

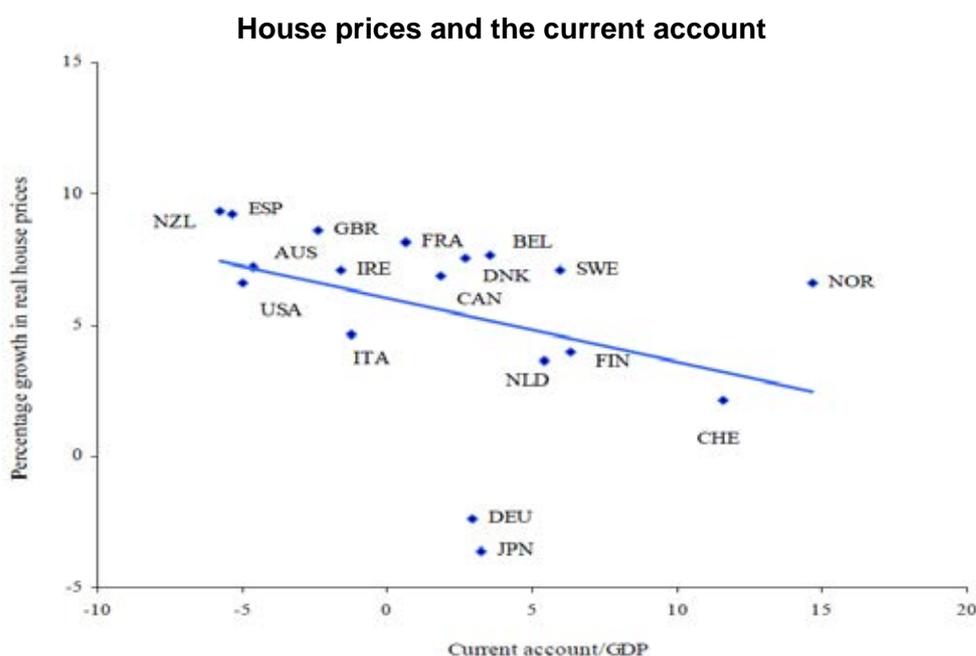
# Capital inflows, financial innovation and housing booms

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## 1. Summary

The run-up to the recent global financial crisis was characterised by an environment of low interest rates and a rapid increase in housing market activity across OECD countries. Some scholars argue that expansionary monetary policy was responsible for the low level of interest rates and the subsequent house price boom.<sup>2</sup> Others contend that the low degree of financial development in emerging market economies led to capital inflows to developed countries, depressing long-term interest rates and stimulating an increase in the demand for housing.<sup>3</sup> Figure 1 provides support for this hypothesis, showing that in the period from 1999 to 2006, house prices rose by more in countries with larger current account deficits. This negative correlation suggests the presence of an important link between the current account balance and the housing sector, but the direction of causality is unclear.

Figure 1



Notes: Data are averages over the period 1999 Q1 to 2006 Q4. Current account/GDP is from the OECD Economic Outlook. Real house price index is from the BIS Property Price Statistics.

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<sup>2</sup> This is the view in Hume and Sentance (2009) and Taylor (2009).

<sup>3</sup> See, for example, Caballero et al (2008), Warnock and Warnock (2009) and Bernanke (2010).

One other factor which is thought to have played a role in amplifying the effect of interest rate movements on housing activity is financial innovation. In more developed mortgage markets, consumers have easier access to credit and tend to be more leveraged. In the presence of financial frictions, the impact of changes in interest rates on consumer wealth and the housing market should become stronger when leverage is higher. This is the idea behind the financial accelerator effect developed by Bernanke and Gertler (1989) and Kiyotaki and Moore (1997). In addition to this effect, there may also be amplification through securitisation. Diamond and Rajan (2009) argue that excessive securitisation has led to a misallocation of capital to the real estate sector, exacerbating the effect of interest rate movements on housing activity.

Each of these explanations has different policy implications. Should policymakers try to address external imbalances, increase financial regulation or redesign the monetary policy framework to prevent future boom and bust episodes in the housing market?

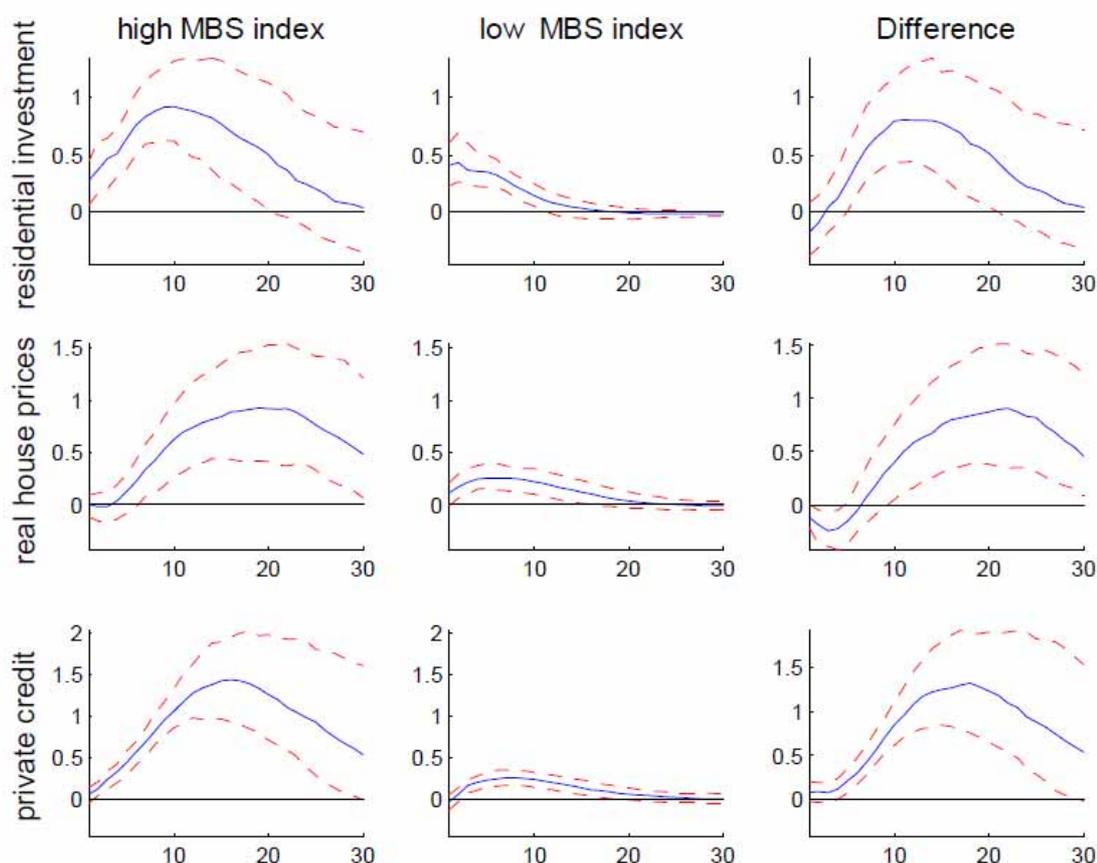
In Sá et al (2011), we estimate a Vector Auto Regressive (VAR) model for a panel of 18 OECD countries and look at the effects of capital inflows, monetary policy and financial innovation on the housing sector. Monetary policy and capital inflows shocks are identified using the sign restrictions approach developed by Canova and de Nicoló (2002) and Uhlig (2005). We look at the effect of both types of shocks on real credit to the private sector, real residential investment, and real house prices. We also assess whether the degree of mortgage market development or legislation permitting issuance of mortgage-backed securities amplifies or dampens the impact of these shocks on the housing sector.

Our results suggest that both monetary policy and capital inflows shocks have a significant and positive effect on house prices, credit to the private sector and residential investment. A reduction of 10 basis points in long-term nominal interest rates caused by an expansionary monetary policy shock raises real credit and house prices by about 0.3% and 0.2%, respectively, after ten quarters and real residential investment by about 0.25% after three quarters. A similar reduction in long-term rates caused by a capital inflows shock has a larger effect, with the rise in real credit to the private sector and real house prices reaching a peak of about 0.4% after ten quarters. The response of real residential investment to capital inflows shocks is quicker and more short-lived, peaking at 0.6% after two quarters.

The effects of both shocks are greater in countries with a higher degree of mortgage market development. This suggests that excessive financial innovation may act as a propagation mechanism. The existence of mortgage-backed securities has a much larger effect on the transmission of capital inflows shocks. Legislation permitting the issuance of mortgage-backed securities increases the impact of capital inflows shocks on real house prices, real residential investment and real credit to the private sector by a factor of two, three and five, respectively (see Figure 2). This may be explained by the fact that securitisation packages mortgages together and slices them in different levels of risk. The riskiest tranches can be bought by investors with higher risk appetite, while the AAA tranches can be sold to international investors who look for safe assets. In this way, securitisation increases the share of foreign capital inflows allocated to home mortgage loans, amplifying the effect of capital inflows on the domestic housing market.

Figure 2

**Response of housing variables to capital inflows shocks  
in countries with high and low levels of securitisation**



Notes: The MBS index is a de jure measure of whether securitisation is allowed in the country. It takes the value one for countries that have a fully liberalised MBS market and zero for countries where no securitisation is allowed. If a limited degree of securitisation is allowed, the index takes the value 0:3. The blue lines represent the median and the red lines represent the 16th and 84th percentiles of the distribution of impulse responses. Changes in housing variables are in per cent, and the horizontal axis denotes quarters after the shock.

## 2. Conclusions and policy implications

We find that both capital inflows and monetary policy shocks have a significant and positive effect on real house prices, real credit to the private sector and residential investment. Housing variables respond more strongly to both shocks in countries with a more developed mortgage market and where securitisation is more prevalent. This is consistent with the presence of a financial accelerator mechanism. In highly developed mortgage markets, households can pledge a larger fraction of their house as collateral, which results in higher leverage. If households are highly indebted, they are more sensitive to changes in the value of collateral. We find that the propagation effect of securitisation is stronger for capital inflows than for monetary policy shocks. The response of housing variables to capital inflows shocks is larger and longer-lasting in countries where securitisation is allowed. A potential explanation is that securitisation transforms illiquid, low-grade loans into publicly traded assets of higher quality which are attractive to international investors. In this way,

securitisation increases the share of foreign capital inflows allocated to home mortgage loans, amplifying the effects of capital inflows on the domestic housing market.

The run-up to the present crisis was characterised by a housing boom in most OECD countries. Our results suggest that persistent capital inflows, coupled with securitisation, played a significant role in the housing boom. This implies that countries with more developed mortgage markets and a high degree of securitisation should be wary of large external imbalances and work towards their reduction. Nevertheless, more research is necessary in order to improve our understanding of the interaction between capital inflows and the housing market. With better organisation and more transparency in securitisation markets, for example, the amplification effect may be reduced.

## References

Bernanke, Ben S. and Mark Gertler (1989) “Agency costs, net worth, and business fluctuations”. *American Economic Review* 79(1), 14–31.

Bernanke, Ben S. (2010) “Monetary policy and the housing bubble”. Speech at the Annual Meeting of the American Economic Association, Atlanta, Georgia, 3 January.

Caballero, Ricardo J, Emmanuel Farhi, and Pierre-Olivier Gourinchas (2008) “An equilibrium model of ‘global imbalances’ and low interest rates”. *American Economic Review* 98(1), 358–93.

Canova, Fabio, and Gianni De Nicoló (2002) “Monetary disturbances matter for business fluctuations in the G-7”. *Journal of Monetary Economics* 49(6), 1131–1159.

Diamond, Douglas W., and Raghuram G. Rajan (2009) “The credit crisis: Conjectures about causes and remedies”. *American Economic Review* 99(2), 606–10.

Hume, Michael, and Andrew Sentance (2009) “The global credit boom: Challenges for macroeconomics and policy”. *Journal of International Money and Finance* 28(8), 1426–1461.

Kiyotaki, Nobuhiro, and John Moore (1997), “Credit cycles”, *Journal of Political Economy*, 105, 211–48.

Sá, Filipa, Pascal Towbin, and Tomasz Wieladek (2011), “Low interest rates and housing booms: the role of capital inflows, monetary policy and financial innovation”, Bank of England Working Paper No. 411.

Taylor, John B. (2009) “The financial crisis and the policy responses: An empirical analysis of what went wrong”. NBER Working Paper No 14631.

Uhlig, Harald (2005) “What are the effects of monetary policy on output? Results from an agnostic identification procedure”. *Journal of Monetary Economics* 52(2), 381–419.

Warnock, Francis E., and Veronica Warnock (2009) “International capital flows and U.S. interest rates”. *Journal of International Money and Finance* 28(6), 903–919.