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Conceptualising the Role of International Capital Flows for Housing Markets

The existing literature on the role of international capital flows for housing markets can be classified into approaches which focus on the macro relationship between the current account and housing prices on the one hand and studies which specify more specific transmission channels on the other. Building on this literature, we conceptualise the role of international capital flows for housing markets via four central transmission channels. We suggest that by differentiating among these channels, the risk build-up potential of capital flows for housing markets can be evaluated more precisely than in the early literature on global imbalances.

In his well-known speech on the "global savings glut" hypothesis given a few years before the crisis, Ben Bernanke highlighted the importance of international capital flows for asset price developments. He stressed a structural difference between countries experiencing current account deficits with corresponding net capital inflows and countries with a current account surplus:

> (…) countries whose current accounts have moved towards deficit have generally experienced substantial housing appreciation and increases in housing wealth, while Germany and Japan (…) have not.[1]

The role of international net capital flows in this view is an initial impetus for house price growth, which leads to increased private consumption via the wealth effects of higher house prices. Second-round effects may lead to further house price increases, which again stimulate the postulated spiral of higher wealth effects, increasing private consumption and house prices. In his "savings glut" speech, Bernanke stressed that capital flows into economic sectors or activities without a contribution to sustainable productivity growth entail a risk build-up potential. This argument is based on the rationale that paying back foreign debt will become more difficult if capital flows lead to high residential investment and domestic consumption (i.e. activities without sustainable productivity gains).[2] Whether capital inflows or consumption growth (or other domestic factors) trigger housing market cycles can be seen as a kind of "chicken-or-egg" problem of international economics. On the one hand, Bernanke and others point out that capital flows may have initiated a spiral of increasing house prices and higher consumption via wealth effects. On the other hand, some authors argue that a more central role should be attributed to increases in domestic consumption in the first place. According to this view, capital inflows were needed in order to finance increasing consumption activities.[3]

From net capital flows to gross capital flows

Several empirical studies support a relatively robust relationship between current account deficits and increasing house prices.[4] Some of these studies also document that institutional features of housing and mortgage markets – like the prevalence of securitisations – may play an

* The article represents the authors' personal opinions and does not necessarily reflect the views of the Deutsche Bundesbank.

1 B. Bernanke: The Global Saving Glut and the U.S. Current Account Deficit, The Sandridge Lecture, Richmond, VA, 2005.

2 Regarding the impact of the composition of FDI flows on domestic economic development, see e.g. D. Aykut, S. Sayek: The Role of the Sectoral Composition of Foreign Direct Investment on Growth, in: L. Piscitello, G. Santangelo (eds.): Do Multinationals Feed Local Development and Growth?, Oxford 2007, Elsevier, pp. 35-59.

3 For an approach focusing more on an initial role of consumption for the boom, see for example D. Laibson, J. Mollerstrom: Capital Flows, Consumption Booms and Asset Bubbles: A Behavioural Alternative to the Savings Glut Hypothesis, in: The Economic Journal, Vol. 120, No. 544, 2010, pp. 354-374.

4 See for example J. Aizenman, Y. Jinjarak: Current Account Patterns and National Real Estate Markets, NBER Working Paper No. 13921, 2008; and M.T. Punzi: Housing Market and Current Account Imbalances in the International Economy, in: Review of International Economics, Vol. 21, No. 4, 2013, pp. 601-613.

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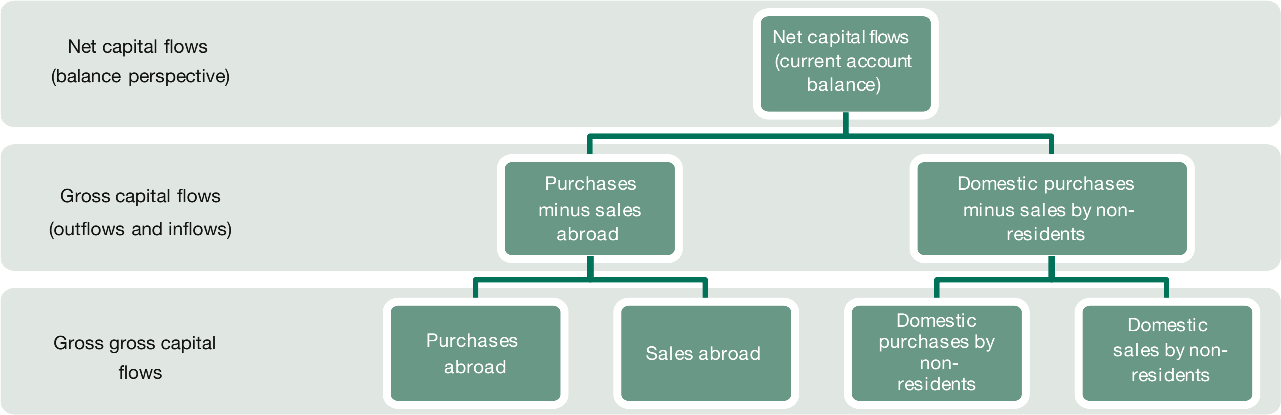
Figure 1
International capital flows



Source: Authors' elaboration.

important role for the volume and the potential for a risk build-up from capital inflows.[5] However, current account deficits are by no means a necessary prerequisite for a country's vulnerability to a housing boom. Surplus countries like Japan and Switzerland also experienced strong boom-bust cycles culminating in the early 1990s.

An inherent limitation of the discussion regarding the relationship between the current account and house prices is caused by its emphasis on net capital flows. Several studies on financial crises have pointed out that an additional focus on gross capital flows is necessary.[6] By taking gross flows into account, a more differentiated view of separate transmission channels of capital flows into housing markets emerges. Figure 1 visualises the different data levels of international capital flows for the stylised example of cross-border buying and selling of assets. In general, we follow the terminology of the academic literature on international capital flows.[7]

In order to analyse the possible impact of international capital flows on certain sectors of an economy such as, for example, the housing market sector, gross flows offer analytical advantages over net capital flows. Gross flows, or in particular "gross gross" flows, amount to many multiples of the volume of net flows.[8] Subsequently, the sectoral composition of capital flows matters for financial stability questions. An uneven sectoral distribution of gross flows may be easily overlooked in a perspective restricted to net capital flows. By influencing some sectors more than others, an uneven distribution of gross capital flows could promote a risk build-up for financial stability by nurturing asset overvaluations, laxer credit standards and debt sustainability problems.

Transmission channels of capital flows for housing markets

Following the rationale for using more granular data on capital flows, we distinguish between four transmission channels of international capital flows on housing markets: i) the transaction channel, ii) the direct credit channel, iii) an indirect credit channel with regard to cross-border transactions of securitised housing loans and iv) the interest rate channel. Depending on the institutional features of national housing markets, the channels may be of differing importance. Additionally, the relevance of these channels for financial stability differs, as we will point out in the following discussion.

5 See for example F. Sá, P. Towbin, T. Wieladek: Capital inflows, financial structure and housing booms, in: Journal of the European Economic Association, Vol. 12, No. 2, 2014, pp. 522-546; and A. Jara, E. Olaberría: Are all Capital Inflows Associated with Booms in House Prices? An Empirical Evaluation, Banco Central de Chile, Documentos de Trabajo No. 696, 2013.

6 See for example F. Broner, T. Didier, A. Erce, S. Schmukler: Gross Capital Flows: Dynamics and Crises, in: Journal of Monetary Economics, Vol. 60, No. 1, 2013, pp. 113-133.

7 See for example K. Forbes, F. Warnock: Capital Flow Waves: Surges, Stops, Flight and Retrenchment, NBER Working Paper No. 17351, 2011; and European Commission: Analysis of developments in the field of direct investments and M&A – Part 1: 2013 developments in world-wide and EU capital flows, 2013.

8 The term "gross gross" flows refers to C. Borio, P. Disyatat: Global imbalances and the financial crisis: Link or no link?, BIS Working Paper No. 346, 2011. According to their calculations, "gross gross" flows were 60 times the magnitude of gross flows, which in turn amount to about three to four times the size of net flows, according to K. Johnson: Gross or Net International Financial Flows – Understanding the Financial Crisis, Council on Foreign Relations, 2009.

Transaction channel

The transaction channel consists of direct transactions of residential property by non-residents. Cross-border flows into real estate investment trusts (REITs) or shares in housing companies can be seen as a supplementary category of this channel. Purchases of housing units by foreigners are often a highly sensitive topic of public discussion in many countries. In an economic sense, these transactions highlight that investors appreciate the country in question as a promising and solid investment destination. Public attention is often limited to buying activities by non-residents. Concurrently occurring sales by non-residents are often overlooked.

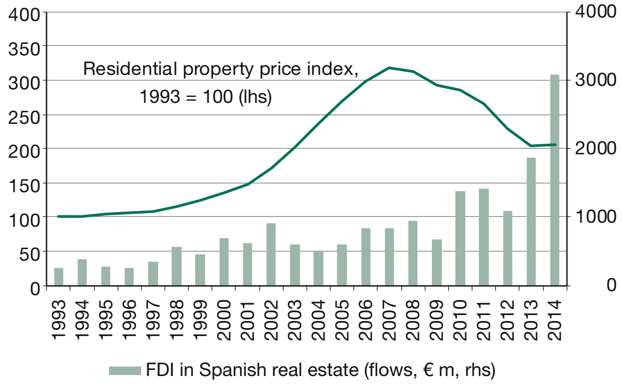
Data on cross-border purchases and sales of real estate is, in principal, available from balance of payments statistics. The limitations of these data collections stem from missing reports of transactions, which lead to underreporting of the total volume. Furthermore, balance of payments data does not distinguish between residential and commercial property units but only reports cross-border transactions of "real estate" in a common category.

A possible alternative is provided by data on transaction volumes that is collected by international real estate agencies. Some of these data collections allow a distinction between transactions of residential and commercial property. Certainly this data is also subject to limitations. For example, it is often limited to transactions of bundles of several property units. As a consequence, single transactions by households are often missing from the data. Furthermore, it is compiled according to principles deviating from statistical principles of official data such as, for example, the residency principle of balance of payments statistics. Nevertheless, data compiled by international real estate agencies often contains several times the volume of foreign real estate investment activities that is included in the official balance of payments statistics (buying and selling) and thus might provide a valuable supplementary data basis.[9]

A prevalence of pro-cyclical effects via the transactions channel on the domestic housing market is not evident. Rather mixed signals can be observed in the case of the Spanish real estate market. In the run-up to the housing boom, foreign investment increased but always remained at a rather low absolute level. Interestingly, foreign investors poured in new investments – which largely exceeded the volumes of the preceding boom – when market developments had reached a nadir (see Figure 2).[10]

Figure 2

FDI in Spanish real estate vs house prices in Spain



Sources: ECB, Ministerio de Economía y Competitividad.

Other country examples also indicate that although foreign real estate investments are often the focus of public attention, they are seldom at the core of financial stability problems.[11] This assessment is also supported by an analysis by de Haan and Kakes regarding the general investment behaviour of Dutch institutional investors.[12] According to their results, anti-cyclical patterns predominate in the approach of these institutional investors.

Summing up, although pro-cyclical investment behaviour by foreigners via the transaction channel cannot be totally excluded, our findings and the literature show that such behaviour does not constitute a general trend. Foreign investors often use their own equity to finance their purchases or may avail themselves of debt financing generated in their home country.[13] As foreign direct investments therefore do not strongly influence debt sustainability in the destination country, financial stability risks ultimately appear rather limited. This is not to say that foreign acquisitions of housing units have no impact on the afford-

9 For an analysis of data from international real estate agencies, see F. Fuerst, S. Milcheva, A. Baum: Cross-Border Capital Flows into Real Estate, in: Real Estate Finance, Vol. 31, No. 3, 2015, pp. 1-20.

10 As the data is derived from the Spanish balance of payments, it may also be subject to the restrictions of this data source on foreign real estate transactions, as described above.

11 With regard to Australia, see M. Gauder, C. Houssard, D. Orsmond: Foreign Investment in Residential Real Estate, June 2014, Reserve Bank of Australia. According to their analysis, foreign investment encouraged more home-building activities, which helped to ease a lack of supply in the Australian housing market.

12 See L. de Haan, J. Kakes: Momentum or contrarian investment strategies: Evidence from Dutch institutional investors, in: Journal of Banking & Finance, Vol. 35, No. 9, 2011, pp. 2245-2251.

13 Nevertheless, debt financing in the destination country could be considered if the interest rate level is significantly lower than in the investor's country of residence.

ability of housing in the case of pro-cyclical investment behaviour, especially in cities generally seen as the favourites of international investors like New York, London or Hong Kong.[14] But ultimately, this aspect of affordability is more relevant for general housing policies and social policy questions than for financial stability concerns. It can be clearly beneficial to ease a demand overhang, for example via more social housing activity in order to limit a house price boom,[15] especially in a situation wherein foreign buying of residential property and increasing public attention to these activities could lead to expectations of further accelerated house price growth. In this case, foreign capital flows indirectly influence the behaviour of domestic market participants and may therefore promote a risk build-up, which may include debt sustainability problems in the eventual bust of the housing market cycle.[16]

Direct credit channel

The direct credit channel encompasses mortgage lending from foreign banks' affiliates or branches. Often, this channel is relevant for countries in an earlier stage of financial market development. Another type of cross-border activity which is covered by the direct credit channel is purchases using mortgages denominated in a foreign currency. This kind of financing becomes especially interesting when there are significant interest rate disparities between the countries involved. Both developments entail a significant risk build-up potential, as country experiences illustrate.

A notable example of the problems involved is given by the last boom-bust cycle in Estonia. Foreign banks aggressively stepped up their lending in the Estonian market and thereby helped to finance the boom. This increase in foreign loans accelerated debt sustainability problems facing the private sector in Estonia. According to an analysis by the OECD, foreign banks may have underestimated the risks involved due to their limited knowledge of the structures of a foreign market.[17]

Dependencies on foreign credit are often accompanied by vulnerabilities regarding refinancing activities via foreign-denominated debt or contagion risks from external shocks, which may spill over from the foreign banks' country of origin. In the case of foreign-denominated mortgages, exchange rate developments can trigger a materialisation of risks by contributing to a growing unsustainability of the debt servicing abilities of indebted households. Other catalysts include an adverse impact via the business cycle resulting from problems in the lenders' home country. These external spillovers may boost a domestic credit shortage, thereby enhancing further economic downside effects in the host country.

Indirect credit channel

The increasing securitisation of mortgages enabled an additional transmission channel for international capital flows into housing markets prior to the 2007-08 global financial crisis. By bundling single loans into voluminous financial products, mortgages increasingly won the attention of international investors; the motivation for securitisation activities may encompass objectives such as risk transferring, liquidity generation, regulatory arbitrage or a combination of these. The potential impact of capital flows via the indirect credit channel obviously depends on the role and the predominant design of securitisations in a specific national mortgage market. Whether such securitisation procedures evolve in the first place may depend on the institutional setting of a housing or mortgage market.[18]

For covered bonds backed by mortgages, the potential cross-border transfer is primarily limited to a debt obligation, whereas off-balance residential mortgage-backed securities (RMBS) include more direct rights (and risks) on the underlying mortgage contracts. In the potential event of an insolvency of the issuing and guaranteeing bank, the

14 For a discussion of policy options for a case study of Hong Kong, see: C.-C. Chao, E.S.H. Yu: Housing Markets with Foreign Buyers, in: The Journal of Real Estate Finance and Economics, Vol. 50, No. 2, 2015, pp. 207-218.

15 As long as such policy initiatives do not contribute to an overheating in the construction sector, which may lead to even more pronounced financial stability problems.

16 A model which illustrates this case of an expectation-driven housing boom encouraged by foreign capital flows is presented in H. Tomura: International capital flows and expectation-driven boom-bust cycles in the housing market, in: Journal of Economic Dynamics & Control, Vol. 34, No. 10, 2010, pp. 1993-2009.

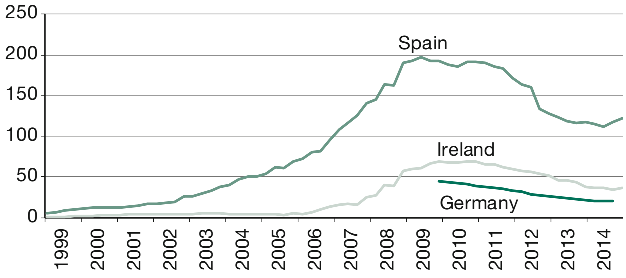
17 See OECD: Estonia – Review of the Financial System, 2011. For a detailed analysis of the role of capital flows in the last Estonian boom-bust cycle, see Z. Brixiova, L. Vartia, A. Wörgötter: Capital flows and the boom-bust cycle: The case of Estonia, in: Economic Systems, Vol. 34, No. 1, 2010, pp. 55-72.

18 Carbó-Valverde et al. observe a "regime shift" in Spanish real estate financing during the last bubble, which had been enabled by legal amendments in the 1990s in favour of securitisations. These possibilities were not used to their full potential until a financial integration process in the first years of the European Economic and Monetary Union led to strong growth of private capital flows. See S. Carbó-Valverde, D. Marqués-Ibáñez, F. Rodríguez-Fernández: Securitizations, risk-transferring and financial instability: The case of Spain, in: Journal of International Money and Finance, Vol. 31, No. 1, 2012, pp. 80-101.

Figure 3

Residential mortgage-backed securities by issuer's country of residence

in billion euros



Note: German data shows covered bonds (*Pfandbriefe* in the legal form of *Inhaberschuldverschreibungen*) backed by residential mortgages.

Sources: Sifma, Deutsche Bundesbank.

underlying mortgages define a second line of defence for covered bonds.[19]

In the last boom-bust cycle, some countries such as Spain and the US experienced a strong growth of securitisations. Altunbas et al. observe a global trend towards securitising mortgages during the last financial cycle.[20] According to their analysis, this trend was promoted even more strongly by rising financial integration during the early years of the European Economic and Monetary Union.[21] In the boom-bust cycle in Spain, the dynamic growth of RMBS was one determining factor prior to the crisis (see Figure 3).

Two time phases should be distinguished regarding the prevalence of different motives for mortgage securitisations. *Time phase 1* securitisations mainly served the purpose of generating liquidity and/or benefits from regulatory arbitrage in the run-up to the housing boom. *Time phase 2* securitisations were conducted in order to generate collateral for central bank refinancing during the bust. In phase 2, securitisations were either unavailable for sale or no potential buyers were available due to the market turmoil. Thus, there is no relevance for private capital flows in this situation. Carbó-Valverde et al. point out that off-balance securitisations lead to lower incentives for banks to monitor credit risks and thus encourage looser lending practices.[22] Nevertheless, this does not mean that securitisations cannot have any useful effect. For example, it could be a positive development if a time phase 3 evolved in which non-performing loans were increasingly securitised and sold to investors who were aware of the risks involved.[23] This would contribute to a necessary clean-up of banks' balance sheets in some countries and would influence the loan stock and not the lending standard of new loans.

In their *ex post* analysis of the crisis, Bernanke et al. also recognised the significant impact of capital flows into off-balance securitisations on the build-up of financial stability risks in the US housing bubble.[24] The capital inflows provided implicit incentives for the US financial system to transform risky loans into highly rated securitised finance products. The failure of rating agencies to adequately classify the risks involved promoted and multiplied the subsequent financial stability problems. European investors in particular showed a strong appetite for investments in such US products with top credit ratings.[25] For example, European investors increased their holdings of US asset-backed securities by $475 billion in the years prior to the global financial crisis.[26] The capital needed for these investments was generated by issuing debt instruments:

> (...) as became apparent after the financial crisis broke, many European financial institutions were

19 Here, the term "securitisation" refers to RMBS as well as to covered bonds, despite the differences in risk transfers and legal and regulatory arrangements. This deviates from some of the literature, in which only RMBS are classified as securitisations. In our view, this might partly be traced back to the exclusive dominance of mortgage-backed securities against covered bonds in some countries, such as the US. Nevertheless, economic differences of asset-backed securities and covered bonds remain relevant and need to be considered in economic analysis. Additionally, differences in national legislation also have implications for the design of covered bonds and RMBS between countries.

20 Y. Altunbas, L. Gambacorta, D. Marqués-Ibáñez: Securitisation and the bank lending channel, in: European Economic Review, Vol. 52, No. 8, 2009, pp. 996-1009.

21 These capital flows into the so-called periphery countries of the EMU should be seen as part of a bigger picture of global and European capital flows before the crisis. See for example G. Hale, M. Obstfeld: The Euro and The Geography of International Debt Flows, NBER Working Paper No. 20033, 2014.

22 S. Carbó-Valverdeet al., op. cit. Roibás Milán points out that in the Spanish case the highest default risk tranche (equity tranche) of mortgage-backed securities was mostly retained on the balance sheet of the bank's securitisation fund, and the fund remained responsible for the management of the whole portfolio; nevertheless it followed a "pass-through model", i.e. bondholders' repayments and cash flows were directly derived from the underlying assets and thus depended on the performance of the portfolio; see I. Roibás Milán: Securitization in Spain: Past developments and expected future trends, BBVA Spain Economic Watch, 2014.

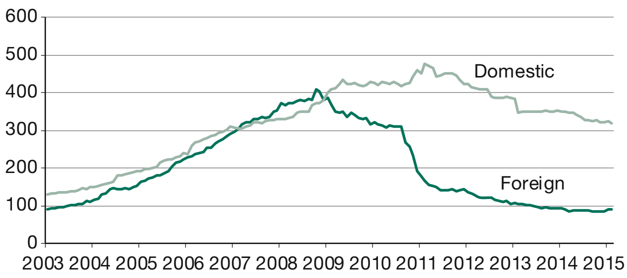
23 See T. Hale: Securitisations of bad loans set to rise, in: Financial Times, 11 December 2015.

24 B. Bernanke, C. Bertaut, L. Pounder DeMarco, S. Kamin: International Capital Flows and the Return to Safe Assets in the United States 2003-2007, Board of Governors of the Federal Reserve System International Finance Discussion Paper No. 1014, 2011. Furthermore, see C. Bertaut, L. Pounder DeMarco, S. Kamin, R. Tyron: ABS Inflows to the United States and the Global Financial Crisis, Board of Governors of the Federal Reserve System International Finance Discussion Papers No. 1028, 2011.

25 B. Bernanke et al., op. cit.

26 C. Bertaut et al., op. cit., p. 31.

Figure 4
Total liabilities of the Irish domestic banking sector by creditors' country of residence
in billion euros



Source: Central Bank of Ireland.

> funding their purchases of U.S. assets with short-term dollar-denominated liabilities like commercial paper or bank deposits, much of which attracted U.S. investors.[27]

Capital flows into such debt instruments were especially prone to a sudden stop when a loss of confidence initiated a shock reaction at the beginning of the crisis.

Interest rate channel

We complete our analytical framework with our final transmission mechanism, the interest rate channel. Obviously, this channel is not clearly separable from the others. Flows into the other channels are themselves components of total capital flows. Therefore, they may likewise influence domestic interest rates. Nevertheless, the interest rate channel constitutes an important conduit by itself and is needed from an analytical point of view to evaluate the overall effects of total capital flows on the level of domestic interest rates. A concise example is given by the extensive international capital flows into the Irish banking system in the run-up to the housing boom. The consolidated balance sheet of the Irish domestic banking sector allows for a distinction between domestic and foreign liability positions. It illustrates that foreign financing played a significant role in the Irish monetary expansion (see Figure 4).[28] Banks were therefore able to provide more and easier credit based on these capital inflows.[29]

In the US boom-bust cycle culminating in 2007-08, an impact via the interest rate channel was also one of the relevant factors for pro-cyclical developments. A direct link to Bernanke's savings glut hypothesis is apparent here, as European purchases of US assets (often debt-financed) and inflows from developing countries (savings-based) drove US interest rates significantly lower. This made domestic credit cheaper, thereby helping to finance the boom. Warnock and Warnock estimate that gross inflows into 10-year US government bonds over the 12 months prior to May 2005 led to a lowering of Treasury yields by 80 basis points.[30] Thus, capital inflows lowered financing costs and facilitated easier domestic lending.

Overview of the channels from a financial stability perspective

Summing up, each channel may entail risks to financial stability, both in the destination country as well as in the country of origin of the capital flows. Yet, we consider the risks involved to be different in their nature and their potential depending on the channel in question; the central aspects are summarised in Table 1.

First of all, the indirect credit channel may have contributed to a risk build-up in some of the most recent housing bubbles, as in the US or Spain. These effects were mainly due to the contribution to lower financing costs and laxer credit standards. Furthermore, this channel opens a window of contagion from the country of origin of the securitised mortgage products to the balance sheets of foreign investors; this was observable in the course of the subprime crisis due to revaluations of RMBS that were originated in the US.

Secondly, the direct credit channel may contribute to the financing of a housing market upswing. Furthermore, the channel exposes foreign lenders (mostly banks) that have activities in the mortgage market in question to housing market distortions. For mortgages denominated in a foreign currency, significant exchange rate movements may pose substantial risks to financial stability due to the potential impact on the ability of private households holding such mortgages to serve their loans.

Finally, the transaction channel and the interest rate channel can be of relevance for domestic housing market developments by fuelling demand, both externally (transactions by foreigners) or internally (lowering interest rates). With regard to the transaction channel, the most critical

27 Ibid., p. 9.

28 For a more detailed analysis, see P. Lane: The Funding of the Irish Domestic Banking System During the Boom, CEPR Discussion Paper No. DP10777, 2015.

29 For the role of capital flows for domestic credit in general, see C. Borio, R. McCauley, P. McGuire: Global credit and domestic credit booms, in: BIS Quarterly Review, September 2011, pp. 43-57.

30 F. Warnock, V. Warnock: International capital flows and U.S. interest rates, in: Journal of International Money and Finance, Vol. 28, 2009, pp. 903-919.

Table 1
Transmission channels of international capital flows on housing markets

Channel	Functioning	Risks
Transaction channel	Direct purchases of real estate by non-residents	Demand by non-residents may contribute to an expectation-driven house price boom
Direct credit channel	Granting of loans by foreign banks (and mortgages denominated in a foreign currency)	Expansion of foreign banks in a domestic mortgage market may "help" to finance a housing boom; mortgages denominated in foreign currency could entail debt sustainability problems in the household sector in the case of strong exchange rate movements
Indirect credit channel	Purchases of securitised mortgages by foreign investors; flight from securitised products in the case of a shock	Effects via lower refinancing costs or higher liquidity of banks may help to prolong and intensify a boom; moral hazard problems regarding credit standards in the case of off-balance securitisations; potential contagion risks from domestic housing sector to foreign investors
Interest rate channel	Lower domestic mortgage rates due to foreign capital inflows into the domestic financial system	Impact on lending rates may fuel domestic mortgage demand and indebtedness of private households

Source: Authors' elaboration.

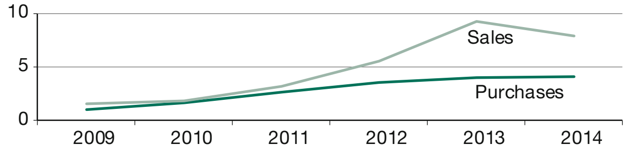
effect would be a contribution to an expectation-driven house price boom. Regarding the interest rate channel, a potential risk build-up can be seen in the side effects of lower domestic financing costs for a stronger and/or prolonged housing market boom. This latter impact is more likely to be significant in countries with substantial current account deficits.

Some evidence for Germany

As a current account surplus country, Germany may not be the likeliest candidate to demonstrate the possible impact of capital flows on its housing market. However, according to our framework on gross capital flows and the proposed transmission channels, the country might offer more relevance than is obvious from looking solely at net capital flows.[31] Press reports stressing increasing purchases of German residential property by non-residents have received a great deal of attention. Surveys of international institutional investors reveal that they regard the German real estate market as highly attractive, due to its

31 The following analysis of the German case is based on a best-effort approach regarding the availability and quality of data for the coverage of the different channels.

Figure 5
Transaction volume of German residential real estate by non-residents
in billion euros



Note: Only portfolio transactions consisting of several housing units.

Source: Proprietary data from Savills.

transparency and clear-cut property rights.[32] However, proprietary data from the global real estate services provider Savills illustrates that the volume of sales by institutional foreign investors may be much higher than the volume of purchases during the recent upswing in the German housing market, at least until 2014 (see Figure 5).[33] This could be due to profit-taking on previous acquisitions of German residential property.

Nevertheless, as stated before, there may be an underreporting of single transactions by non-resident households. Due to the more prevalent "safe haven" motive of some of these investors, pro-cyclical effects may play a greater role here than they do for transactions by institutional investors.[34] Furthermore, the aforementioned attractiveness of German real estate in the view of institutional investors may lead to more buying activity, especially if the euro exchange rate remains weak for a prolonged period.[35]

An analysis of the other channels does not reveal a significant impact of gross or "gross gross" capital flows on the German housing market either. The potential impact from the indirect channel seems to be rather limited because

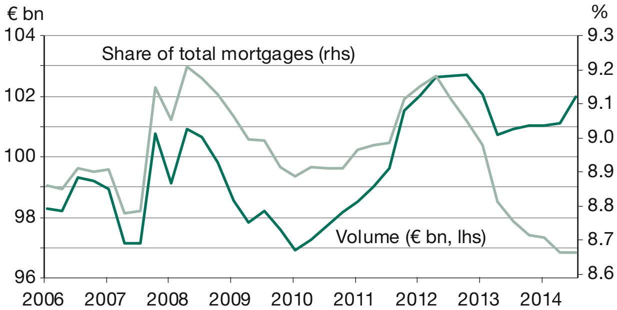
32 See for example Ernst & Young: Trendbarometer – Immobilien Investmentmarkt, 2015; the German real estate market is often seen as more complex because there is not one dominant market, as in France (Paris) or the UK (London) for example.

33 The data is not available in a regionally separated pattern, which would allow one to analyse which cities and regions may be more or less influenced by foreign transactions. According to reports by some real estate agencies, however, most foreign transaction activities are strongly focused on bigger German cities.

34 On the statistical problems of covering foreign real estate transactions in balance of payments statistics, see Deutsche Bundesbank: Real estate transactions by non-residents in Germany, Monthly Report, March 2013, Vol. 65, No. 3, 2013, pp. 25-26.

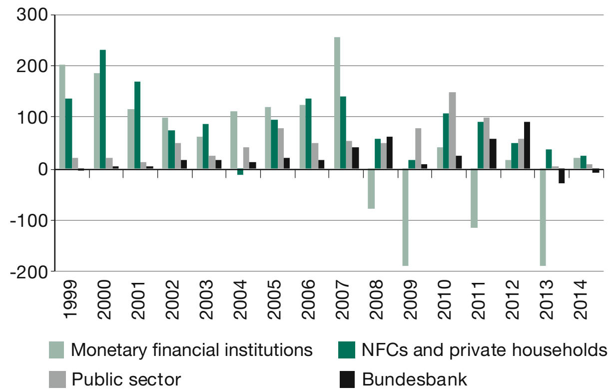
35 For example, the Association of German Pfandbrief Banks attributes a strong rise in prices for multi-family houses in the first half of 2015, inter alia, to a strong appetite for these investments by international institutional investors. See vdp Property Price Index Q2.2015: Demand for German residential and commercial property still strong, 2015.

Figure 6
Outstanding mortgages in Germany originated by foreign banks and their affiliates



Source: Deutsche Bundesbank.

Figure 7
Gross portfolio investment inflows to Germany, by sector of destination
in billion euros



Source: Deutsche Bundesbank.

of the very low and, recently, even declining level of mortgage-backed covered bonds and the nearly non-existent usage of RMBS in Germany.[36] Additionally, the traditional on-balance design of German covered bonds avoids incentives for laxer credit standards and loose monitoring in comparison to countries where off-balance securitisations predominate.[37]

In contrast, the direct credit channel shows more activity. Thus, foreign banks or their affiliates have continuously increased the volume of outstanding mortgages since the recent upswing of the German housing market, which started in 2010. Yet, their decreasing market share indicates that foreign banks or their affiliates are not at the forefront of developments in the recent upswing (see Figure 6).[38]

In the end, effects from the interest rate channel look most intuitive in the context of Germany's safe haven status. Indeed, a surge into German sovereign bonds – especially in 2011 and 2012, caused by fears during the height of the euro crisis – contributed to lower financing costs of the German state, and thereby the general interest level in Germany due to the benchmarking function of government bonds. In 2014, however, total gross portfolio inflows nearly came to a halt, whereas in the years shortly after the beginning of the crisis, a withdrawal of external debt financing led to significant outflows from the German banking system (see Figure 7).[39]

Summing up, the analysis of the potential impact of capital flows on the German housing market according to the proposed analytical framework yields no results at least through 2014 that would point to significant effects which could cause a potentially higher risk profile of the German housing market. In the end, domestic factors like urbanisation trends and low unemployment, in combination with historically low interest rates for mortgages, continue to be the market-dominating factors.[40]

Conclusion

Extensive literature focusing on the macro relationship between current account balances, corresponding net capital flows and house prices reveals relatively robust linkages. The intensity of this connection strongly depends on the institutional features of the housing and mortgage markets in question. Another stream of re-

36 The volume of covered bonds backed by residential mortgages in Germany is not to be confused with the higher volume of total covered bonds backed by real estate, which also includes commercial property.

37 In fact, mortgages used for backing covered bonds could be subject to more conservative standards than is usual for mortgages in general in Germany. See Deutsche Bundesbank: Results of a survey on mortgage loans, Financial Stability Review, 2014, pp. 58-61.

38 Whereas Figure 6 shows gross capital inflows, according to the terminology used in academic literature, in statistical terms it is defined as "net" capital flows, as outflows and inflows into German portfolio investments are netted. As the term net flows is reserved for the highest aggregate of capital flows (i.e. the current account balance) in economic literature, differences with the terminology of balance of payments statistics are unavoidable.

39 These capital outflows should be seen in the context of earlier exaggerations prior to the crisis. See V. Acharya, S. Steffen: The "Greatest" Carry Trade Ever? Understanding Eurozone Bank Risks, in: Journal of Financial Economics, Vol. 115, No. 2, 2015, pp. 215-226.

40 For explanations focusing on domestic factors, see Deutsche Bundesbank: The determinants and regional dependencies of house price increases since 2010, in: Monthly Report October 2013, Vol. 65, No. 10, 2013, pp. 13-29; and Deutsche Bundesbank: Housing prices in 2014 in Germany, in: Monthly Report February 2015, Vol. 65, No. 2, 2015, pp. 55-57.

search analyses more specific impact channels (like cross-border flows via direct buying and selling of real estate).[41]

In our approach, we build on the more granular data level of gross capital flows and propose a conceptual framework of four transmission channels. Ultimately, domestic factors might play a far more central role for many housing bubbles than external capital flows. But as country examples and the analysis of the four central transmission channels illustrate, external factors can support and enhance the extent of a boom-bust cycle and of the financial stability risks involved. In this context, one main result of our analysis is that the risk build-up potential of international capital flows for housing markets varies depending on the transmission channel through which foreign capital pours in. Whereas foreign direct investment in real estate is often the focus of public attention, its influence on domestic debt sustainability remains rather limited. Nevertheless, situations in which foreign buying activities contribute to expectations of accelerated price growth need to be monitored closely. More critical are capital inflows via the remaining channels, as they may encourage easier domestic lending and laxer credit standards or entail direct links which expose an economy and, in particular, its housing market to risks from external shocks. Although not a focus of this article, the contagion effects of reverse transmission from a debtor country experiencing financial instability problems to its creditor countries and the general economic development of the global economy should also be kept in mind. This is especially true if the debtor country is a large financial player, as was the case in the US subprime crisis.

In general, the use of more granular data for capital flows opens up new analytical possibilities. While the relationship between gross capital flows and financial stability is not restricted to the housing market, it may be one of the most important concerns due to the high relevance of housing market developments for financial stability issues. Surveillance and macroprudential policies should therefore be ready to address the composition and sectoral destinations of capital flows in an appropriate way.[42]

41 See for example C. Rodríguez, R. Bustillo: Modelling Foreign Real Estate Investment: The Spanish Case, in: Journal of Real Estate Finance and Economics, Vol. 41, No. 3, 2010, pp. 354-367.

42 See for example V. Bruno, I. Shim, H. Shin: Comparative assessment of macroprudential policies, BIS Working Paper No. 502, 2015.