ASYMMETRIES IN THE MONETARY TRANSMISSION MECHANISM IN THE EURO AREA: THE CASE OF THE HOUSING MARKET

Vanessa Zammit*

Abstract. After ten years of euro and the single monetary policy, the monetary transmission mechanism is still asymmetric across euro area countries, with the housing market being one of the factors behind such divergence. This paper examines the role of housing market channels in the monetary transmission mechanism in the euro area and verifies the heterogeneous transmission of monetary policy through such channels by focusing on post-EMU data. The speed and extent of the effect of a change in the monetary policy stance on real economic variables in euro area countries is analysed in terms of house price movements and institutional characteristics of mortgage markets such as the interest rate structure, loan-to-value ratios and refinancing possibilities through mortgage equity withdrawal. Significant evidence relating the different effects of a change in monetary policy to the country-specific structure of housing and mortgage markets suggests that national characteristics still impinge on a uniform effect of monetary policy across euro area countries, with all the implications involved for monetary policy.

Introduction

The primary objective of the European Central Bank (ECB) is to maintain price stability to contribute towards economic growth and job creation. In achieving its monetary policy objectives, the ECB uses short-term interest rates as the main policy instrument to influence economic developments. The transmission mechanism of monetary policy is the process by which

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interest rate changes induced by central banks impact real economic variables such as inflation, aggregate output and employment. The transmission mechanism of monetary policy to the real economy is a topical issue for both academic and central bank research and it has proved to be an interesting yet complex topic both in theory and in practice. Such complexity arises since the transmission of monetary policy is characterised by long, variable and uncertain time lags and affects real economic variables through a wide variety of channels, which are often interlinked.

The economics of housing is a subject of increasing interest to economists as well as policy makers due to its specific features. Firstly, housing represents a substantial segment of household wealth especially in the euro area, where households tend to invest more in property rather than in stock or equity. Secondly, housing has a dual role as it fulfills both a consumption and investment role for households. Moreover, due to the collateral role of housing, most transactions in the housing market involve a corresponding transaction in the mortgage market. As such for the financing of home purchases, the functioning of the housing markets also relies heavily on mortgage markets, which is likely to have a role in amplifying or dampening the effects of macroeconomic shocks on house prices. Therefore the mortgage market is of particular importance from a monetary policy perspective as it transmits changes in the ECB’s key policy rates to housing investment and consumption by households, and ultimately to output and prices.

The relation between the housing market and real economic variables operates primarily through the effects of house price dynamics and mortgage market developments. House prices changes could be attributed to an array of factors stemming from both the demand for and the supply of housing. Moreover, like other asset prices, house prices are interest rate sensitive and respond to changes in the monetary policy stance. Movements in residential property prices could hence impact aggregate demand and economic activity by affecting the borrowing and consumption decisions of households, through wealth effects and residential investment. Accordingly, movements in house prices bring about fluctuations in housing wealth, with the extent of such effects depending on the mortgage market structure. Thus, changes in household wealth, income and consumption generated by changes in house prices and mortgage market characteristics could have a significant impact on aggregate demand and inflation, and consequently play an important role in the transmission mechanism of monetary policy.
Developments in property prices are thus an important factor underlying monetary policy decisions aimed at maintaining price stability in the euro area over the medium-term. The two-pillar strategy of the ECB closely monitors residential property prices in terms of the economic analysis while the monetary analysis covers the evolution of money and credit, often reflecting the movements in prices and house purchases.1 Residential property prices are thus not an independent concern of monetary policy but matter to the extent that, house price movements disclose information about overall inflation prospects and are an important indicator in the analytical framework used for the conduct of the single monetary policy. As such, monitoring and understanding house price dynamics is important for monetary policy, since the housing market could well be an important channel in the monetary policy transmission mechanism and also due to the fact that house price fluctuations are potential sources of shocks to the economy. The paper is structured as follows. Section 2 provides a review of the literature on the monetary transmission mechanism with reference to the residential property market. Section 3 evaluates the importance of the housing market channels of monetary transmission by means of stylised facts on housing and mortgage markets in the euro area. Section 4 provides some inference for the formulation and implementation of the ECB’s monetary policy and implications of financial integration based on stylised facts on the functioning of euro area property and mortgage markets, while Section 5 concludes.

Theoretical Review

The Transmission Mechanism of Monetary Policy

In the long-run steady state, standard economic theory suggests that after all adjustments in the economy have worked through, monetary policy has a neutral effect on output.2 However, over the short and medium-term, monetary policy can affect economic activity and inflation through several

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1 While the euro area real estate sector is taken into account in assessing risks to price stability and hence in monetary policy decisions, the ECB does not target house prices or any other asset prices for the conduct of monetary policy.

2 Such phenomenon is referred to as the long-run neutrality of money and relates to the fact that in the long-run, a change in the quantity of money in the economy will be reflected in a change in the general level of prices but it will not induce permanent changes in real economic variables such as real output or unemployment.
Figure 1
The Transmission Mechanism of Monetary Policy in the Euro Area

OFFICIAL INTEREST RATES

Inflationary Expectations

Money & Credit Aggregates
- Banks Interest Rates

Market Interest Rates Asset Prices

Exchange Rate

Wealth Effects

Income Effects

Supply & Demand in Goods and Labour Markets

Wage & Price Setting

Import Prices

Price Developments

Source: ECB
channels, which are collectively known as the monetary transmission mechanism (MTM) as depicted in Figure 1.

Initially, a change in the monetary policy stance affects the economy through money market rates and exchange rates. Hence, through these channels, movements in financial prices interact with the spending behaviour of households and firms, as structural factors influence the speed and extent of the transmission mechanism, ultimately impacting aggregate demand. Accordingly, impulses on monetary policy produce a link between money, financial markets and asset prices affecting output and prices. The separation of the effects of different channels on inflation and aggregate demand is very complicated due to the close interaction between the channels.

Monetary Policy Transmission via the Housing Market Channels

Mishkin (2001) states that real estate prices can affect aggregate demand through three channels being the direct effect on housing expenditure, household wealth and bank balance sheets. Later, in 2007, he argues that there are at least six channels through which movements in the short-term interest rates affect the housing market, in a direct or indirect manner. Vadas and Kiss (2005) suggest three main theoretical channels that influence households’ behaviour via the housing market, directly through the interest rate channel and indirectly by way of the wealth effect and the credit channel. Giuliodori (2004) refers to the conventional money view based on the standard IS-LM framework and the credit view of monetary transmission on the basis of financial market imperfections and on the role of financial intermediaries in the transmission mechanism of monetary policy.

Aron and Muellbauer (2006) found that an increase in short-term interest rates has negative direct effects on consumer spending, but there appear to be even larger indirect effects via asset prices and income expectations. Consequently, monetary policy causes a direct impact on the economy through changes in mortgage repayments, sequentially affecting disposable income and hence consumption. However, other linkages have become increasingly important and affect economic activity through asymmetric information and the creditworthiness of economic agents stemming from the collateral value of housing, the liquidity aspect of housing wealth (through mortgage equity withdrawal) and Tobin’s q ratios for housing along with consumer optimism and expectations about the future.
Economic research has identified various channels through which changes in housing market developments are likely to have an impact on economic activity. The three main channels of transmission of monetary policy through housing and mortgage markets include the interest rate, the asset price and the credit channel.

The traditional *interest rate channel* has a direct effect on consumption and investment decisions and ultimately economic activity and inflation through changes in key ECB interest rates that affect the general level of interest rates. Interest rate changes affect disposable income directly via the interest paid or the gain received on variable rate contracts. If financial markets are well developed and efficient, then monetary policy normally affects household expenditure via its impact on interest rates and asset prices.

The *asset price channel* relates to the wealth effect generated by increasing house prices leading to higher consumption possibilities. Developments in the house prices can affect the economy through household consumption, represented by the fluctuations in household wealth, generated by house price movements. Consequently, higher property prices increase households’ wealth and boost consumption, contributing to consumer price pressures. This means that demographic trends as well as cultural traits of a country also influence such impulse on aggregate consumption, as the housing market, unlike other asset markets, is a closed domestic market.

Property prices may also affect real economic variables via the *credit channel*, through the collateral effect of house prices and asymmetric information, affecting both access to borrowing possibilities and the terms and conditions involved in obtaining the required funding. If, as in the euro area, banks are the main providers of funds for households, then monetary policy could affect their spending by modifying the supply of bank loans through the *bank lending channel*. Since the availability and value of collateral is a highly relevant factor in borrowing, the *balance sheet channel* affects borrowing through the value of assets prices. This positive correlation between the impact of house prices on the net wealth of households and the availability and value of collateral can also be viewed as a connection from house prices to loan dynamics.

*The Housing and Mortgage Markets in the Monetary Transmission Mechanism*

The relationship between house prices and mortgage market structure acts
A Schematic Illustration of the Transmission of Monetary Policy through the Housing Market Channels

Figure 2
Asymmetries in the Monetary Transmission in the Euro Area

as the underlying foundation for housing market dynamics. This follows from the fact that house transactions, in general, entail a corresponding transaction in the mortgage market. Consequently, the cost of obtaining the required financing and the terms and conditions under which it is available are significant determinants of house price dynamics.

The view that the relative importance of different channels in the economy depends mainly on the financial structure and macroeconomic environment of the country is supported by several economists, namely, Iacoviello (2003), Guiliodori (2004), Tsatsaronis and Zhu (2004) and Mishkin (2007). The institutional framework of mortgage markets differs greatly across industrialised economies. As illustrated by Girouard and Blöndal (2001), this is true even within areas that are rather homogeneous such as the euro area, where in spite of the monetary union differences persist in mortgage to debt-income ratios, loan-to-value (LTV) ratios, home ownership rates and the extent to which adjustable rate mortgages are used.

In turn, the functioning of the house financing system is seen as a major feature affecting the strength of the wealth and credit effects. This stems from the fact that wealth and credit effects on consumption are influenced by the ability of households to turn housing wealth gains into extra liquidity. Whereas transactions in the second-hand housing market usually neutralize one another, the liquidity of the household sector can only be increased through the credit market by borrowing more against the increased value of housing assets. This effect results from developed mortgage markets with refinancing possibilities and mortgage equity withdrawal products, whereby households can easily transform household wealth into liquidity without the need to transact in the housing market. As such, the synchronisation between GDP growth and house prices increases at the business cycle frequency, leading to a stronger effect of the housing wealth channel.

Stylised Facts on the Euro Area Housing and Mortgage Markets

Developments in the Euro Area Housing Market

Movements in property prices seem to be highly influenced by relevant macroeconomic factors but are also affected by complex dynamics and expectations. Some stylised facts have been established by existing empirical
literature suggesting that the house price movements are to a significant
degree attributable to macroeconomic conditions, in particular to changes in
households’ disposable income and income expectations, real and nominal
interest rates, the availability and extent of mortgage finance, the latter
based on credit availability and borrowing terms and conditions. A significant
relationship between monetary policy and housing demand could in turn
influence household wealth and hence consumption. This is partly due to
the mortgage market, which is key in the transmission of changes in
property prices to aggregate demand, with implications for housing
affordability. Other factors inducing changes in housing demand include
demographic developments and the extent of government intervention,
niche property markets such as foreign demand and buy-to-let markets.

Due to the specific nature of the construction sector, housing supply appears
to be sluggish in the short-run due to the fact that housing supply is
intensively domestic and the provision of new housing depends on the
length of planning and constructions phases, influenced by the availability
of land for residential development including the number of building
permits issued, which reflect the supply in the real estate market in the
medium and long-term horizons. The responsiveness of housing supply is
also dependant on the expected return on investment in the construction
sector, that is, the profitability of the construction industry determined by
factors of production connected with the construction of the property.

Apart from being shaped by macroeconomic factors and market forces,
property markets have a number of intrinsic characteristics causing property
prices to behave differently from other types of assets. These local and
specific features of the national housing markets lead to cross-country
differences in housing price movements.

Although house price growth generally remains relatively buoyant in the
euro area on average when seen in historical perspective, the notion of a
cooling down in euro area housing market developments after a prolonged

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3 Nominal house prices behave differently from equity prices and usually tend to exhibit
sticky prices downwards rather than sharp falls. These intrinsic characteristics are so specific
that house price equalisation is weak even within a single country and even in the long run,
highlighting the importance of such special features of the housing market. This is further
accentuated by the fact that housing market prices lack transparency and most transactions
occur through bilateral negotiations.
period of unusually high growth rates in many euro area countries restores
the real estate sector in line with market fundamentals. Despite the fact that
real house prices in most euro area countries follow long cycles around a
moderate upward trend, the pattern varies significantly across countries
due to considerable heterogeneity in underlying country developments.

Hence, such a strong annual rate of growth in the prices of residential
property in the euro area as a whole, in reality masks considerable diversity
at the country level where the recent dynamism largely reflects buoyant
residential property markets in Spain, Ireland, and France whereas in
Germany residential property prices were flat and tended to average
around zero from a historical perspective as illustrated in Figure 3.

**Figure 3**

 Movements in Residential Property Prices in Euro Area Countries

![Bar chart showing movements in residential property prices in Euro Area countries from 1999 to 2008.](chart)

*Source:* European Mortgage Federation Hypostat 2006

Notes: The euro area annual percentage changes for residential property prices are obtained by aggregating national data weighted on the basis of nominal GDP for 2006. Due to relatively high levels of GDP, Germany carries a substantial weight in the calculation, which has a significant impact on the aggregate annual rate of growth in residential property prices in the euro area.
Developments in the Euro Area Mortgage Market

The dynamism of residential property prices in the noughties could be attributed to a combination of strong housing demand, partly reflecting the very favourable financing conditions with mortgage interest rates declining substantially over the past ten years reaching historically low levels in 2005. This also emanated from the increased integration of the housing credit market with the rest of the financial system creating conditions for a rapid expansion in the range of mortgage products available yielding increased competition in the mortgage market.

Evidence from housing and mortgage markets of the euro area to date suggests that convergence in residential property and housing finance markets following EMU membership occurred only to a limited extent. While nominal mortgage rates have tended to converge, interest rate disparity persists among euro area countries.

Figure 4
Typical Mortgage Interest Rates in Euro Area Countries

Source: European Mortgage Federation Hypostat 2006
Asymmetries in the Monetary Transmission in the Euro Area

Table 1  
Features of the Euro Area Mortgage Market

<table>
<thead>
<tr>
<th>Country</th>
<th>Type of Mortgage Interest rate(^4)</th>
<th>Typical Loan-to-value ratio (LTV)</th>
<th>Typical duration of Mortgage contract (years)</th>
<th>Refinancing possibility (fee-free pre-payment)</th>
<th>Utilisation Mortgage Equity Withdrawal</th>
<th>Interest Rate Deductable from tax products</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>Fixed</td>
<td>60%</td>
<td>20-30</td>
<td>No</td>
<td>No</td>
<td>Yes (50%)</td>
</tr>
<tr>
<td>Belgium</td>
<td>Fixed</td>
<td>80%</td>
<td>20</td>
<td>No</td>
<td>No</td>
<td>Yes (50%)</td>
</tr>
<tr>
<td>Finland</td>
<td>Variable</td>
<td>75%</td>
<td>15-20</td>
<td>No</td>
<td>Yes</td>
<td>Yes (29%)</td>
</tr>
<tr>
<td>France</td>
<td>Fixed</td>
<td>75%</td>
<td>15</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Germany</td>
<td>Fixed</td>
<td>70%</td>
<td>Up to 30</td>
<td>No</td>
<td>No</td>
<td>No (limited)</td>
</tr>
<tr>
<td>Greece</td>
<td>Variable</td>
<td>75%</td>
<td>15</td>
<td>No</td>
<td>Yes</td>
<td>Yes (40%)</td>
</tr>
<tr>
<td>Ireland</td>
<td>Variable</td>
<td>70%</td>
<td>20</td>
<td>No</td>
<td>Yes</td>
<td>Yes (42%)</td>
</tr>
<tr>
<td>Italy</td>
<td>Fixed</td>
<td>50%</td>
<td>10-25</td>
<td>No</td>
<td>No</td>
<td>Yes (45%)</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>Variable</td>
<td>80%</td>
<td>20-25</td>
<td>No</td>
<td>No</td>
<td>Yes (38%)</td>
</tr>
<tr>
<td>Netherlands</td>
<td>Fixed</td>
<td>90%</td>
<td>30</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (52%)</td>
</tr>
<tr>
<td>Portugal</td>
<td>Variable</td>
<td>75%</td>
<td>15</td>
<td>No</td>
<td>No</td>
<td>Yes (40%)</td>
</tr>
<tr>
<td>Spain</td>
<td>Variable</td>
<td>70%</td>
<td>15-25</td>
<td>No</td>
<td>Yes</td>
<td>Yes (45%)</td>
</tr>
</tbody>
</table>


Mortgage market structures within the euro area have evolved within national boundaries and in consequence, characteristics of mortgage contracts have been influenced by local features and policies. These factors include the nature of the lending institution and the source of funding of the lending activity, the competitive conditions and marketing practices, the share of subsidised loans, as well as to cultural habits and regulations, inflation history and fiscal issues.

Alas, mortgage markets lack cross-border integration and remain segmented at the national level, implying that mortgage lending remains a predominantly

\(^4\) Relates to the predominant rate of interest in the country.
Table 2
Mortgage Markets in the Euro Area

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>23.5%</td>
<td>7,340</td>
<td>57.0%</td>
<td>3.8%</td>
</tr>
<tr>
<td>Belgium</td>
<td>36.3%</td>
<td>10,860</td>
<td>68.0%</td>
<td>5.4%</td>
</tr>
<tr>
<td>Finland</td>
<td>43.8%</td>
<td>13,930</td>
<td>58.0%</td>
<td>3.7%</td>
</tr>
<tr>
<td>France</td>
<td>32.3%</td>
<td>9,170</td>
<td>56.6%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Germany</td>
<td>51.3%</td>
<td>14,360</td>
<td>43.2%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Greece</td>
<td>29.3%</td>
<td>5,140</td>
<td>75.0%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Ireland</td>
<td>70.1%</td>
<td>29,290</td>
<td>74.5%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Italy</td>
<td>18.7%</td>
<td>4,700</td>
<td>80.0%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>34.3%</td>
<td>24,690</td>
<td>74.6%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>98.4%</td>
<td>32,200</td>
<td>54.2%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Portugal</td>
<td>59.2%</td>
<td>8,690</td>
<td>76.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Spain</td>
<td>58.6%</td>
<td>13,070</td>
<td>86.3%</td>
<td>4.0%</td>
</tr>
</tbody>
</table>

Source: European Mortgage Federation Hypostat 2006

Alas, mortgage markets lack cross-border integration and remain segmented at the national level, implying that mortgage lending remains a predominantly domestic business activity, largely reflecting national traditions and cultural factors as well as the institutional settings of the local banking sector with a low propensity for the types of mortgage products available to become more similar across the different countries.

Historical time series for the euro area is thus impinged by developments at the country level, as markets for household debt have remained segmented following different degrees of liberalisation and speed of deregulation over the past decades. These different national housing finance systems, housing policies, patterns of inflation and economic growth have resulted in substantial differentiation in the ratio of mortgage debt to GDP across euro
area countries, ranging from 19.8 per cent in Italy to 99.1 per cent in the Netherlands (as at 2008).

The mortgage debt to GDP ratio in the euro area has been rising rapidly in recent years, reflecting continued vigorous borrowing growth in an environment of lower interest rates in several euro area countries following the introduction of the single monetary policy. In terms of the outstanding amounts of MFI loans to households for house purchase, the mortgage debt to GDP ratio in the euro area increased from 22 per cent in 1992 to around 44 per cent in 2008. The stronger mortgage loan growth in countries with initially lower mortgage debt ratios such as Ireland and Portugal could be identified as a sign of catching-up process with countries with initially higher debt ratios. In spite of increasing in all area countries, with the exception of Germany, debt ratios continued to differ significantly across member countries as at 2008 as illustrated in Figure 5.

![Figure 5: Mortgage Debt to GDP Ratio in the Euro Area](image)

Source: Catte et al. (2004), European Mortgage Federation (2008)

**Notes:** Data for Austria for the years 1992 and 2002 was not available. The mortgage debt ratio for the euro area is calculated on a weighted average based on nominal GDP in 2006 of euro area countries.
On the basis of these institutional differences between countries, some inference is made on the connection between real house prices and consumption through mortgage markets in euro area countries, where the strength of the housing market channel and the speed with which fluctuations in interest rates affect households’ disposable income and consequently consumption and investment decisions are contrasted on the basis of institutional features of mortgage debt contracts. The quadrants below will thus contrast the different institutional mortgage market features with the level of mortgage debt. In such a manner, the effect of changes to the official interest rate on euro area households will be assessed through quadrants indicating the importance of the mortgage market in each euro area country and the strength of the housing market channel through these housing and mortgage market features.

Stylised Fact 1: The relationship between the ratio of mortgage debt to GDP and the mortgage interest rate structure

The interest rate structure is highly significant for the speed through which changes in the monetary policy stance affect economic activity. If fixed rate mortgages are predominantly used, then households are insulated from the effect of changes in interest rate conditions, in the short-term horizon. Contrastingly, households with variable mortgage interest rates are directly affected by changes in interest rate conditions over the life of the mortgage due to an immediate impact on households’ income. Moreover, a change in the rate of interest affects the user cost of capital, which in turn influences housing investment. In those countries with fixed rate mortgages, the rate is fixed with the long-term rate and hence the pass-through to rates on new loans depends on whether the change in short rates is accompanied by a shift in long rates (de Bondt et al., 2003).

The interest rate pass-through via the interest rate channel is thus, more pronounced in those countries where the variable interest rate is the prevalent rate for mortgages as short-term interest rates have a stronger impact. Those countries with a predominant use of variable rate mortgages will naturally be more sensitive to changes in interest rates.

In addition to being dependent on the structure of interest rates, households’ sensitivity to interest rate changes depends on the extent of household indebtedness. The vulnerability of the household sector to potential interest
rate shocks increases with higher indebtedness. Hence, the interest rate sensitivity of households in the euro area has probably risen over recent years as households that have been tempted to finance mortgages under the low interest rate conditions at variable rates have increased their mortgage debt holdings and increased their sensitivity to interest rate changes, as a consequence. However, quantitative estimates are surrounded by considerable uncertainty and further research is needed in this area complemented by qualitative information on the features of mortgage contracts in order to gain a broader picture of the exposure of mortgage debt to interest rate risk.

**Stylised fact 2: The relationship between mortgage debt and the loan-to-value ratio**

Most housing finance markets have contracts with a loan-to-value ratio of between 70 and 100 per cent, although in some countries this may be restricted to 60 per cent (Germany) while in others it can reach 125 per cent (Netherlands). In the last decade, until the dawn of the financial crisis, there
Vanessa Zammit

has been a trend towards higher LTV ratios in several countries, partly reflecting changing market practice and regulatory changes, which have resulted in lower down payments for housing loans.

Following a higher loan-to-value ratio, households tend to borrow higher amounts against collateral. In turn, the higher source of funding for the house purchase generates cash flow amounts through lower down-payment requirements. A higher loan-to-value ratio could be supported by the share of double-income households, which could lead towards higher levels of mortgage debt. Evidence of the positive correlation between a higher loan-to-value ratio and a higher ratio of mortgage debt to GDP is confirmed at the macroeconomic level as shown in Figure 8.

Netherlands has the highest debt burden in the euro area with a ratio of mortgage debt to GDP of 98 per cent, which is most probably linked to the fact that loan-to-value ratios are at the higher end of the scale. In fact, the

Figure 7
Typical and Maximum Loan-to-Value Ratios in the Euro Area

average LTV of first-time buyers in the second quarter of 2006 was 115 per cent, the majority of which were variable and thus fully exposed to short-term interest rate movements. Italy and Austria with low loan-to-value ratios of 50 and 60 per cent respectively, on the other hand, have the lowest level of mortgage debt in the euro area, of less than 25 per cent of their GDP level. The consent of higher debt levels through higher loan-to-value ratios requires a longer repayment period such that debt service-to-income ratios remain affordable. Accordingly, those countries with a high loan-to-value ratio tend to have a longer term to maturity for mortgage contracts.

Stylised fact 3: The relationship between mortgage debt and the home ownership rate

Rates of home ownership differ considerably across euro area countries due to a number of factors, relating to taxation and housing policies, the rental market and cultural traits. For example, from Figure 9, it can be observed that countries in Southern Europe have a higher share of owner-occupied housing. On the other hand, housing tenures are relatively small in Germany, Austria, Netherlands, Finland and France.
A high rate of home ownership along with a high rate of mortgage debt, that is, the top-right quadrant, signifies that the transmission mechanism will be stronger due to the larger impact of a change in interest rates. The high level of home ownership hence reflects the fact that most of the housing debt is held by households and not by rental investors. However, the home ownership ratio also reflects different levels of credit availability through mortgage markets as the mortgage market acts as the sole intermediary between households and house tenure.

Analysis of the home ownership rates brings about some contrasting results. For example, Netherlands with the highest level of mortgage debt, high LTV ratios and long term to maturity has one of the lowest home ownership rates in the euro area.

Moreover, those countries with the highest owner-occupation rates, namely Italy and Spain, are those countries that have, or until recently had the least developed mortgage markets showing that where mortgage markets are less sophisticated, the home ownership rate is not explicable by the outstanding mortgage debt. In these countries, the mortgage market is most
Asymmetries in the Monetary Transmission in the Euro Area

probably by-passed when purchasing residential property and other mechanisms for obtaining the necessary funding, like inter-generational wealth transfers exist. Such conduct is especially valid in southern European countries whose values and cultural traits vary distinctively from northern European and Nordic countries.

This stylised fact suggests that while owner-occupation may be a necessary condition for signalling a housing wealth channel, it is not a sufficient one. This in view that unless property ownership by households does not replicate the role of an effective mortgage market with appropriate mortgage products, transmission mechanism through the housing channel is expected to be weak, despite a high ownership ratio.

**Stylised fact 4: The relationship between mortgage debt and transaction costs**

Turnover in the housing market and its responsiveness to macroeconomic shocks is also influenced by the extent of transaction costs. Transaction costs include stamp duty, VAT, registration fees and real estate taxes.

Housing transaction costs also differ considerably across countries with the ratio of transaction costs to house prices ranges from a low level of seven per cent in Ireland to exceptionally high levels of almost eighteen per cent in Belgium, as observed in Figure 10.

It is presumed that higher transaction costs contain the wealth effect in the transmission mechanism by reducing the liquidity component of housing assets. Conversely, low transaction costs mean that households can easily convert housing wealth generated by residential assets into consumption without involving large amounts of extra costs.

As is the case for those countries falling in the top-left quadrant of Figure 11, that is, Ireland, the Netherlands and Spain, the tendency of having relatively lower transaction costs in the euro area is coupled with high levels of mortgage debt.

The group of countries with lower transaction costs is more likely to have a larger impact on house prices through rising demand for real estate leading to important country differences affecting the role of housing in the interest rate transmission process.
Figure 10
Transaction Costs in the Euro Area

<table>
<thead>
<tr>
<th>Country</th>
<th>Transaction Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>17.9%</td>
</tr>
<tr>
<td>Italy</td>
<td>17.0%</td>
</tr>
<tr>
<td>France</td>
<td>16.3%</td>
</tr>
<tr>
<td>Greece</td>
<td>15.7%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>15.5%</td>
</tr>
<tr>
<td>Portugal</td>
<td>13.7%</td>
</tr>
<tr>
<td>Spain</td>
<td>12.2%</td>
</tr>
<tr>
<td>Germany</td>
<td>11.8%</td>
</tr>
<tr>
<td>Austria</td>
<td>11.5%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>11.0%</td>
</tr>
<tr>
<td>Finland</td>
<td>10.2%</td>
</tr>
<tr>
<td>Ireland</td>
<td>7.0%</td>
</tr>
</tbody>
</table>

% of property price consists of registration costs, sales & tax transfers, legal and agent's fees

Source: Globalpropertyguide.com

Figure 11
Quadrant 4: Transaction Costs

Sources: Globalpropertyguide.com, European Mortgage Federation Hypostat 2006
Stylised fact 5: The relationship between mortgage debt and mortgage equity withdrawal

Mortgage equity withdrawal (MEW) is still in its infant stages in euro area countries and although it exists in Finland, Greece, Ireland and Spain, withdrawing housing equity is still minimal.

A positive correlation exists between the availability of mortgage equity withdrawal and the mortgage debt to GDP ratio as evidenced in Figure 12. This, in part, explains the anomaly of high debt and low home ownership levels. A new phenomenon is that equity withdrawal is being utilised for housing investment in terms of second homes or for investment purposes following the high rate of return from housing assets. An even stronger reason behind the low impact of mortgage equity withdrawal relates to substantial inter-generational transfers, as is the case in Ireland. As house prices have gone higher, down-payments required for mortgages have grown larger, and so older households help the younger generations in fulfilling down-payment requirements by withdrawing equity\(^5\) from their own housing assets.

\[\text{Figure 12} \]

\textbf{Quadrant 5: Mortgage Equity Withdrawal}

\[\text{Access to MEW products} \]


\(^5\) This effect is so widespread that the acronym ‘PG’ (parental gift at time of first mortgage) has entered the Irish vocabulary.
Another characteristic highlighting flexible and highly developed mortgage markets is the effect of the possibility to refinance mortgages. Mortgage refinancing entails home and mortgage owners to withdraw equity to take advantage of lower interest rates. Refinancing possibilities (at no added cost) is only available in the Netherlands, whereas in other countries such as Germany and France, it is costly to refinance due to penalties on early repayment, making refinancing unattractive especially in view of small interest rate declines.

Stylised fact 6: The relationship between mortgage debt and mortgage interest tax relief

Mortgage interest tax relief (MITR) allows the mortgage holder to offset interest paid on an outstanding mortgage against income tax. As such, after applying the tax relief, the real rate faced by borrowers falls significantly. In this regard, the impact of the ECB’s interest rate policy is partially muted and the expected response to an increase in interest rate does not occur.

Figure 13

Quadrant 6: Mortgage Interest Tax Relief

In other words, the tax relief on mortgage interest payments dampens the effect of rising interest rates by sheltering borrowers against their full impact, especially in those countries featuring in the top-right quadrant namely Ireland, Spain and the Netherlands. At over 50 per cent, the MITR is highest in the Netherlands. The OECD deems such a high rate of tax relief as a distortionary subsidy and recommends that it is removed. In addition, capital gains on housing, arising from rising house prices are exempt from taxation in the Netherlands.

**Evaluation of the Housing and Mortgage Market Features**

On the basis of these institutional features, it could be deducted that after a decade of single monetary policy, the transmission mechanism of monetary policy through the housing market still yields considerable dissimilarities. Such variation among euro area countries has been attributed to different characteristics in national mortgage markets, acting as the conduit in the transmission of changes in monetary policy to aggregate demand, through property prices. From analyzing the quadrants, it was argued that those countries with a high proportion of fixed interest mortgage loans, low home ownership ratios, low loan-to-value ratios and high transactions costs, should experience a relatively lower impact from house price effects on consumption and thus a smaller role for housing in the interest rate transmission mechanism.

On the contrary, those countries with predominantly variable interest rates, high home ownership ratios, high loan-to-value ratios and low transaction costs tend to have an impact on consumption through house price effects and a stronger role of the housing channel in the monetary policy transmission mechanism. Moreover, the housing channel seems to be strongest in those countries where equity release products and refinancing possibilities are applicable.

The impact of the recent real house price increase on private consumption is believed to have been relatively modest in the euro area as a whole, although in some euro area countries, house price developments have had a more significant influence on consumption decisions. Although it is difficult to assess the relative importance of each mortgage characteristics for euro area countries, stylised facts on the housing and mortgage markets indicate that a low potential for the role of the housing channel in the MTM
exists in Austria, Belgium, France, Germany and Italy while a more significant role is present in Spain, Ireland and the Netherlands.

The results obtained from the quadrant analysis are then juxtaposed with econometric analysis. Empirical evidence (Zammit, 2008) suggests that these stylised facts are reflected in the estimation results from macroeconomic data of the euro area and euro area countries. A simple vector autoregression (VAR) model\(^6\) consisting of the short-term interest rate, the mortgage interest rate on loans to households for house purchases, the changes in the inflation index for house prices and the quarterly growth of real gross domestic product is used to analyse the effect of a shock in short-term interest rates on output growth through the housing channel. In effecting a monetary policy shock, short-term interest rates were used as a measure given that the European Central Bank (ECB) targets short-term interest rates to move in line with the monetary policy rate through its implementation of monetary policy. For instance, following a contraction in monetary policy, mortgage interest rates are expected to increase while house prices and economic growth are expected to decline.

A priori expectations suggest that in those countries where the housing market channel manifests itself in the monetary transmission mechanism of monetary policy, households would be affected, directly or indirectly, by changes in interest rates. The model is initially estimated on aggregated data for the euro area as a whole to assess whether euro area wide impact through the housing market exists following the implementation of single monetary policy and is then estimated separately for each euro area member subject to data availability.

The data set is composed of quarterly data from 1999:Q1 to 2008:Q1, hence only considering data from the introduction of the euro and the single monetary policy framework. It should be noted that the collection of reliable and comparable data on property markets has proved very difficult, restricting the scope of meaningful analysis. For this reason, the results have to be interpreted with due caution. The lack of harmonised data on house prices in the euro area, leads to data incompleteness in euro area aggregates mostly relating to the heterogeneous nature of national indicators that corrodes reliability and comparability of data across the euro area.\(^7\)

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\(^6\) A standard VAR model consists in regressing each current non-lagged variable in the model on all the variables in the model lagged a certain number of times.
Economic literature has highlighted how the interplay between housing and mortgage markets can amplify the effects of shocks on house prices and strengthen the transmission of mortgage interest rate changes to economic activity. This underlines the potential importance of spillover effects of housing markets for the overall economy and for monetary policy transmission. Moreover, this could signify that monetary transmission is increasingly functioning via the housing market, especially through high loan-to-value ratios and prevalent usage of property as collateral against borrowing for non-housing consumption through mortgage equity withdrawal, rendering it increasingly important for central banks to monitor house prices and mortgage developments. In this regard, real estate price changes can be seen as new information for policymakers. In order to be in a better position to analyse the house price and mortgage market dynamics, reliable and timely statistical data of euro area member states is vital. However, thus far, statistics on key aspects of housing market are not readily available in euro area countries and the available sets of data are not strictly comparable. In this respect, significant improvements are still necessary with particular regard to data availability, frequency, timeliness and quality.

**Implications of the Housing Market Channel for Monetary Policy**

Empirical evidence (Zammit, 2008) has shown that an asymmetric monetary transmission mechanism in the euro area results through the housing market channels, due to different structural and institutional features of the European housing and mortgage markets. EU policy makers have repeatedly indicated that further integration would yield a number of benefits to EU mortgage markets, including the removal of inefficiencies, increased competition and a higher degree of market completeness, while possibly also enhancing the monetary policy transmission mechanism.

**Financial Integration in the Euro Area**

While the moves towards a single financial market have made it easier for banks to operate in different countries, such cross-border activity for mortgage

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7 Considerable discrepancies are also found in the definition and interpretation of the representative mortgage interest rate and the ration of house loans to GDP. Hence, the information available for the euro area does not yield a comprehensive picture of the structure of outstanding mortgage debt.
loans, has as yet a long way to go. Owing to the differences between the mortgage credit markets of the Member States, the Commission set out a number of proposals a white paper on the Integration of EU Mortgage Credit Markets, to promote further integration in European mortgage markets.

Further homogeneity in the mortgage markets across euro area countries would lead to producing a similar impact of the single monetary policy for the member states of the monetary union. Financial integration of mortgage market within the euro area would help reduce differences in the transmission of the monetary impulses and thereby facilitate the common monetary policy. This view confirms the need for the euro area to have well-developed financial systems as more efficient and flexible financial systems present better conduits not only for macro monetary policies but also for other macro and micro polices.

Thus, as European mortgage markets become more integrated and more competitive, the importance of the link between housing wealth and consumption is likely to grow further. As in the near future, the impact of financial innovation through similar mortgage market products becomes increasingly widespread in the euro area, households would tap housing equity with minimum costs, strengthening the effects of housing market fluctuations on final consumption.

The Housing Market Channel and the Business Cycle

Recent innovations in housing finance markets have generally increased the impact of monetary policy on house prices. More flexible and competitive mortgage markets have amplified the impact of monetary policy on house prices and thus, ultimately, on consumer spending and output. Easing of monetary policy at the beginning of the current decade seems to have contributed to the run up of housing prices and residential investment in the euro area. The fact that the historically low interest rates in recent years have been one of the main determinants of the rise in house prices in many countries in the past few years highlights the important role that the link between the housing market and the business cycle plays in determining the strength of monetary policy. Moreover, the correlation between GDP growth and house prices at the business cycle frequency is significantly related to mortgage markets characteristics, with the link between the housing and the
business cycle tending to be stronger where mortgage markets are more developed and highly flexible, home ownership is high and refinancing facilities or mortgage equity withdrawal are more widespread. However, further empirical research is required on the respective roles of these factors in the transmission of monetary policy and in the business cycle.

Implications of the Housing Market Channel for Monetary Policy Formulation

Cardarelli *et al.* (2008) suggest that monetary policymakers may need to respond more aggressively to housing demand and financial shocks in economies with more developed mortgage markets and financial shocks affect the amount of credit available for any given level of house prices. Similarly, higher interest rates would also have to be applied in those economies where fiscal arbitrage in terms of mortgage interest tax relief plays a significant role, such that the desired result from monetary tightening is achieved. However, within the euro area, country-specific monetary policy rates are not possible due to single monetary policy. As such, unless the institutional characteristics of national mortgage markets converge and diversities in house financing are reduced, similar transmission mechanisms across euro area countries cannot be obtained.

Another policy recommendation found in recent publications is to achieve improved economic stabilization by a monetary policy approach that responds to house price developments in addition to consumer price inflation and output developments. Monetary policy and interest rates are affected by house price movements as the latter impact directly on consumption and aggregate demand and hence on future inflation prospects, which in turn, have a direct impact on interest rate decisions.

In economies with more developed mortgage markets, where the impact of house price movements is increasingly being transmitted to the real economy, monetary policy makers should respond to changes in asset prices when they affect inflation and output outcomes and expectations (Mishkin, 2007). These suggestions, however, do not extend to a recommendation that monetary policy should target house prices. Given the uncertainty surrounding both the shocks hitting the economy and the effects of interest rates on asset-price bubbles, house prices should be one of the many elements to be considered in assessing the balance of risks to the outlook, within a risk-management approach to monetary policy. In this background,
monetary policy certainly should not bear the full weight of responding to possible asset price bubbles as regulatory policy also has a critical role to play in guarding against the inappropriate loosening of lending standards that may fuel extreme house price movements.

Conclusion

Overall, empirical analysis suggests that the transmission of monetary policy through the housing channel yields dissimilar responses across euro area countries, in terms of speed and extent, to changes in the monetary policy rates. The strength and timing of the effects of monetary policy shocks on house prices and consumption in euro area countries is found to be correlated by the varying mortgage market characteristics and tends to be stronger in countries with more flexible and highly developed mortgage market, especially where financial practices such as mortgage refinancing and housing equity releases, can trigger the use of mortgage credit to finance current expenditure.

Furthermore, both the correlation between consumption and house prices in terms of the business cycle, as well as the transmission of monetary policy shocks on economic growth and house prices, seem to be significantly related to the institutional characteristics of mortgage markets in different euro area countries. Following the obtained results, it can be concluded that the co-movement between house prices and private consumption is stronger and the transmission of monetary policy through the credit and wealth effects is more effective in those countries with highly developed and increasingly flexible mortgage markets.

In conclusion, housing markets could potentially lead to differences in the sensitivity of monetary policy changes through three elements. These factors are all, to some or most extent, influenced by national factors and as such lead to considerable heterogeneity in the transmission of monetary policy across a common currency area with a common interest rate.

- House price trends are ultimately driven by national demand and supply factors that are intrinsically local in character and can be strongly influenced by particular characteristics, which can differ substantially across countries. Theoretical literature highlights how the interplay between house price
Asymmetries in the Monetary Transmission in the Euro Area

determinants and differences in the institutional features of housing and mortgage markets can lead to discrete house price movements or dissimilar house price cycles, which may affect household consumption differently across euro area countries.

• The institutional mortgage features affect households’ interest rate sensitivity through the interest rate, wealth and credit channels amid variations with respect to both the magnitude and timing of the effects and the relative contributions of each of the channels of transmission. Monetary policy does not seem to have considerable impact on economic growth via the housing market channel in those countries where the mortgage market is least developed such as Austria, Italy, Belgium and Germany. On the other hand, the housing market channel appears to be stronger in the Netherlands, Ireland and Spain, where the mortgage market is either highly developed or is exhibiting signs of enhanced flexibility.

• The rate of home ownership tends to increase the impact of changes in housing wealth on consumption. Moreover, the extent to which households are able to borrow against their housing wealth through mortgage equity withdrawal and refinancing is a crucial determinant for the impact of changes in housing wealth on consumption. Such results highlight the fact that the interest rate channel on its own is not sufficient to explain monetary transmission through the housing channel in the euro area. Hence, this signifies that the diverse transmission of monetary policy and different house prices movements may be highly related to the level of liquidity-constraints of households. The liquidity aspect of housing through the wealth and balance sheet channels are thus also deemed to play a role via house prices in the transmission of monetary policy to the real economy. In fact, this is evidenced by the Netherlands, which shows that the transmission of monetary policy can be effective via the wealth and collateral effects through house price movements and mortgage equity withdrawal even in a predominantly fixed interest rate environment. So following further integration in euro area mortgage markets, the wealth and credit channels are expected to become stronger. Thus, as European mortgage markets become more integrated and more competitive, the importance of the link between housing wealth and consumption is likely to grow further.

Accordingly, in bringing greater efficiency in the financial and housing sectors, further integration and liberalisation of mortgage markets within the euro area would help reduce differences in the transmission of the
monetary impulses and thereby facilitate the single monetary policy. Although reducing differences in the mortgage market structure would clearly lead to a more synchronized response in the transmission of monetary policy to changes in monetary policy stance, housing markets tend to remain largely characterized by national factors. As a result, a stronger link between the housing and the business cycles could lead, in some circumstances, to increased growth differences, especially if house price developments turn out to be pro-cyclical.

Ultimately, evidence suggests that the different reactions to a change in the monetary policy stance across euro area countries could be partially explained through the heterogeneous mortgage market structures. From a monetary policy perspective, house prices should matter for monetary policy formulation to the extent of providing information about inflation prospects. This is so, because in part, developments in the housing and mortgage markets reflect an outlook on economic prospects.

References

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