association Annual Meeting, San Diego, available at www.bankofengland.co.uk/publications/speeches/ 2004/speech207.pdf.

Becker, Ralf, Urs Fischbacher and Thorsten Hens (2007), "Soft Landing of a Stock Market Bubble: An Experimental Study," National Centre of Competence in Research, NCCR Finrisk Working Paper No. 32.

Bernanke, Ben S. (2002), "Asset-Price 'Bubbles' and Monetary Policy," Remarks before the New York Chapter of the National Association for Business Economics, New York, New York.

Borio, Claudio and Philip Lowe (2002), "Asset Prices, Financial and Monetary Stability: Exploring the Nexus," BIS Working Paper No 114.

Calza, Alessandro, Tommaso Monacelli and Livio Stracca (2007), "Mortgage Markets, Collateral Constraints, and Monetary Policy: Do Institutional Factors Matter?," Center for Financial Studies CFS Working Paper No. 2007/10.

Cannari, Luigi, Ivan Faiella, Roberto Sabbatini and Francesco Zollino (2006), "House Prices in Italy: The Statistics Used at the Bank of Italy," Paper presented at the OECD-IMF Workshop on Real Estate Prices Indexes, Paris, 6-7 November 2006.

Cecchetti, Stephen G. (1999), "Legal Structure, Financial Structure, and the Monetary Policy Transmission Mechanism," Federal Reserve Bank of New York, Economic Policy Review, July 1999, 9-28.

Cecchetti, Stephen G., Hans Genberg, John Lipsky and Sushil Wadhwani (2000), "Asset Prices and Central Bank Policy," Geneva Report on the World Economy 2, CEPR and ICMB.

Chow, Gregory C. and An-loh Lin (1971), “Best Linear Unbiased Interpolation, Distribution, and Extrapolation of Time Series by Related Series,” Review of Economics and Statistics, 53, 372-375.

Christiano, Lawrence J., Martin Eichenbaum and Charles L. Evans (1999), “Monetary Policy Shocks: What Have We Learned and To What End?,” in: John B. Taylor and Michael Woodford (ed.), Handbook of Macroeconomics, Elsevier, Amsterdam, 65-148.

Committee on the Global Financial System (2006), “Housing Finance in the Global Financial Market,” Bank for International Settlements CGFS Papers No. 26.

Economist (2008), "Building Wealth - Japan's Property Markets," January 3rd, 2008.

Eitrheim, Oyvind and Solveig K. Erlandsen (2004), “Chapter 9 - House Price Indices for Norway 1819-2003,” in: Oyvind Eitrheim, Jan T. Klovland and Jan F. Qvigstad (eds), Historical Monetary Statistics for Norway, Norges Bank, Oslo, 349-375.

Ehrmann, Michael, Leonardo Gambacorta, Jorge Martínez-Pagés, Patrick Sevestre and Andreas Worms (2003), “Financial Systems and the Role of Banks in Monetary Policy Transmission in the Euro Area,” in: Ignazio Angeloni, Anil K. Kashyap and Benoit Mojon (eds), Monetary Policy Transmission in the Euro Area, Cambridge University Press, Cambridge, 235-269.

Girouard, Natalie and Sveinbjörn Blöndal (2001), “House Prices and Economic Activity,” OECD Economic Department Working Paper 279.

Giuliodori, Massimo (2005), “Monetary Policy Shocks and the Role of House Prices across European Countries,” Scottish Journal of Political Economy, 52, 519.543.

Goodhart, Charles A.E. and Boris Hofmann (2007a), House Prices and the Macroeconomy: Implications for Banking and Price Stability, Oxford University Press, Oxford.

Goodhart, Charles A.E. and Boris Hofmann (2007b), “House Prices, Money, Credit, and the Macroeconomy,” Financial Markets Group, London School of Economics, mimeo.

Holtz-Eakin, Douglas, Whitney Newey and Harvey S. Rosen (1988), “Estimating Vector Autoregressions with Panel Data,” Econometrica, 56, 1371-1395.
Hunter, William C., George G. Kaufman and Michael Pomerleano (2003), Asset Price Bubbles: The Implications for Monetary, Regulatory, and International Policies, MIT Press, Cambridge, MA.

Iacoviello, Matteo (2002), “House Prices and Business Cycles in Europe: A VAR Analysis,” Boston College Working Papers in Economics, No 540.
Im, Kyung So, M. Hashem Pesaran and Yongcheol Shin (2003), “Testing for Unit Roots in Heterogenous Panels,” Journal of Econometrics, 115, 53-74.

Kohn, Donald L. (2006), Monetary policy and asset prices," Speech at "Monetary Policy: A Journey from Theory to Practice," a European Central Bank Colloquium held in honor of Otmar Issing, Frankfurt, March 16, available at www.federalreserve.gov/newsevents/speech/ kohn20060316a.htm.

Lastrapes, William D. (1998), "International Evidence on Equity Prices, Interest Rates and Money," Journal of International Money and Finance, 17, 377-406.

Levin, Andrew, Chien-Fu Lin and Chia-Shang James Chu (2002), "Unit Root Tests in Panel Data: Asymptotic and Finite-Sample Properties," Journal of Econometrics, 108, 1-24.

Maclennan, Duncan, John Muellbauer and Mark Stephens (1998), "Asymmetries in Housing and Financial Market Institutions and EMU," Oxford Review of Economic Policy, 14, 54-80.

Neri, Stefano (2004), "Monetary Policy and Stock Prices: Theory and Evidence," Banca D'Italia, Temi di Discussione No. 513.

Pedroni, Peter (1999), "Critical Values for Cointegration Tests in Heterogenous Panels with Multiple Regressors," Oxford Bulletin of Economics and Statistics, Special Issue, 653-670.

Pesaran, M. Hashem and Ron Smith (1995), "Estimating Long-Run Relationships from Dynamic Heterogeneous Panels," Journal of Econometrics, 68, 79-113.

Sims, Christopher A. and Tao A. Zha (1999), "Error Bands for Impulse Responses," Econometrica, 67, 1113-1156.

Sutton, Gregory D. (2002), "Explaining Changes in House Prices," BIS Quarterly Review, September 2002, 46-55.

Tsatsaronis, Kostas and Haibin Zhu (2004), "What Drives Housing Price Dynamics: Cross-Country Evidence," BIS Quarterly Review, March 2004, 65-78.

Walsh, Carl E. (2003), Monetary Theory and Policy, second edition, MIT Press, Cambridge, MA.

Tables and Figures

Table 1. Panel unit root tests

	Level		Difference	
	LLC	IPS	LLC	IPS
CPI	0.20	0.30	-3.82*	-6.48*
Real GDP	-0.93	-1.46	-16.25*	-15.55*
Interest rate	0.36	-0.17	-11.77*	-14.29*
Real property prices	0.80	1.31	-5.41*	-7.80*
Real equity prices	-1.24	-1.56	-18.45*	-22.73*

Note: LLC is the Levin, Lin and Chu (2002) test, IPS the Im, Pesaran and Shin (2003) test. Except for the interest rate, where we include a constant only, the tests for the levels include a constant and a trend and five lags, whereas the test for the differences include a constant and four lags. The test statistics are distributed as N(0,1). * denotes significance at the 5 percent level.

Table 2. Characteristics of mortgage markets

	Interest rate ad-justment (1)	Mortgage equity withdrawal (2)	Average loan-to-value ratio (%) (3)	Mortgage–debt-to-GDP ratio (%) (4)	Valuation method (5)	Securiti-sation (6)	Share of owner-occupied homes (%) (7)
Australia	Variable	Yes	90-100	74	Market value	Yes	70
Belgium	Fixed	No	80-85	31	Market value	No	72
Canada	Fixed	Unused	70-80	43	Lending value	Yes	66
Denmark	Fixed	Yes	80	67	Market value	No	59
Finland	Variable	Yes	75-80	40	Market value	No	64
France	Fixed	No	80	26	Market value	No	56
Germany	Fixed	No	70	52	Lending value	No	42
Ireland	Variable	Yes	60-70	53	Market value	Yes	78
Italy	Fixed	No	50	15	Market value	No	80
Japan	Fixed	Yes	80	36	Market value	No	61
Netherlands	Fixed	Yes	112	111	Market value	Yes	53
Norway	Variable	Yes	70	63	Market value	No	77
Spain	Variable	Unused	80	46	Market value	Yes	85
Sweden	Variable	Yes	80-90	54	Market value	No	61
Switzerland	Variable	No	66	128	Lending value	No	36
UK	Variable	Yes	70	73	Market value	Yes	70

US	Fixed	Yes	80	69	Market value	Yes	69	

Note: Columns (1), (2), (5) and (6) are from Tsatsaronis and Zhu (2004), columns (3), (4) and (7) are from Calza et al. (2007), with information for Norway and Sweden taken from Ahearne et al. (2005) and for Switzerland from CGFS (2006).

Figure 1. Log real house prices (1986=100)

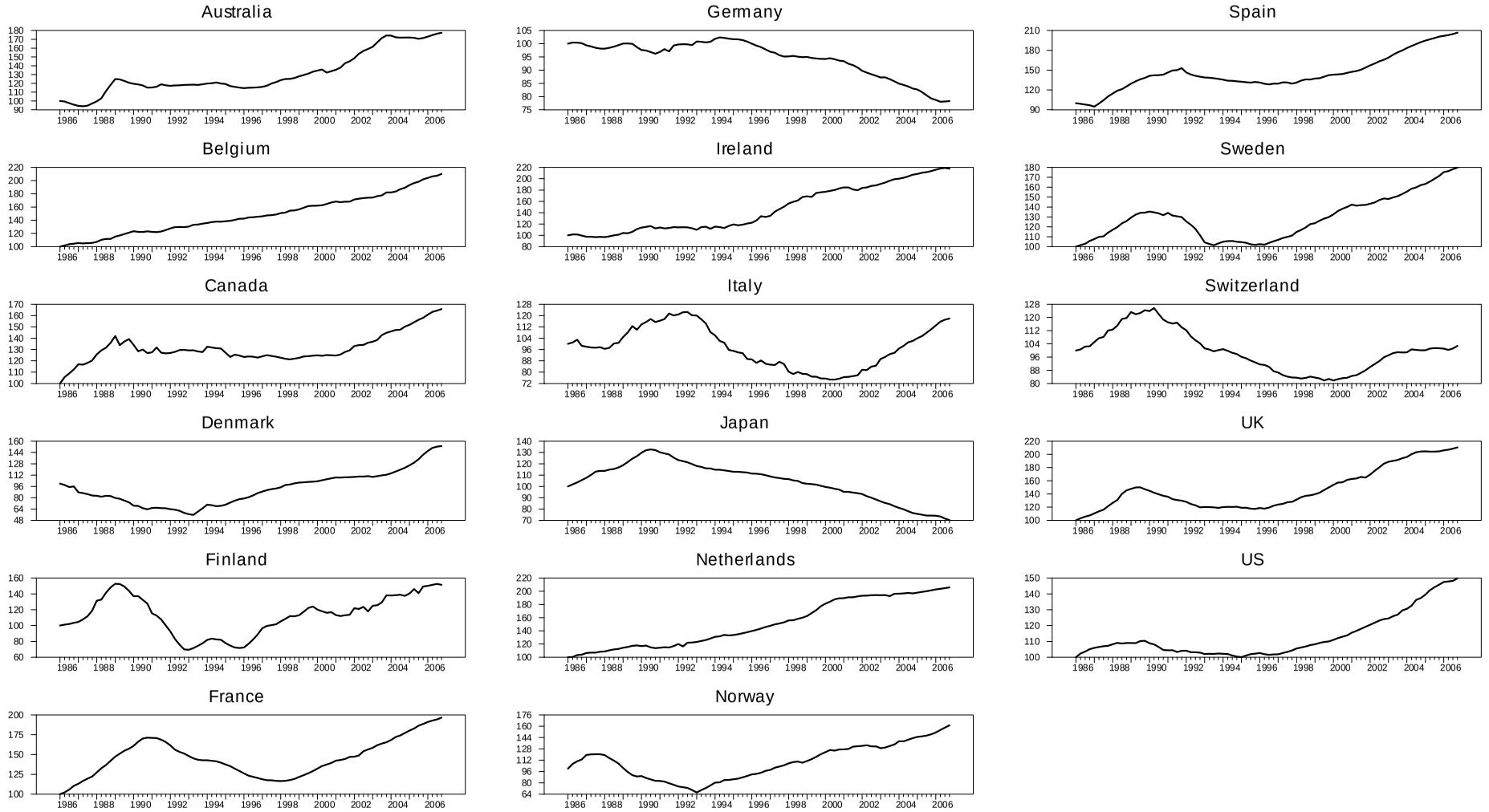


Figure 2. Annual property-price growth rates for subcategories

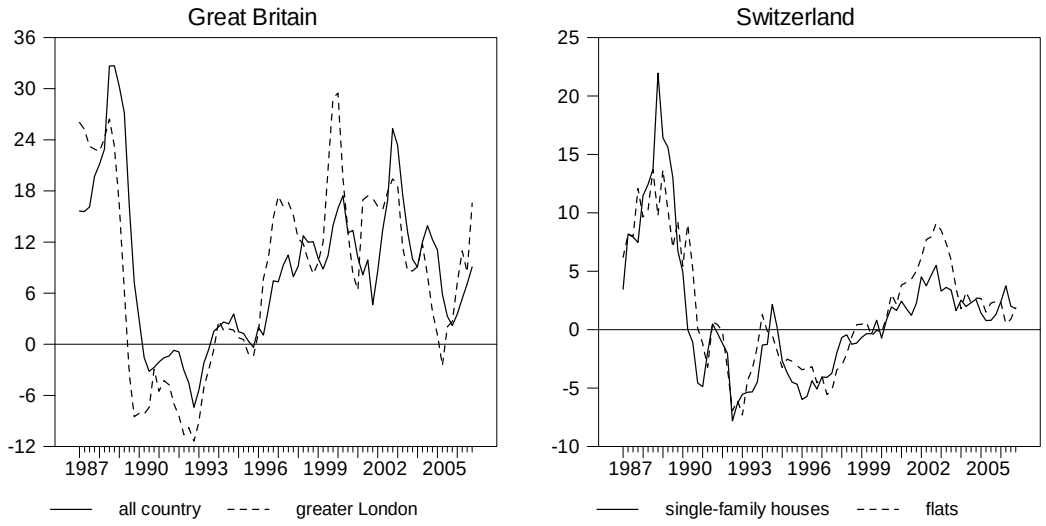


Figure 3. Impulse responses to a 25 basis points interest rate shock

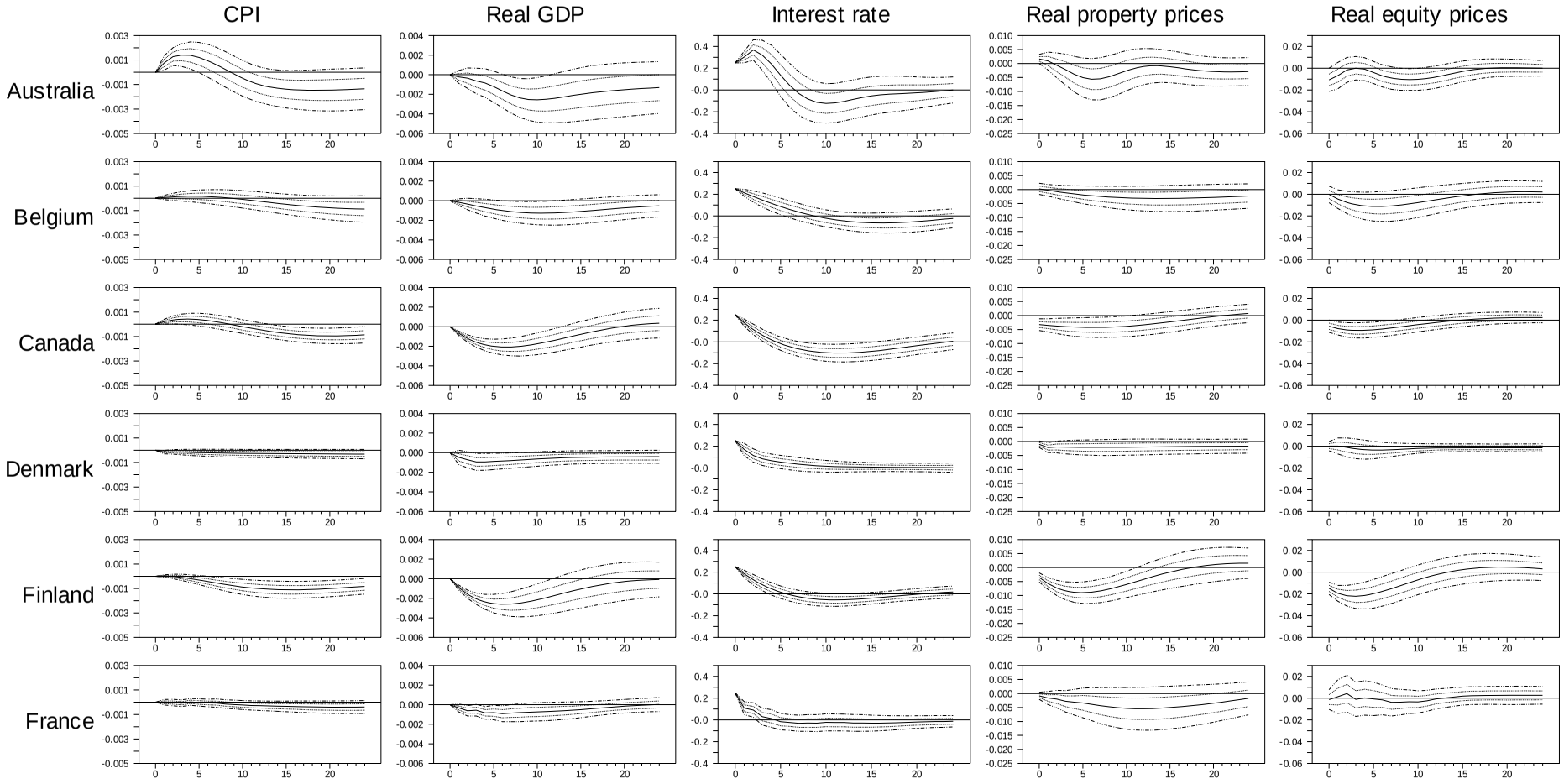


Figure 3 (cont.): Impulse responses to a 25 basis points interest rate shock

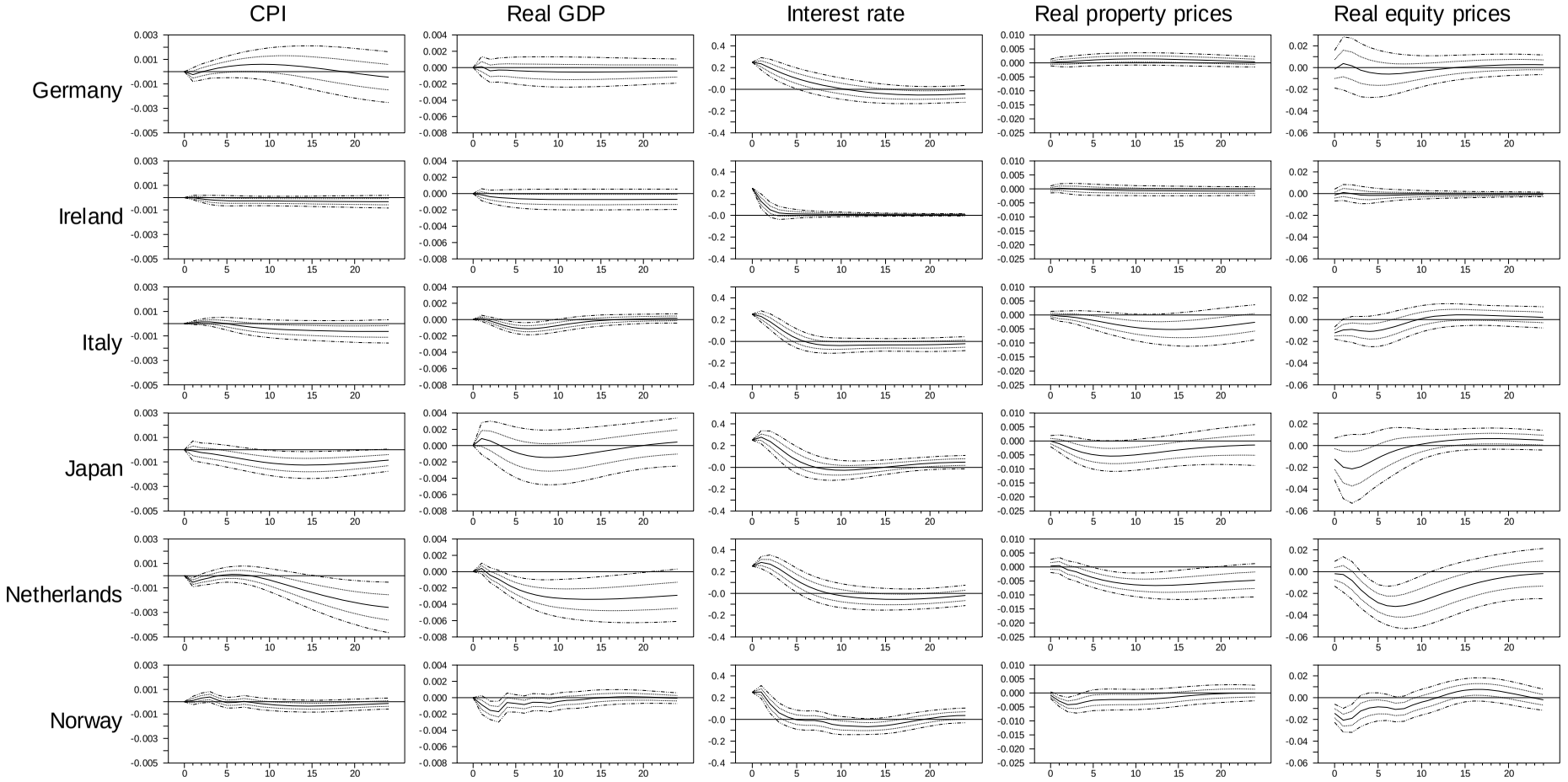
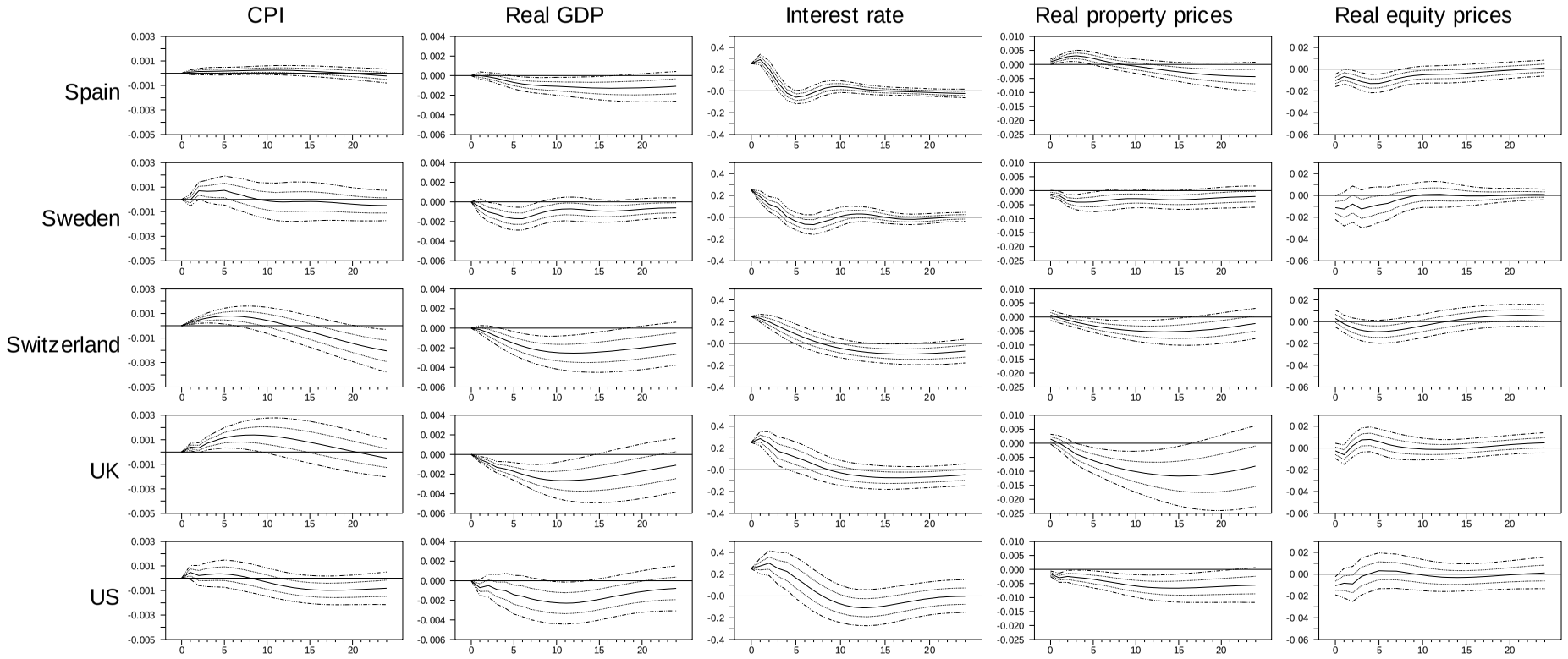
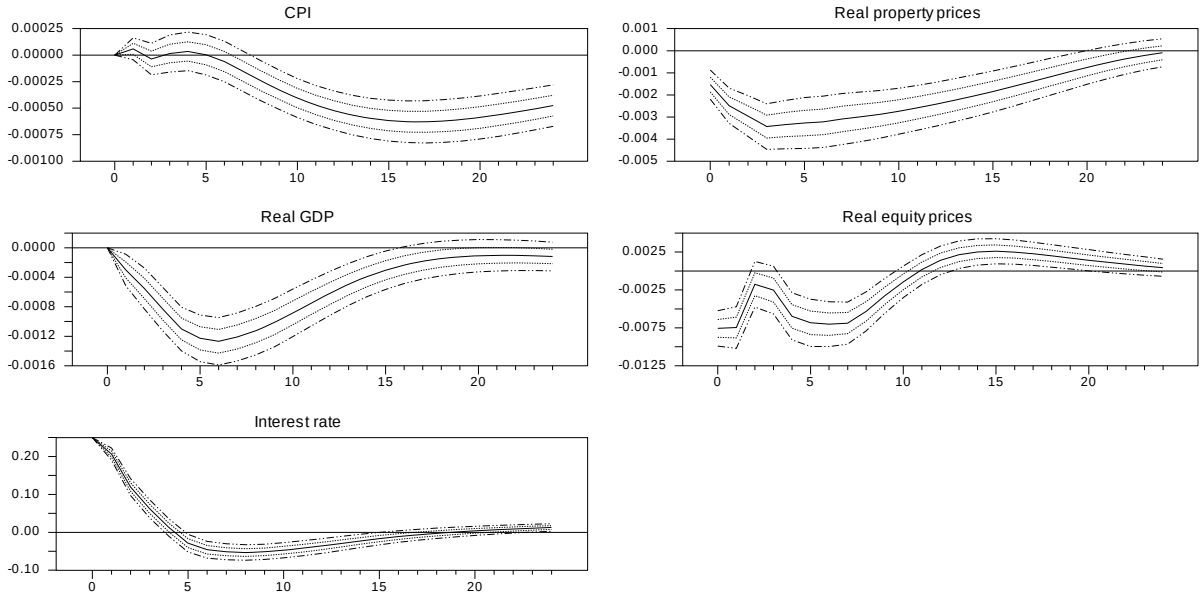


Figure 3 (cont.): Impulse responses to a 25 basis points interest rate shock



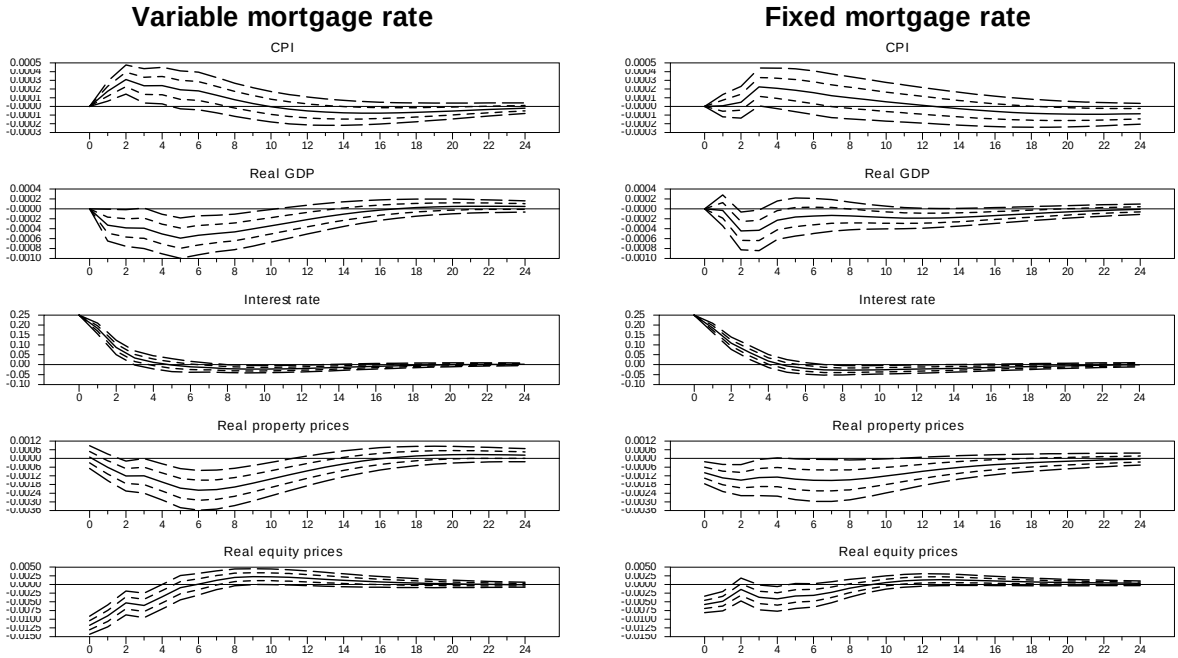
Note: Impulse responses are the bootstrapped mean response, using the approach recommended by Sims and Zha (1999). Long dashes indicate two-standard-error, short dashes one-standard error confidence bands. Results are based on 1000 bootstrap replications.

Figure 4. Panel VAR



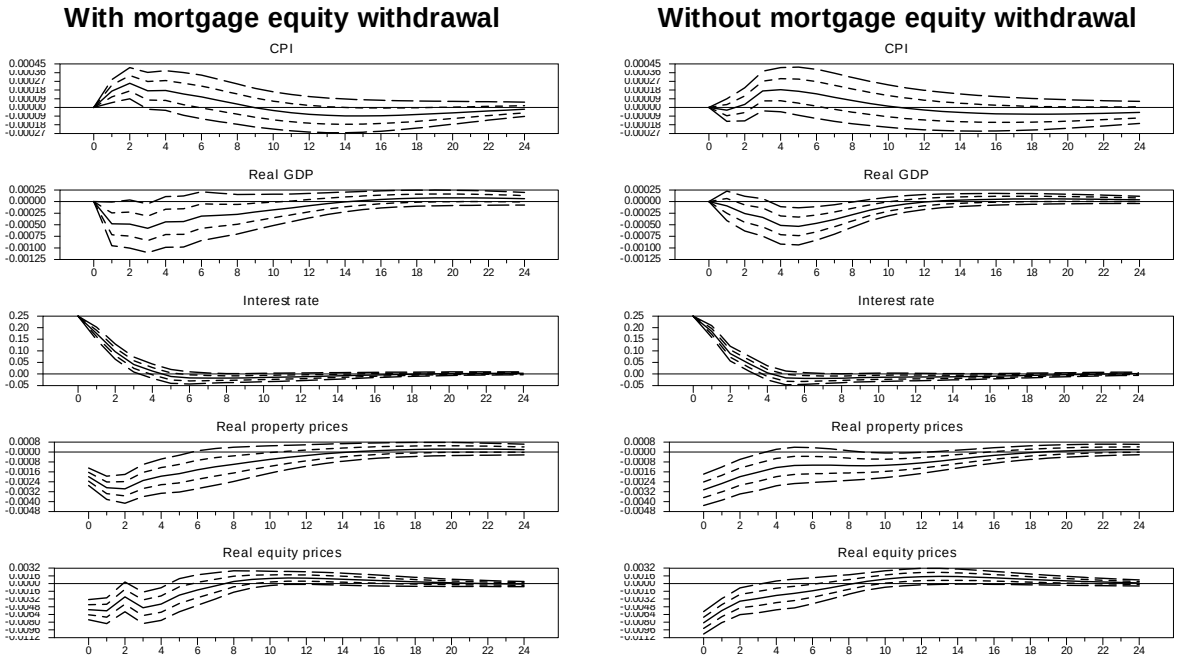
Note: See note to Figure 3.

Figure 5. Panel VAR split with respect to mortgage rate



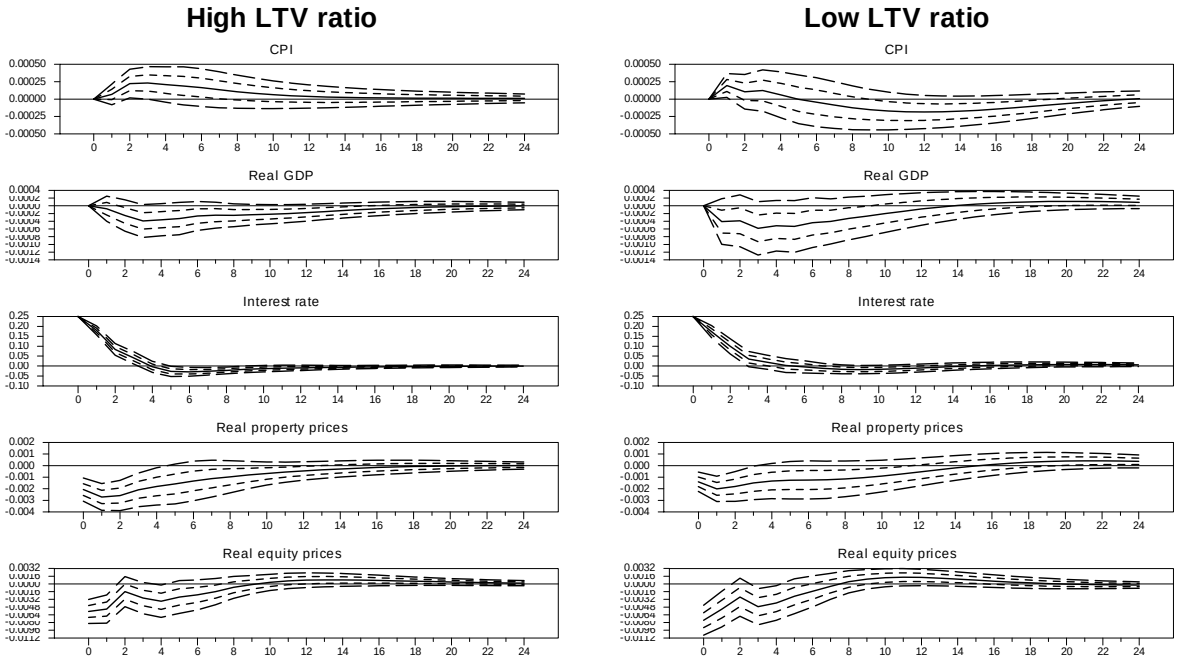
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 6. Panel VAR split with respect to mortgage equity withdrawal



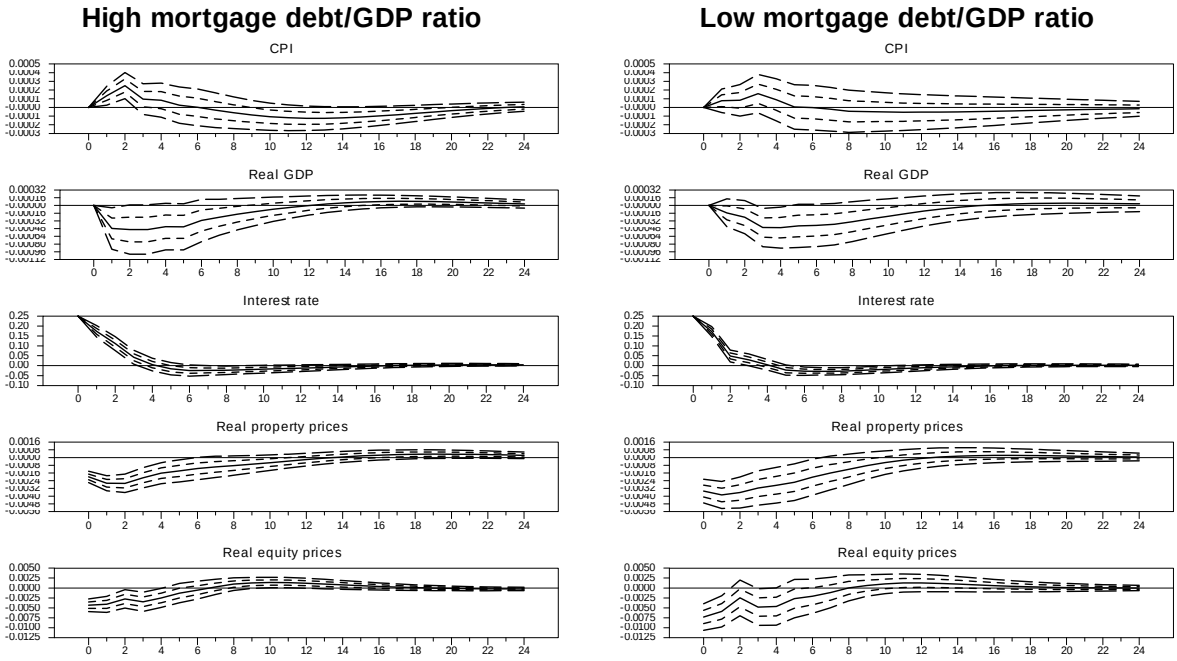
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 7. Panel VAR split with respect to loan-to-value ratio



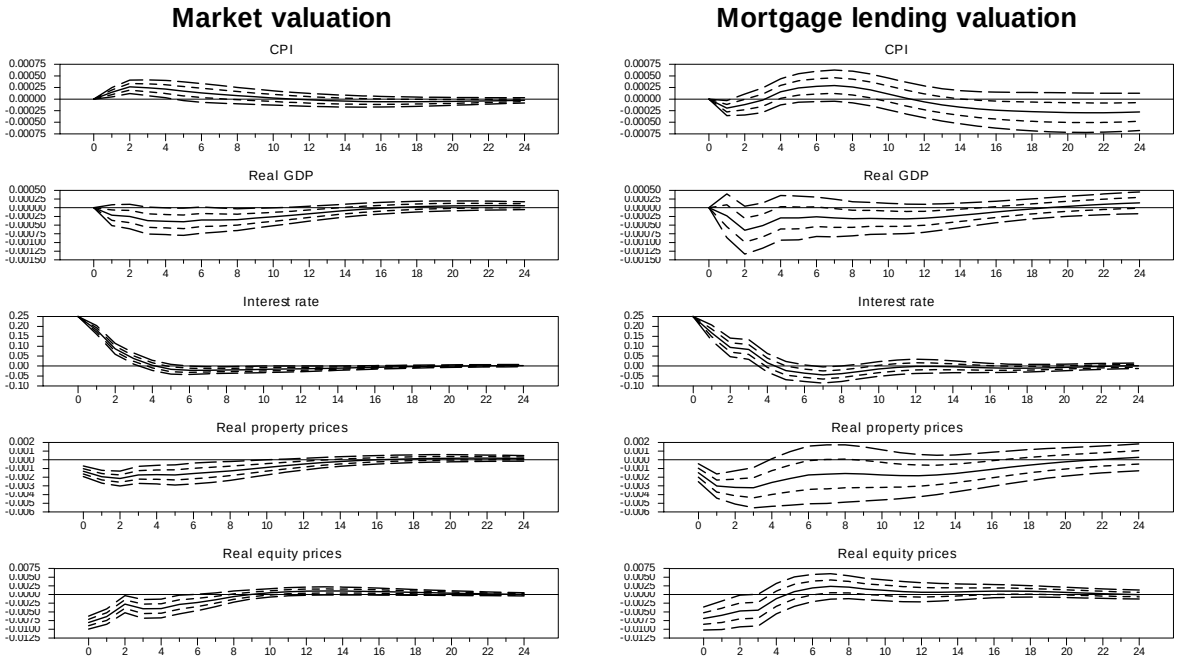
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 8. Panel VAR split with respect to mortgage-debt-to-GDP ratio



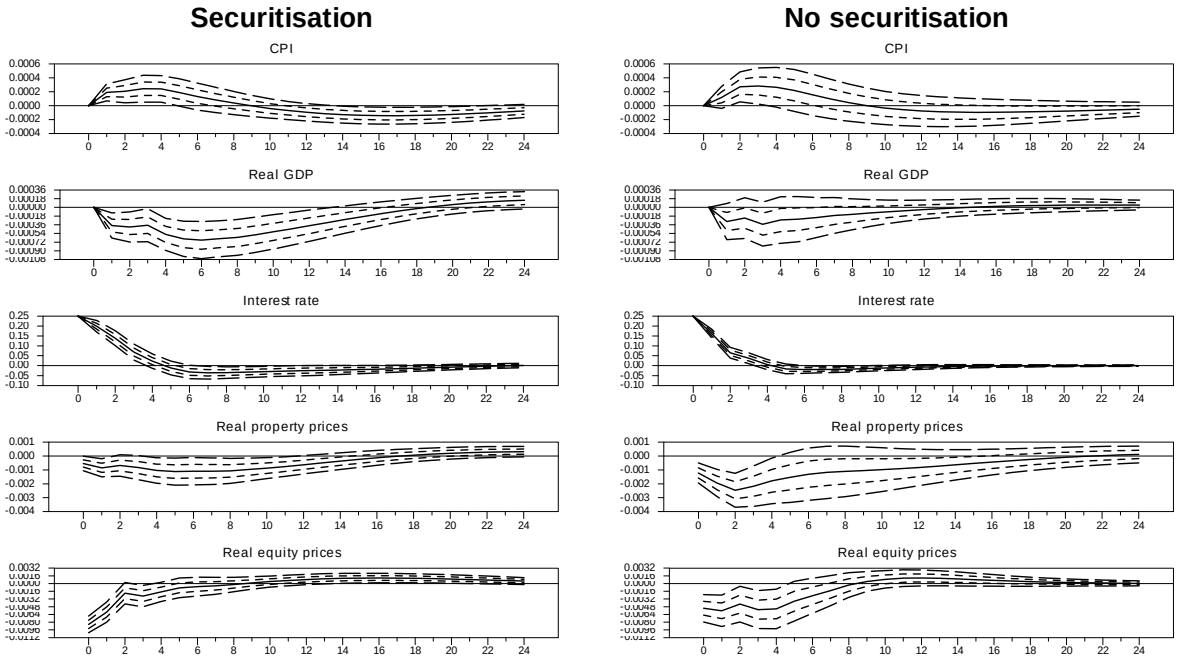
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 9. Panel VAR split with respect to valuation method



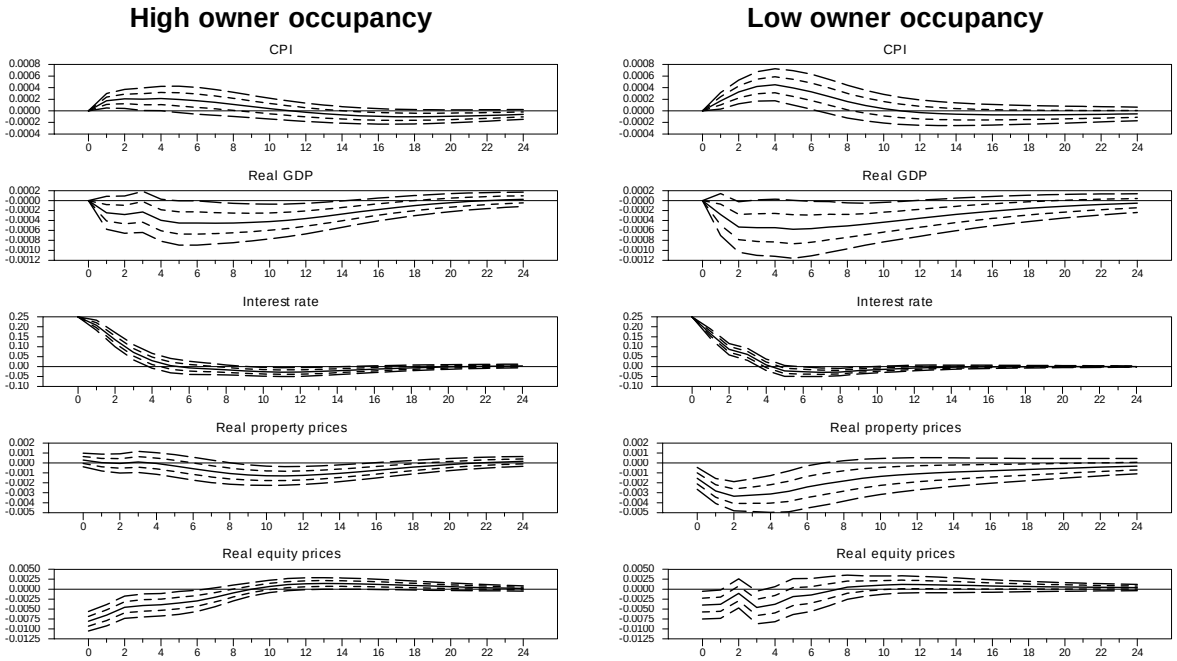
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 10. Panel VAR split with respect to securitisation.



Note: See note to Figure 3. The country grouping is indicated in Table 2.

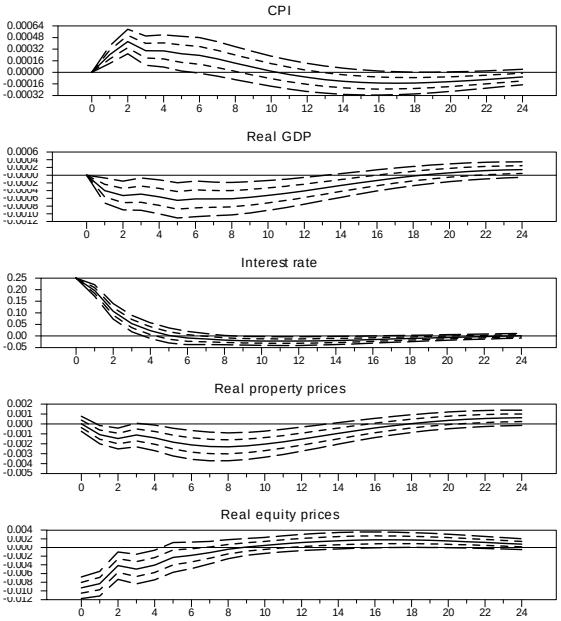
Figure 11. Panel VAR split with respect to owner occupancy



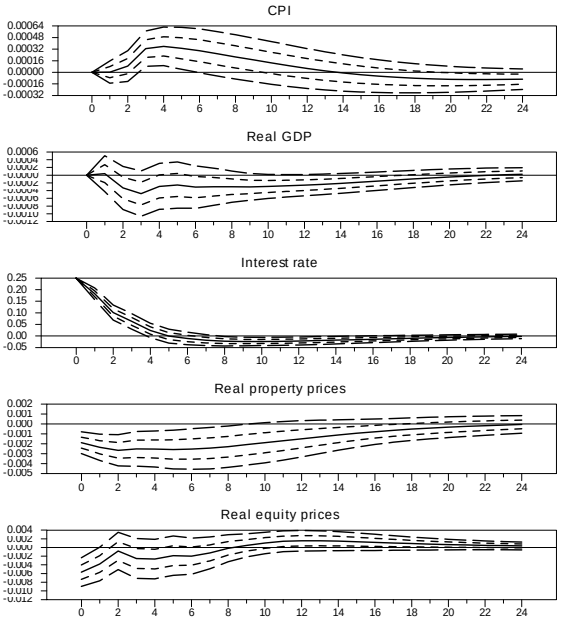
Note: See note to Figure 3. The country grouping is indicated in Table 2.

Figure 12. Panel VAR split according to the sum of financial structure indicators

Large effects of monetary policy expected



Small effects of monetary policy expected



Note: See note to Figure 3. Countries in the first group include Australia, Finland, Ireland, the Netherlands, Norway, Spain, Sweden, the UK and the US; countries in the second group are Belgium, Canada, Denmark, France, Germany, Italy, Japan and Switzerland.

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