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Monetary policy transmission through the financial system to households

Diana Bonfim, Laura Moretti, Alicia Aguilar, Simone Auer, Emil Bandoni, Tamás Briglevics, Dominic Cucic, Annalisa Ferrando, Olivier De Jonghe, Stephen Kho, Caterina Mendicino, Maria Rodriguez-Moreno, Stefano Pica, Afonso S. Moura

No 390

Challenges for Monetary Policy Transmission in a Changing World (ChaMP) Research Network

This paper is one of five Occasional Papers (OPs; listed further below) summarising the strands of research conducted within the framework of the Challenges for Monetary Policy Transmission in a Changing World (ChaMP) Research Network, which was an initiative of the European System of Central Banks (ESCB) and brought together economists from the European Central Bank (ECB), the national central banks comprising the ESCB, the Bank of England and Norges Bank. Overall, it produced 168 individual papers and four papers on cross-country coordinated research projects.

ChaMP sought to revisit our knowledge of monetary transmission channels in the euro area and other European economies following a series of unprecedented shocks, and amid multiple ongoing structural changes and the extension of the monetary policy toolkit over the last decade and a half, including the 2021-23 inflation episode. The five OPs cover the main priorities of the network's two workstreams (WSs). WS1 focused on monetary transmission via the financial system, with OP No 389 covering transmission mechanisms from banks to non-financial corporations, OP No 390 examining mechanisms to households and OP No 391 looking at transmission via non-bank financial intermediation. Meanwhile, WS2 was dedicated to monetary transmission via the real economy, with OP No 392 summarising the network's research on transmission through input-output linkages among non-financial corporations and production sectors and OP No 393 examining how various structural changes interact with monetary policy transmission.

ChaMP was coordinated by a team chaired by Philipp Hartmann (ECB) and consisting of Diana Bonfim (Banco de Portugal), Margherita Bottero (Banca d'Italia), Emmanuel Dhyne (Nationale Bank van België/Banque Nationale de Belgique) and Maria T. Valderrama (Oesterreichische Nationalbank). This core team was supported by Melina Papoutsi, Gonzalo Paz-Pardo, Jean-David Sigaux, Raquel Gil-Antona, Clara Dolci and Simone de Luca (all ECB), along with seven central bank advisers and eight academic consultants. More information can be found on the ChaMP website.

Occasional Papers related to the ECB's ChaMP Research Network

No 389, "Monetary policy transmission via banks to firms"

No 390, "Monetary policy transmission through the financial system to households"

No 391, "Monetary policy transmission and non-bank financial intermediation"

No 392, "The propagation of shocks across the production network and implications for monetary policy"

No 393, "Monetary policy transmission and structural changes"

Contents

Abstract

This Occasional Paper reviews evidence from the ChaMP Research Network on the transmission of monetary policy to households in the euro area – an area of monetary policy that has attracted less attention among researchers. It highlights the central role of banks and non-bank intermediaries in shaping how policy affects borrowing, saving and consumption. Despite the overall effectiveness of monetary policy in the euro area, the pass-through of policy rates to household borrowing costs is incomplete and heterogeneous, reflecting differences in funding structures, market power and institutional settings.

A key insight is that transmission depends on household heterogeneity. Differences in balance sheets, credit access and housing market characteristics produce uneven effects across income, age and wealth groups, with important implications for aggregate demand and distributional consequences. Another key finding is that several components of consumption respond more rapidly to changes in interest rates than previously thought, especially in high-debt, variable-rate environments.

Overall, the findings point to the need for an integrated, system-wide perspective that accounts for multiple aspects of financial structure and heterogeneity when assessing monetary policy transmission. ChaMP research also highlights the value of readily available granular data, as many novel findings stem from a major coordinated effort to use new data on households obtained from national credit registers, as well as novel granular data on household expenditure.

JEL classification: E52, E21, G21

Keywords: monetary policy transmission; household heterogeneity; banking sector

Non-technical summary

This Occasional Paper summarises the research produced by the ChaMP network to gain a better understanding of how monetary policy affects households in the euro area. The key findings show that a change in ECB interest rates can affect households much faster than previously thought and that these effects depend crucially on household characteristics, notably their borrowing and saving choices. It is important to note that most of the existing research on monetary policy transmission has traditionally focused on transmission to firms, rather than households. Against this background, this Occasional Paper offers new evidence on the channels through which households change their borrowing, saving and consumption decisions in response to monetary policy and on why these reactions differ across countries, institutions and types of households.

A central finding of the ChaMP network is that the financial system plays a key role in transmitting monetary policy to households. Banks remain the main intermediaries between central banks and households. When policy rates change, banks adjust the interest rates they offer on loans and deposits. This affects how expensive it is for households to borrow – for example through mortgages or consumer credit – and how attractive it is to save. However, this adjustment is not always immediate or complete. Banks may react differently depending on their funding structure, how reliant they are on deposits, and the level of competition they face. In some cases, banks adjust lending and deposit rates slowly, which delays or weakens the impact of monetary policy on households.

At the same time, non-bank financial institutions, such as investment funds, finance companies and insurance firms, are playing an increasingly prominent role in the euro area. These institutions are capable of either reinforcing or offsetting the effects of monetary policy. For example, when interest rates rise, some households may move their savings from bank deposits into higher-yielding financial products, such as money market funds. This can reduce the funding available to banks and constrain their lending. However, these same funds may then provide the funding needed for non-bank intermediaries to continue supplying credit to households. As a result, the overall effect of monetary policy depends on the interaction between banks and non-banks, rather than on banks alone.

Another key finding is that monetary policy does not affect all households in the same way. Differences in income, wealth, debt levels and access to credit make some households more sensitive to interest rate changes than others. For instance, households with mortgages, especially those borrowing at variable rates, are directly affected when interest rates change, as their monthly payments adjust accordingly. Highly indebted households tend to be more exposed to rate increases, which can reduce their disposable income and spending. In contrast, households with more savings may benefit from higher interest rates, although this depends on the degree to which banks pass on interest rate increases to their depositors.

These differences can have significant distributional effects. Monetary policy can shift income and wealth between borrowers and savers, or between younger and older households. During periods of rising interest rates, younger and more indebted households are often more adversely affected, while older households with savings may be less affected or can even stand to benefit. Conversely, the opposite can occur when interest rates fall, with borrowing becoming cheaper and asset prices rising. These distributional effects matter because different households have different spending patterns, which in turn influences overall economic activity. These distributional effects may also have material political economy consequences.

The research produced by ChaMP also shows that households respond to monetary policy more quickly than previously thought. Traditional views held that changes in interest rates take a long time to feed through to aggregate consumption and economic activity. However, new evidence based on high-frequency data suggests that households are able to adjust their spending within weeks. Using high-frequency transaction data, researchers have found that some categories of spending respond within days or weeks of a policy announcement, rather than only after many months. The fastest responses are observed when household debt is high and mortgage payments adjust quickly to changes in interest rates.

Housing plays a particularly important role in this process. For most households, housing is both their largest asset and their largest liability. Changes in interest rates affect house prices, mortgage payments and borrowing capacity. In countries where most mortgages are granted at variable rates, the impact of monetary policy on household finances is typically faster and stronger. In contrast, in countries with a predominance of fixed rate mortgages, the effects tend to be slower and more gradual. Notably, households do not play a passive role in this process: ChaMP research shows that they respond to changes in interest rates by refinancing their loans, renegotiating terms or adjusting their borrowing and spending decisions, which can either amplify or dampen the effects of monetary policy.

This Occasional Paper also highlights the importance of interactions between monetary policy and other policies, particularly macroprudential policies aimed at safeguarding financial stability. Measures such as limits on loan-to-value ratios or capital requirements for banks can influence how monetary policy affects credit and the broader economy. In some cases, these policies are mutually reinforcing, while in others they offset one another. Understanding these interactions is essential for designing effective policy frameworks. These findings therefore suggest that monetary and macroprudential policies should not be designed in isolation. Instead, an integrated policy approach can help central banks calibrate financial conditions more effectively, especially during periods of high inflation or elevated financial vulnerabilities, or where there is limited room for conventional monetary policy, while reducing the risk of unintended tightening or excessive accommodation.

Finally, the ChaMP network's research points to emerging challenges that may shape monetary policy transmission in the future. These include the growing role of non-bank financial institutions and emerging risks such as those related to climate change. For example, climate-related risks may affect borrowing costs and insurance premiums in certain regions, influencing how households respond to interest rate

changes. These developments suggest that policymakers may need to broaden their monitoring and regulatory frameworks beyond traditional banks, strengthen data collection on non-bank intermediaries and climate-related exposures, and adopt a more system-wide perspective when assessing the transmission and side effects of monetary policy.

Overall, the findings of the ChaMP network suggest that monetary policy operates through a complex and interconnected system involving financial institutions, markets and households. Its effects are not uniform but depend on institutional features, financial structures and household characteristics. This calls for a more integrated and data-driven approach to understanding monetary policy transmission; one that takes into account the diversity of households and the evolving nature of the financial system. Such an approach could help policymakers better assess the impact of their decisions and design policies capable of achieving their objectives more effectively, while minimising unintended consequences. The findings also underline the importance of improving the availability of granular data on household borrowing, saving and consumption, while more explicitly incorporating heterogeneity, non-bank financial intermediaries and financial frictions into macroeconomic models used for policy analysis and forecasting.

1 Introduction

Prepared by Diana Bonfim (European Central Bank) and Laura Moretti (Central Bank of Ireland)

Households and banks are deeply intertwined. In the euro area, at end-2025 16.4% of banks' assets consisted of claims on households, while 23.4% of their liabilities took the form of household liquidity (deposits) and savings instruments. Given the central role played by banks in the transmission of monetary policy, household borrowing and lending to banks are also instrumental in this transmission process, with implications for household consumption and savings decisions, as well as for labour and housing markets. Ultimately, the effectiveness of monetary policy in achieving price stability is shaped by all these interactions and transmission mechanisms. This Occasional Paper summarises the key findings of the ChaMP Research Network on this topic, showcasing how research conducted across the European System of Central Banks (ESCB) and participating central banks has advanced our understanding of the transmission of monetary policy through banks (and non-banks) to households.

The classic bank lending channel (Kashyap and Stein, 1994) posits that a policy tightening can reduce the supply of loans because banks, especially those with limited access to outside funding, cut back lending when reserves or deposits become scarce. In the presence of financial frictions, higher policy rates raise banks' funding costs and weaken their balance sheets, leading to higher lending rates and a contraction in loan supply (Bernanke and Blinder, 1988; Kashyap and Stein, 1994; Bernanke and Gertler, 1995). More recent research has refined this view by focusing on banks' funding structure, particularly the role of deposits. Drechsler, Savov and Schnabl (2017) document a deposit channel of monetary policy, showing that when the central bank raises short-term rates, banks exploit their market power and widen the spread on deposits (i.e. deposit rates rise much less than market rates), prompting depositors to withdraw funds and, in turn, banks to reduce their lending. While corporate lending has traditionally been the focus of empirical studies on the bank lending channel, mortgage markets have been garnering more attention of late. This shift is due to both the critical importance of housing debt for households and the growing availability of granular mortgage data (Berger et al., 2021; Di Maggio et al., 2017, 2020).

The ChaMP Research Network has helped to strengthen our understanding of how the bank lending channel (and other channels) operates through household borrowing in the euro area. In a bank-based financial system, banks unsurprisingly play a central role in the transmission of monetary policy to households. However, the pass-through to household borrowing costs is often incomplete and varies significantly across institutions and contexts. Banks with significant market power in

the deposit market or which are highly reliant on deposit funding tend to adjust deposit and loan rates sluggishly (notably in tightening cycles), thereby weakening and delaying monetary transmission. A novel result concerns the importance of banks' cross-selling strategies: by anticipating future profits from bundling financial products, banks may have fewer incentives to offer attractive deposit rates when policy rates rise, as the expected net present value of future cross-selling profits is discounted more heavily.

The growing prominence of non-bank financial institutions in the euro area has important implications for how monetary policy reaches households. ChaMP research shows that finance companies, investment funds and insurers can either amplify or offset policy effects depending on their business models and funding sources. For instance, during periods of monetary tightening, deposit outflows from banks into money market funds can be recycled to support non-bank lending, thus partially compensating for the reduction in bank credit. Similarly, rising interest rates can affect insurers' capital positions and raise mortgage and insurance costs, while asset purchase programmes tend to stimulate demand for housing-related securities among institutional investors, thereby easing credit conditions in mortgage markets. Occasional Paper No. 391 "Monetary policy transmission and non-bank financial intermediation" provides a more detailed discussion of ChaMP's findings on the role of non-banks in the transmission of monetary policy.

Research from the ChaMP network also highlights the importance of understanding the interaction between monetary and macroprudential policies. An integrated approach may be especially relevant during periods of high inflation, or in the presence of binding financial constraints, or where there is limited room for conventional monetary policy.

The existing literature has also shown that monetary policy can have redistributive effects that amplify its impact on aggregate demand. Expansionary monetary policy tends to redistribute income and wealth from certain groups to others. As the marginal propensity to consume (MPC) differs among households, this redistribution influences total consumption (Auclert et al., 2019). Empirical work by Doepke and Schneider (2006) shows that unanticipated inflation can significantly shift real wealth from lenders to borrowers, thus benefiting the latter at the expense of the former. These redistributive effects matter when it comes to the aggregate outcomes of monetary policy. Kaplan, Moll and Violante (2018) reinforce this view using a Heterogeneous Agent New Keynesian (HANK) model. In their model, many households are "hand-to-mouth" or liquidity-constrained, so when monetary policy stimulates aggregate demand and labour income, it has a much larger effect on consumption than the intertemporal substitution effect of lower interest rates.

Microeconomic studies using household data confirm that balance sheet heterogeneity shapes the transmission of monetary policy. Cloyne, Ferreira and Surico (2020) use UK and US household panel data to show that mortgagors (borrowers) increase their spending sharply when interest rates fall, whereas outright homeowners (with no mortgage) show little change. The cash-flow relief experienced by borrowers stimulates their consumption of durable goods, while those without debt derive a smaller direct benefit. Similarly, using Norwegian administrative data,

Holm, Paul and Tischbirek (2021) find that both low- and high-liquidity households exhibit significant consumption changes in response to rate cuts, but for different reasons. Lower-liquidity (typically indebted) households benefit immediately through reduced interest expenses, whereas high-liquidity (saver) households initially lose interest income and may cut their spending in response.

ChaMP research sheds new light on the redistributive effects of monetary policy. Tightening disproportionately affects highly indebted households (often younger or lower-wealth individuals) through increased debt service burdens, while older savers and households holding fixed rate mortgages tend to be less affected. In contrast, during easing cycles, households with better access to credit, owing to higher levels of wealth and collateral, tend to borrow more and drive up asset prices. While this can support aggregate demand, it may also exacerbate affordability challenges for other groups. Furthermore, monetary policy propagates via labour markets, as accommodative policy boosts credit to financially constrained firms, enabling them to hire more and raise wages, which reduces wage inequality between firms.

Households adjust their consumption behaviour in response to monetary policy shocks. One of the key insights to have emerged from the ChaMP network is that these adjustments occur with much shorter lags than previously thought. Leveraging high-frequency consumption data, ChaMP researchers showed that monetary policy can elicit rapid changes in spending – within days or weeks – closely mirroring the swift responses observed in financial markets. Nonetheless, the timing of these responses varies across sectors: downstream, final-demand sectors react quickly, whereas upstream sectors, employment and prices adjust more gradually. The short lags in consumption response are primarily driven by changes in interest payments, making transmission particularly rapid in environments characterised by high household debt and the prevalence of adjustable rate mortgages. In such settings, transmission is reinforced not only through direct cash flow effects, but also via shifts in borrower behaviour and collateral-based amplification. Consequently, the overall effectiveness of monetary policy in stimulating consumption and aggregate demand is shaped by country-specific housing and mortgage market structures.

ChaMP made another important contribution to our understanding of transmission to households by assembling a novel dataset comprising information obtained from nine European credit registries on households, allowing for the first cross-country characterisation of monetary policy transmission through mortgages and consumer loans using granular data. While AnaCredit has greatly advanced the study of transmission to firms, with many novel findings arising from the ChaMP Research Network being documented in Occasional Paper No 389 “Monetary policy transmission via banks to firms”, the absence of similarly detailed data on household borrowing has hindered a comparable understanding of its role in the transmission mechanism. This new dataset has allowed researchers to understand for the first time how monetary policy affects household borrowing across European countries using harmonised micro-level data. The results show that mortgage markets respond relatively similarly across countries once borrower and loan characteristics are taken into account, whereas consumer credit markets remain much more fragmented. This coordinated effort reveals substantial heterogeneity in transmission across both

countries and borrower types. The pass-through of policy rates to new mortgage lending appears to be relatively homogeneous across euro area countries for loans and borrowers with similar characteristics, while the transmission to consumer loans is markedly more uneven. Institutional factors, such as interest rate caps, competition from non-bank lenders and variation in credit product structures, contribute to these differences, with some countries exhibiting significantly weaker responses of consumer credit rates to changes in monetary policy. Demographic characteristics also matter: mortgage lending to younger borrowers tends to be more sensitive to interest rates, while older borrowers are more affected by rate changes in consumer credit markets.

Existing literature on monetary policy transmission to households has also focused on the role of housing and the mortgage refinancing channel. In the United States, when policy-driven interest rates fall, households with mortgages often can refinance into lower-rate loans, thus freeing up cash flow and stimulating spending. Research has shown that this channel can have sizeable effects, but also that its efficacy depends on housing market conditions and mortgage contract structures. By introducing housing collateral into a DSGE model, Iacoviello (2005) shows that declining interest rates boost house prices and relax borrowing constraints, allowing credit-constrained households to borrow more against home equity, thereby amplifying the impact of monetary policy on the business cycle.

This theoretical insight has been supported by empirical research on the refinancing behaviour of households. Di Maggio et al. (2017) provide direct evidence of the refinancing channel using US mortgage data. Exploiting the staggered timing of interest rate resets on adjustable rate mortgages during the Great Recession, they found that a sizeable drop in mortgage interest payments led to a surge in auto purchases among those borrowers. Meanwhile, fixed rate borrowers benefit only once they refinance, which may be constrained by credit conditions or home equity (and is less common in Europe) (Beraja et al., 2019). Berger et al. (2021) show that, following a prolonged period of low interest rates, a large proportion of homeowners have already refinanced into cheaper mortgages, so subsequent rate cuts have a smaller effect on spending, revealing a non-linear, path-dependent effect of monetary policy. Mortgage market structure and lender behaviour also shape this channel. Benetton, Gavazza and Surico (2025) examine how UK banks responded to a Bank of England funding cost reduction (the Funding for Lending Scheme) and find that banks lowered interest rates on new mortgages but simultaneously raised upfront origination fees. This finding shows that the effects of monetary stimulus can be absorbed or reallocated by banks, depending on their market power. It should be noted that most of this earlier body of research focuses on monetary easing periods, while an important part of ChaMP research includes the 2022-2023 tightening period, thereby significantly contributing to a broader understanding of borrower and lender behaviours in the euro area.

ChaMP research has confirmed that, in the euro area, housing and mortgage markets play a central role in monetary policy transmission, as housing typically represents both the largest asset and the largest liability on household balance sheets. Key structural features of housing markets, such as the prevalence of

adjustable versus fixed rate mortgages, loan maturities, average loan-to-value ratios and homeownership rates, critically influence the intensity and timing of consumption reactions. In general, countries with a higher share of variable rate debt and greater household leverage exhibit faster and stronger transmission to household spending, whereas those featuring a predominance of fixed rate mortgages experience more delayed and muted effects. Importantly, borrowers actively respond to monetary policy, particularly interest rate increases, by refinancing, renegotiating terms or prepaying debt, thereby absorbing part of the rise in interest expenses and cushioning the impact on consumption.

Research has also focused on structural shifts, including those related to climate risk, which give rise to new transmission dynamics (Occasional Paper No 393 "Monetary policy transmission and structural changes" discusses ChaMP's findings on structural changes in greater depth). During periods of monetary tightening, banks tend to raise the risk premium on loans in areas with elevated climate-related exposure, pointing to an emerging "climate risk-taking" channel. At the same time, rising interest rates adversely affect insurers' balance sheets, leading to higher insurance premiums, particularly in disaster-prone regions. These developments suggest that climate-related financial risks shape the transmission of monetary policy through both credit pricing and household borrowing conditions.

Taken together, the findings of the ChaMP Research Network on the transmission of monetary policy provide valuable insights to guide policy decisions along several dimensions. First, the fact that the structure of banking markets matters for monetary policy transmission means that we must be mindful of potential hurdles to effective monetary policy transmission in less competitive banking markets. An integrated and competitive European banking market, coupled with a well-functioning Savings and Investments Union, are key factors to support the effective and even transmission of monetary policy across the euro area.

Second, the increasingly complex interplay between banks and non-bank intermediaries means that policymakers must adopt a system-wide view of monetary transmission. Focusing solely on banks runs the risk of overlooking important leakages or amplifiers of monetary policy. At the same time, ChaMP research shows that there are deep connections between monetary and macroprudential policies. Taken together, these findings point to the need to step up data collection and ensure closer oversight of non-bank financial institutions so as to better anticipate spillovers and unintended effects of monetary policy decisions.

Finally, ChaMP's findings reinforce the now well-established importance of accounting for heterogeneity when analysing monetary policy transmission. While monetary policy is, by design, geared towards aggregate targets, a growing body of research shows how uneven transmission can be. For example, a sharp rate hike might predominantly affect young, highly leveraged families, whereas older households with savings may see little change or even benefit slightly by earning a higher return on their deposits. Besides the redistributive impacts, which are more naturally addressed through fiscal policy, these heterogeneous effects (and even the ensuing fiscal policy response) may undermine the effectiveness of monetary policy in achieving price stability over the medium term. Moreover, being transparent about

these effects in public communications can make policymaking more credible and easier to understand. Accounting for heterogeneity leads to more informed decision-making and can help anchor expectations and prompt complementary actions by other policymakers, thus ensuring that monetary policy achieves its goals with minimal unintended side effects. Greater availability of granular data on household borrowing, saving and consumption in the euro area would greatly support these efforts.

2 Transmission through the financial system

2.1 Bank lending and credit supply

Prepared by Dominic Cucic (Danmarks Nationalbank) and Tamás Briglevics (Magyar Nemzeti Bank)

2.1.1 Bank lending channel

Through the financial sector, monetary policy affects households mainly by altering intermediaries' funding costs, which then feed through to lending rates and credit supply.

Foundational work on the bank lending channel shows that, in the presence of financial frictions, higher policy rates raise banks' funding costs and weaken their balance sheets, leading to higher lending rates and a contraction in loan supply (Bernanke and Blinder, 1988; Kashyap and Stein, 1994; Bernanke and Gertler, 1995). While much of the empirical literature on the bank lending channel has focused on loans to firms, an increasing number of studies have used mortgage markets as a natural laboratory, reflecting both the central role of housing in household balance sheets and the growing availability of granular mortgage-level data (see, for example, Berger et al., 2021; Di Maggio et al., 2017, 2020). The ChaMP Research Network has further advanced our understanding of how the bank lending channel operates through household borrowing.

Shocks to banks' funding and balance sheets affect both mortgage and non-mortgage household credit. A large meta-analysis of VAR studies by Bajzík et al. (2023) shows that monetary policy tightening leads to a persistent decline in credit – particularly household credit – with effects that build gradually and peak only after several years. Affinito et al. (2025) exploit variation in Italian banks' reliance on interbank funding during the global financial crisis, which produced an unexpected negative funding shock unrelated to banks' underlying fundamentals. They show that banks more exposed to the interbank freeze reduced the supply of both mortgage and non-mortgage loans to households. Households borrowing from these banks experienced lower debt-to-income ratios and reduced holdings of real estate and durable goods, while consumption and labour supply showed no statistically significant differences even two years after the shock. Taken together, these results suggest that unexpected credit supply shocks can lead households to adjust primarily through their balance sheets and asset holdings, with consumption responses remaining muted over medium horizons.

In contrast to the evidence from large-scale funding disruptions, monetary policy tightening can affect household spending more rapidly when it operates through non-mortgage credit channels. Using Danish administrative data covering the universe of non-mortgage credit, together with monetary policy shocks, Cucic and Gorea (2026)

study the supply of credit by bank and non-bank lenders. They document that monetary policy tightening triggers a decline in bank credit supply, leading to reductions in disposable income, consumption, car purchases and total assets among households that rely predominantly on bank credit. These findings are consistent with the view that tighter access to consumer credit may translate more directly into spending cutbacks than adjustments operating mainly through housing choices and gradual refinancing. This contrast suggests that the timing and visibility of consumption responses depend on both the nature of the shock and the credit margin through which it operates.

The transmission of monetary policy to households is not impaired by the use of unconventional tools.

Central bank balance sheet policies can affect both credit quantities and the composition of households' interest rate exposure by reshaping banks' portfolio choices. Chavaz et al. (2025) examine quantitative tightening by the Bank of England and show that, as reserves were drained, banks reduced mortgage lending volumes – especially those with weaker liquidity positions – while shifting their remaining lending towards longer-duration fixed rate mortgages. Complementary evidence from Sigmund et al. (2024) shows that ECB-targeted liquidity provision through TLTROs was largely absorbed through balance sheet reallocation by banks, with only limited net effects on lending to households and firms. Together, these findings indicate that balance sheet policies influence how banks manage liquidity and risk, but do not guarantee a proportional expansion or contraction in household credit.

Even when policy rates move into negative territory, conventional interest rate transmission to mortgage rates continues to operate, albeit more weakly, which matters for the calibration of interest rate policy near the lower bound. Kwan et al. (2025) study the pass-through of ECB policy rates to Finnish mortgage rates during the period when policy rates turned negative. Using multiple identification strategies, they show that policy rate cuts continued to pass through to mortgage rates, albeit less strongly than when rates were positive. The reduced pass-through reflects banks' funding structures and the effective lower bound on deposit rates, thereby compressing margins and weakening transmission. This evidence shows how bank funding conditions shape the effectiveness of conventional interest rate policy for households near the lower bound.

The pass-through of funding costs to lending rates is incomplete not only because lenders might not want to transmit the full extent of the funding cost increase, but also because rate hikes induce borrowers to refinance their loans.

Mortgage market evidence suggests that households can mitigate the short-term impact of rate hikes on disposable income by adjusting their mortgage contracts and balance sheets. Adelino et al. (2026) study the Portuguese mortgage market, where most mortgages are adjustable rate contracts that mechanically transmit policy rate changes into mortgage payments. Using population-wide administrative data, they show that households respond to rising rates by renegotiating their contracts, refinancing with other banks or prepaying their loans. These adjustment margins absorb around 17% of the increase in aggregate scheduled mortgage payments that would otherwise occur under full mechanical pass-through. Through this adjustment process, policy rate hikes translate into smaller and more gradual increases in households' actual mortgage repayment burdens, shifting adjustments towards refinancing and repayment rather than an immediate reduction in consumption.

Younger and more educated borrowers are more responsive. Cesnak and Exler (2026) provide further evidence on the role of borrower education. The authors find that university-educated borrowers make fixation choices that are more responsive to expected changes in borrowing conditions, whereas loans mediated through professional financial advisors place greater emphasis on minimizing current borrowing costs, resulting in higher exposure to future interest rate risk.

Overall, the evidence points to an asymmetric transmission of monetary policy to household credit: tightening episodes lead to sharper and more immediate contractions in credit, while expansionary shocks are more muted, reflecting banks' balance sheet adjustments.

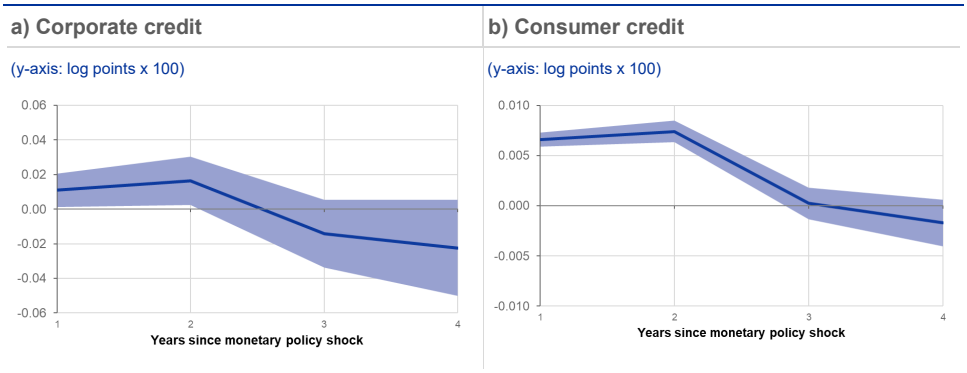
2.1.2 The role of non-bank financial intermediaries

Non-banks can partially offset a decline in bank lending following a monetary tightening episode, although this substitution depends on their funding structure, which can differ greatly across different types of non-bank financial institution.

Non-banks can partially offset the decline in bank lending following a policy rate hike, thereby attenuating the transmission of monetary policy to household economic outcomes. Building on earlier work showing this effect in selected US credit markets (Chen et al., 2018; Xiao and Cornelli, 2020), Cucic and Gorea (2026) document this effect across the universe of consumer credit markets in Denmark. Importantly, the substitution is typically incomplete because non-bank credit remains relatively small in most markets. The leading explanation for why non-banks increase credit supply in response to interest rate hikes lies in how their funding costs respond to monetary policy. In the United States, non-bank mortgage lenders that rely on short-term funding have been shown to benefit from deposit outflows from traditional banks into money market funds, which in turn provide funding to non-bank mortgage lenders (see, for example, Xiao and Cornelli, 2020). In Denmark, Cucic and Gorea (2026) show that credit-specialist NBFIs – including leasing companies, consumer credit firms and specialised finance companies – expand their lending following monetary tightening because they rely more heavily on long-term, relatively rate-insensitive funding (see Chart 1). As a result, they substitute for banks and mitigate, but do not fully offset, the contraction in household borrowing.

Chart 1

Dynamic response of non-bank credit supply to changes in monetary policy



Note: This figure shows the relative effect of a monetary policy shock on non-bank credit supply, compared with bank credit supply for corporate credit (left) and consumer credit (right).
Source: Cucic and Gorea (2026, Appendix H, Figure 3).

Non-bank credit can alter which households retain access to credit following a tightening episode, with potential distributional implications. Cucic and Gorea (2026) show that borrowing relationships with non-bank lenders vary systematically across the household income distribution. Higher-income households are more likely to borrow from both banks and non-banks and exhibit stronger increases in non-bank credit following a tightening cycle, while lower-income households are more likely to rely exclusively on non-bank relationships but exhibit more limited substitution. For policymakers, this implies that shifts in the composition of credit supply across intermediaries can reshape the effects of monetary tightening across households.

Beyond lending volumes, non-banks transmit monetary policy to households through housing-related costs and asset allocation decisions that affect mortgage funding and house prices. Damast et al. (2025) show that higher policy rates reduce insurers' asset values and regulatory capital, leading insurers to raise homeowners' insurance premiums. Because insurance coverage is typically required for mortgage origination and refinancing, higher premiums increase the effective cost of housing finance for households. Along similar lines, Krause and Mazidi (2025) show that ECB quantitative easing induces pension funds and insurers to rebalance away from low-yield government bonds towards covered bonds and real estate, lowering thereby mortgage funding costs and supporting house prices.

In summary, monetary transmission to household credit operates through an interacting system of banks and non-banks centred on housing, with important implications for the timing, strength and incidence of monetary tightening. The bank lending channel continues to play a central role, operating through mortgage rates, housing access and balance sheet adjustments, while non-bank intermediaries can either mitigate or amplify monetary transmission depending on their funding structures and business models. For policymakers, these findings underscore the value of adopting a system-wide perspective on household credit markets, while being careful not to draw broad aggregate or distributional conclusions from what is a still-evolving body of evidence.

2.2 Deposit and funding channels

Prepared by Simone Auer (Banca d'Italia) and Stephen Kho (De Nederlandsche Bank)

The transmission of monetary policy to banks' funding costs is generally sluggish and incomplete.

Understanding and assessing the transmission of monetary policy to banks' funding costs is crucial for policymaking, as it affects banks' intermediation capacity. The cost of funding directly influences intermediaries' decisions on what lending rates to offer to households (and other borrowers), ultimately affecting credit dynamics and, in turn, economic activity.

The pass-through of changes in policy rates to the remuneration paid on deposits, the main source of funding for euro area banks, is generally sluggish and incomplete. Banks generally do not pass on increases in policy rates one-for-one to (overnight) deposit rates, particularly during episodes of monetary policy tightening (see, for example, Hannan and Berger, 1991, and Neumark and Sharpe, 1992, for the United States and De Bondt et al., 2005, for the euro area). The unprecedentedly forceful monetary tightening undertaken by the European Central Bank (ECB) in 2022-23 in response to the resurgence of inflation was likewise characterised by a relatively muted increase in interest rates on deposits.

The limited pass-through to deposit rates reflects both banks' market power and their reliance on deposit funding.

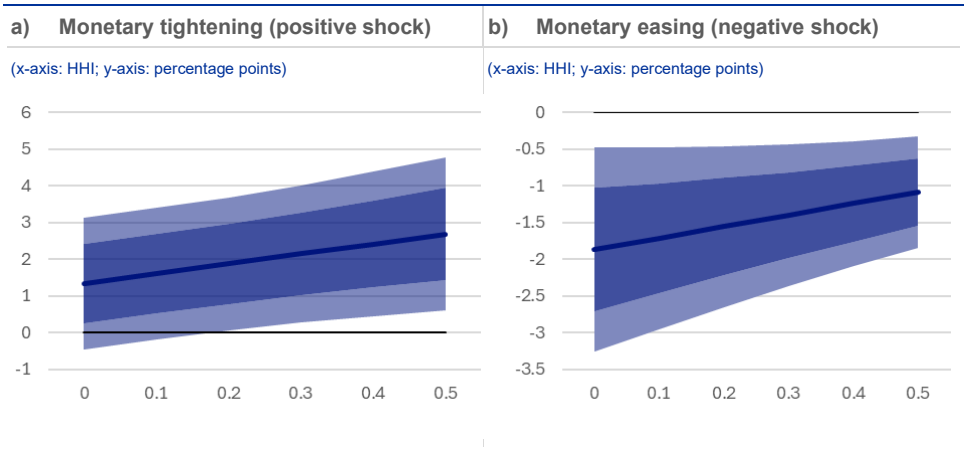
The limited pass-through of monetary policy to deposit rates generally reflects bank market power. According to Drechsler et al. (2017) and Drechsler et al. (2021), banks leverage their market power – which grows as interest rates increase, given that the unremunerated option of holding cash becomes less attractive – and only partially adjust deposit rates in response to increases in policy rates, allowing them to maintain a relatively stable cost of deposit funding. However, as the opportunity cost of holding deposits increases, depositors reallocate their funds towards higher-yielding products. Given that deposits represent a primary funding source for banks, this reallocation also results in a contraction in bank lending.

A divergence in the pass-through of euro area monetary policy to deposit rates emerges between more and less concentrated banking sectors. Kho (2025) finds that, following a surprise change in ECB monetary policy, a temporary wedge opens up between the deposit rates paid in more and less concentrated banking sectors in the euro area. This finding is consistent with the literature on market power, which holds that market power increases as markets become more concentrated. Relying on data on the euro area banking sector from 2003 to 2023, the author shows that this wedge emerges following both rate hikes and rate cuts, with unexpected tightening being passed through more slowly and unexpected easing passed through more quickly in more concentrated banking sectors (see Chart 2). This pattern differs from the linear effect captured by Drechsler et al. (2017) and holds for deposits among both firms and households, also adding to the existing literature that had previously provided evidence mainly for the US deposit market. Along similar lines, Böhnke et al. (2025), examine the determinants of the pass-through to sight deposit

rates at bank level and using German bank data from 2004 to 2024 and find that local market concentration among German banks has been a key factor constraining the pass-through of interest rate changes, although the effect is statistically significant only for corporate deposits (not for households). Furthermore, Beriša et al. (2026) use individual depositor-level data and a plausibly exogenous deposit rate increase in Croatia to show that high-liquidity individuals are the main driver of reallocation to term deposits. The authors find that local deposit market competition makes only a minor contribution in explaining the variation in interest rates and saving patterns across banks, counties and individuals.

Chart 2

Heterogeneous deposit spread response by banking sector concentration



Notes: The figures show the response of bank deposit rates (weighted average of overnight deposits held by households and non-financial corporations) by degree of banking sector concentration (measured in terms of HHI) in response to either a 100-basis-point positive shock or a 100-basis-point negative shock, four months after impact. Shaded areas correspond to 68% and 90% confidence. Source: Kho (2025).

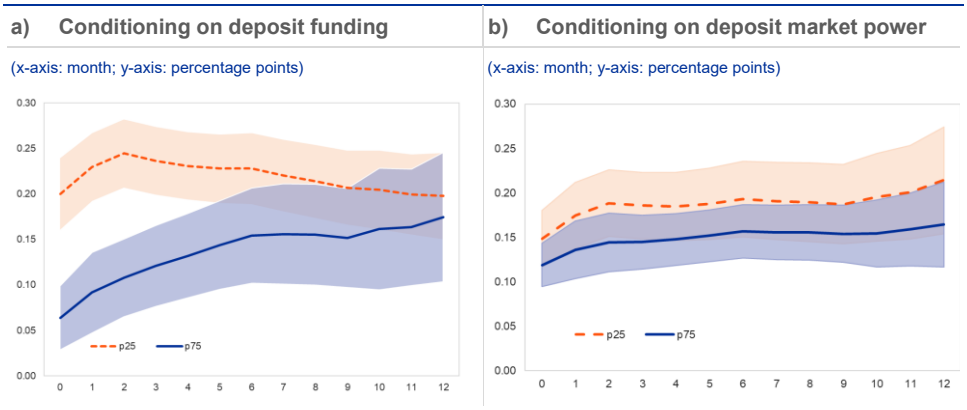
Banks highly reliant on deposit funding may also limit the pass-through of monetary policy to deposit rates. As shown in the literature, banks with a high share of deposits to total liabilities have weaker incentives to attract further deposits by offering higher remuneration (Messer and Niepmann, 2023). If they hold adequate reserves on the asset side, the cost of losing the marginal depositor is relatively lower. Moreover, earlier studies document that a larger deposit base heightens the impact of repricing the entire stock of deposits on interest expenses and profitability, making banks less willing to pass on rate hikes to depositors (Gambacorta, 2008; Eggertsson et al., 2024; Cappelletti et al., 2024).

ChaMP research extends this literature by showing that a higher incidence of deposit funding reduces the pass-through to overnight deposit rates, but only in the short term, while the dampening effect of deposit market power is more persistent and extends to lending rates. Drawing on euro area granular bank-level information from 2007 and 2023 and on state-dependent panel IV local projection, Auer et al. (2026) show that, following a 100-bp increase in the reference rate, a bank with high deposit market power would pass through 6 basis points less to households' overnight deposit rates after 12 months than a bank with low deposit market power (see Chart 3). This dampening effect also extends to mortgage rates. By contrast, the

attenuation in the pass-through associated with higher deposit funding vanishes almost completely over the same time span.

Chart 3

State-dependent pass-through to interest rates on households' overnight deposits



Notes: The figures show the impulse response of interest rates on households' overnight deposits to a monetary policy shock, conditioning separately on deposit funding (panel a) and deposit market power (panel b). The two lines, p25 and p75, denote, respectively, the first and third quartile of the distribution of the conditioning variable. See Auer et al. (2026) for more details.
Source: Auer et al. (2026).

Moreover, the structure of bank funding affects the pricing of credit. Using a rich monthly panel of banks across 19 euro area countries from 2007 to 2023, Bussière et al. (2025) estimate state-dependent local projections to trace the dynamic response of lending rates to monetary policy shocks. They find that banks with a greater reliance on deposit funding exhibit a more muted increase in household lending rates following a monetary policy tightening episode. The gap in responses between banks characterised by high and low deposit ratios peaks about 18 months after the monetary policy shock. These findings suggest that monetary policy has a heterogeneous impact on loan pricing, depending on bank reliance on deposit funding.

The transmission of monetary policy is also shaped by the use of market-priced savings products among households and by banks' cross-selling activities.

The deposit pricing power of banks depends also on the ability and propensity among bank depositors to substitute towards alternative savings products, known as "market-priced savings products". Moving beyond the narrow scope of banking sector concentration, Basten et al. (2025) consider competition across a broader set of savings products. They find that depositors who hold market-priced savings products experience substantially higher pass-through to deposit rates, while banks more exposed to such depositors transmit monetary policy more strongly to deposit outflows and lending. These findings emphasise the importance of outside options for depositors for the deposit channel of monetary policy.

Banks with more depositors participating in market-priced savings exhibit a higher pass-through from monetary policy to deposit rates, and experience a greater impact on deposit withdrawals and on loan growth. Basten et al. (2025) exploit the variation in depositors' use of market-priced savings across Danish banks between 2003 and 2022 and rely on administrative (tax) data covering all deposit accounts in Denmark matched to each depositor's complete financial portfolio. They show that banks pass through a greater share of policy rate changes in municipalities where their depositors hold more market-priced savings. However, because these savers are

more price-sensitive, they reduce their deposits more in response to the same increase in rates. These outflows then propagate to credit supply, as banks whose depositors hold more market-priced savings contract their lending more sharply. These results imply that the households' reliance on market-priced savings matters not only for the risk and return that they receive but also generates spillovers to returns on deposits.

Cross-selling activities can be interpreted as an additional source of market power for banks that also shapes the transmission of monetary policy. Banks price deposits not only to maximise current profits but also to secure future lending opportunities – particularly mortgages – as part of the same client relationship. As a result, deposit pricing reflects the expected net present value of future cross-selling profits. When policy rates rise, these future profits are discounted more heavily, reducing the incentive on banks to offer attractive deposit rates. Conversely, when interest rates are low, the value of cross-selling is higher, motivating banks to accept narrower or even negative deposit spreads in order to retain clients (see, for example, Basten and Mariathasan, 2023, or Eggertsson et al., 2024).

The possibility for banks to cross-sell mortgages and other loans to household depositors at a later stage also strengthens the pass-through of monetary policy to deposit spreads and, in turn, to deposit and loan growth. Using comprehensive data on all Norwegian bank-household relationships from 2004 to 2018, Basten and Juelsrud (2025) show that a one-standard-deviation increase in cross-selling potential raises deposit spreads by up to 0.9 basis points and reduces deposit growth by as much as five percentage points. These effects propagate to loan supply: banks with greater cross-selling opportunities cut loan growth more sharply following policy rate hikes, even after controlling for loan demand.

Ensuring adequate competition in the banking sector is crucial for the efficient transmission of monetary policy.

Overall, ChaMP papers have contributed to our understanding of the role of deposit reliance and various manifestations of market power in influencing the transmission of monetary policy within the euro area. The results indicate that a greater reliance on deposit funding affects the transmission of monetary policy, although these effects tend to be short-lived. Differences in the degree of banking sector concentration also influence the transmission of monetary policy to deposit rates across the euro area, which in turn may affect banking sector profitability and the speed at which bank customers experience the effects of monetary policy changes. In this regard, greater integration of the euro area banking sector could help reduce differences in concentration across banking sectors and further promote a more uniform transmission of monetary policy. Indeed, ensuring adequate competition in the banking sector is crucial for enabling the central bank to calibrate its monetary policy stance effectively and for securing an efficient transmission of its policy impulse to the broader economy.

Banks' cross-selling activities complement the role of deposit market concentration and may also help explain why banks continue to offer loss-making deposits during periods of low interest rates. Regarding the role of market-priced savings, the evidence implies that banks' offering or encouraging the use of these types of savings, for example to make their income stream less policy rate sensitive, could

come at the cost of their deposit franchise value. This in turn might again affect the transmission to deposit rates.

2.3 Monetary policy and financial stability

Prepared by Caterina Mendicino (European Central Bank)

Effective monetary policy requires an integrated and coordinated framework that recognises the interactions between monetary policy and macroprudential tools and explicitly incorporates them into policy design and calibration.

Monetary policy and macroprudential policy interact in shaping credit conditions, aggregate demand and inflation. Several ChaMP papers focus on these interactions, supporting a more integrated view of monetary and macroprudential policy, particularly in environments characterised by high inflation, binding financial constraints or limited scope for conventional monetary policy.

One important result emerging from this line of research is that releases of the countercyclical capital buffer (CCyB) and monetary policy easing are not merely additive in their effects on lending conditions. Instead, they reinforce each other through banks' balance sheets (Jude and Levieuge, 2025). When capital buffers are relaxed, banks' funding constraints ease, allowing policy rate cuts to pass through to lending rates more strongly. Empirically, the authors document that lending rates decline significantly more when CCyB releases accompany monetary easing than when either policy is implemented in isolation. This complementarity is particularly strong when policy rates are already low, suggesting that macroprudential space can enhance monetary transmission precisely when conventional tools face constraints. Capital buffers thus act not only as financial stability instruments but also as effective amplifiers of accommodative monetary policy.

Another meaningful conclusion is that borrower-based macroprudential policy can have first-order macroeconomic effects that work through aggregate demand, and that any monetary policy offset comes with distributional costs. Herrero, Mendicino and Schang (2024) examine loan-to-value (LTV) limits within a heterogeneous-agent New Keynesian framework and show that tighter LTV constraints reduce borrowing capacity, depress consumption and house prices, and lower inflation through aggregate demand channels. These effects are quantitatively significant and operate through general equilibrium mechanisms rather than through narrow credit supply effects alone. Monetary policy accommodation can mitigate the contractionary effects of tighter LTV limits, but at the cost of amplifying redistribution towards more leveraged households.

Finally, there is new evidence that monetary tightening has a substantially stronger negative effect on credit growth during periods of high inflation than during low-inflation regimes (Gregori and Ramos, 2024). At the same time, macroprudential tightening appears to have only limited adverse effects on output and prices. The authors complement these theoretical insights by using a time-varying parameter VAR for Portugal to show that the transmission of monetary and macroprudential policies is state-dependent. Their findings suggest that inflation regimes condition the strength of the credit channel of monetary policy and that macroprudential

instruments may be better suited to addressing financial imbalances without imposing substantial macroeconomic costs. Importantly, the results imply that failing to account for policy interactions risks over- or under-tightening overall financial conditions (Gregori et al., 2026).

These papers convey a consistent message: monetary and macroprudential policies are deeply intertwined. Crucially, the availability of macroprudential tools allows for a better calibration of national policies to local realities and frictions, even under a single monetary policy. Central banks should not treat macroprudential policy as a background constraint but as an integral part of the policy mix that shapes transmission, trade-offs and outcomes. An integrated framework that recognises these interactions can improve the effectiveness of monetary policy while supporting financial stability in an increasingly complex macro-financial environment.

3 Transmission to households: debt, consumption and housing

3.1 Household heterogeneity, redistribution and credit constraints

Prepared by Maria Rodriguez-Moreno (Banco de Espana) and Olivier De Jonghe (European Central Bank and Nationale Bank van België/Banque Nationale de Belgique)

3.1.1 Heterogeneity in household borrowing responses

Granular evidence shows that heterogeneous household characteristics and fragmented consumer credit markets contribute to uneven monetary policy transmission across Europe.

The greater availability of granular data has made it increasingly clear that monetary policy transmission exhibits significant heterogeneity. Aggregate metrics often mask meaningful variation in how households, firms or regions respond to monetary policy, leading to incomplete assessments of its effectiveness. Differences across agents, sectors and countries influence overall outcomes and also have distributional consequences. Recent research has used micro-level data to reveal the mechanisms behind these varied responses, reinforcing the view that monetary transmission must be understood through the lens of economic and behavioural heterogeneity (see, for example, Benetton et al., 2025; Beraja et al., 2019; Cumming and Hubert, 2023; Flodén et al., 2021).

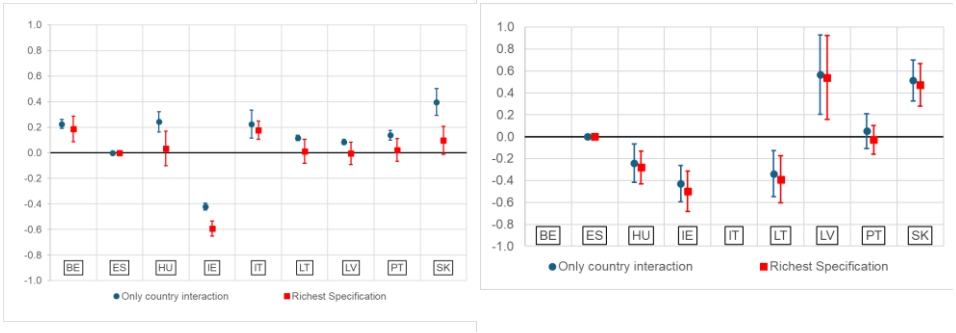
Monetary policy transmission varies significantly across European countries due to institutional differences and demographic structures. A recent ChaMP-wide collective effort (De Jonghe et al., 2026) has provided several new insights into this heterogeneity in monetary policy transmission across Europe by looking at harmonised cross-country household credit data. This study represents the first coordinated use of such data across European countries. By combining granular information from nine national household credit registers (Belgium, Hungary, Ireland, Italy, Latvia, Lithuania, Portugal, Spain and Slovakia) for the period 2022-2024, the study shows how institutional features and demographic structures shape transmission across countries. This coordinated approach allows the authors to identify structural drivers of heterogeneity that are difficult to observe in single-country settings and marks a novel step in understanding household-level transmission within the monetary union.

The data reveal pronounced across- and within-country differences in borrower characteristics, loan maturities and interest rate structures. Mortgage lending is concentrated among households aged 25-44, whereas consumer credit is more evenly distributed across age groups. Maturity profiles and interest rate fixation

practices vary widely across countries, pointing to institutional factors that influence both the channels and the speed of monetary transmission. Overall, the summary statistics reveal substantial heterogeneity in household credit markets across and within countries and across loan products. Consumer credit is far less standardised than mortgage lending, underscoring the need to look beyond aggregate indicators when assessing transmission and household borrowing dynamics.

Chart 4

Cross-country heterogeneity in interest rate pass-through



Notes: Each point reports the estimated difference, relative to Spain, in the pass-through from reference rates to mortgage and consumer loan rates for a given country. Vertical bars show 95% confidence intervals. Blue markers correspond to regressions that include only country–reference rate interactions. Red markers show estimates from the richest specification, which additionally controls for borrower and contract characteristics and allows these characteristics to affect pass-through. Comparing the two sets of estimates illustrates the extent to which cross-country heterogeneity persists once differences in borrower composition and loan design are accounted for. The figure is based on the point estimates in columns (2) and (6) of Tables 3 and 4 of De Jonghe et al. (2026).
Source: De Jonghe et al. (2026).

Monetary policy pass-through is stronger in mortgage markets than in consumer loan markets. A 100-bp increase in benchmark rates leads to a 90-bp increase in the interest rates on newly originated mortgages, compared with a 36-bp increase in the case of new consumer loans. Moreover, monetary policy transmits smoothly through mortgage markets across Europe but does so far less evenly through consumer credit markets (see Chart 4). After controlling for all observable borrower and contract characteristics, most of the cross-country variation disappears in mortgage markets, but not in consumer credit markets. The results also show that younger borrowers are significantly more exposed to the effects of tightening in mortgage markets, underlining the importance of targeted oversight. In an ageing Europe, where the fraction of younger borrowers is shrinking, transmission through this channel may be weakened. The findings also show that contract design, including typical fixation periods, shapes the balance between transmission speed and borrower resilience. By contrast, persistent institutional differences in consumer lending amplify geographic and socio-economic disparities. These patterns point to the value of enhanced transparency, stronger financial literacy initiatives, greater regulatory consistency and closer monitoring of pricing behaviour to ensure that developments in consumer credit do not weaken the overall effectiveness of monetary policy transmission.

An important source of heterogeneity is that households with more wealth and fewer financial constraints tend to exhibit a much stronger response to declines in interest

rates. A ChaMP contribution by Emiris and Koulischer (2023) shows how differences in household balance sheets shape the response to monetary policy. Using granular Belgian credit registry data for the period 2006-2018 and a model that incorporates credit constraints and house prices, the authors show that older households with existing housing wealth account for much of the increase in borrowing when rates fall. Two transmission channels emerge: a direct channel operating through credit markets and intertemporal choices, and an indirect channel whereby stronger housing demand from unconstrained households pushes up house prices, thereby tightening borrowing conditions for younger or more constrained households.

Box 1
OFIs as a source of heterogeneity in consumer credit markets

Prepared by Tamás Briglevics (Magyar Nemzeti Bank)

Building on the ChaMP-wide collective effort to build a harmonised cross-country household credit dataset (De Jonghe et al., 2026), this box examines a key source of heterogeneity in consumer credit transmission: non-bank lenders (formally, other financial institutions, or OFIs).

Across many countries, non-bank lenders (OFIs) represent a significant portion of consumer loan issuance, accounting for over 40% of new contracts between January 2022 and December 2024 (see Chart A). These institutions predominantly provide small-value loans with shorter repayment periods and more frequent rate adjustments when compared with traditional banks. This pattern indicates that OFIs often cater to unique, and sometimes higher-risk, segments of the market.

Empirical evidence shows that the pass-through from reference rates to consumer loan rates charged by OFIs is, on average, close to zero and varies widely across countries. Notably, this cross-country variation is only partly explained by observable contract terms, underscoring the importance of institutional segmentation between banks and non-banks. As a result, differences in credit provision structures can lead to fragmented transmission of monetary policy, even after accounting for borrower profiles and loan design.

Overall, the prevalence, regulatory environment and competitive landscape of OFIs shape the effectiveness of policy transmission, highlighting the importance of considering institutional diversity when analysing transmission in consumer credit markets.

A ChaMP contribution using Danish administrative credit data (see Section 2.1.2) has already shown that non-banks can materially shape monetary transmission (Cucic and Gorea, 2026). Taken together with the newly collected harmonised cross-country evidence, this suggests that both the sign and strength of these effects are likely to vary across countries, reflecting differences in the types of non-bank lenders, their funding models and regulatory regimes. This, in turn, strengthens the case for exploiting harmonised cross-country household credit registers to assess the role of transmission across institutional settings.

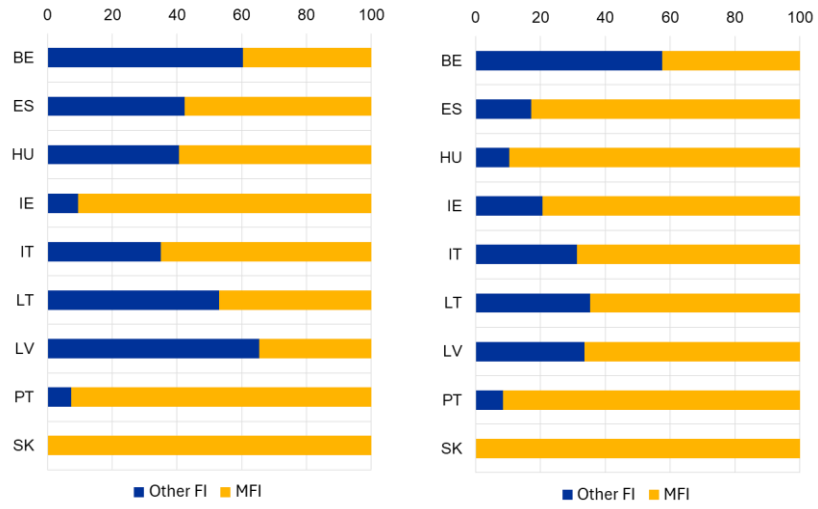
Chart A

Share of OFIs in consumer loans across different countries

a) Number of loans

(percent, by country)

b) Loan amounts



Notes: The figure shows the shares of consumer loans originated by OFIs (other financial institutions) and MFIs (monetary financial institutions). Panel a) shows the number of contracts, while panel b) shows the value of the loans.

3.1.2 Heterogeneity impact on labour income and consumption

Monetary easing reshapes inequality via jobs and wages: it lifts pay at credit-constrained, low-wage firms (reducing gaps across firms) but can widen skill premia within firms.

Monetary policy affects labour income and household consumption through aggregate demand, firm behaviour and labour market dynamics, influencing employment, wages and income risk over the business cycle. Monetary policy also has distributional effects on households that propagate via both wealth and labour income channels. Early discussions in the literature focused on wealth channels, as policy easing typically raises the value of financial assets, including equities (Bernanke and Kuttner, 2005), corporate bonds (Gertler and Karadi, 2015) and government bonds (Hanson and Stein, 2015), which are held disproportionately by higher-wealth households. For most households, however, labour income is the primary source of wealth accumulation, placing employment and wages at the centre of monetary policy transmission. More recent models and empirical evidence show that policy changes influence labour income through their impact on aggregate demand and firm behaviour, with heterogeneous effects across workers (Kaplan et al., 2018; Auclert, 2019; Dolado, Motyovszki and Pappa, 2021; Hubert and Savignac, 2024), highlighting the key role played by employment and wages in the transmission of monetary policy (Slacalek et al., 2020; Lenza and Slacalek, 2024). Consumption responses also vary with income risk, exposure to employment shocks and household indebtedness (Cloyne, Ferreira and Surico, 2020; Cumming and

Hubert, 2023; Flodén et al., 2021). Yet the underlying mechanisms remain insufficiently understood, highlighting the need for more granular evidence on firm- and labour-market heterogeneity in monetary transmission. Several contributions from the ChaMP network help to mitigate this knowledge gap.

Expansionary monetary policy reduces overall labour income inequality, primarily by narrowing wage dispersion across firms. Using a unique Portuguese dataset that links employee-employer data with firm-level credit registry information for the period 1999-2013, Jasova et al. (2025) show that small, young and financially constrained firms, which typically pay lower wages, expand credit and raise wages more strongly following a monetary easing shock. An innovative measure of firm-level credit sensitivity confirms that workers in firms more exposed to monetary policy shocks experience disproportionately larger wage gains. At the same time, an offsetting within-firm pattern emerges: easier monetary conditions tend to widen skill premia and favour college-educated workers, consistent with capital–skill complementarities. Taken together, these findings indicate that monetary policy affects the distribution of labour income through several channels operating both across and within firms. Along similar lines, Bobasu and Repele (2025) show that wages at larger firms adjust more strongly than those at smaller firms in the euro area, with this difference being asymmetric and particularly pronounced during easing episodes.

Firm-level frictions and worker heterogeneity play a central role in understanding the distributional consequences of monetary policy. Policy easing narrows wage gaps across firms and simultaneously widens wage dispersion within firms, implying that aggregate indicators may mask important opposing dynamics (Jasova et al., 2025). For policymakers, the evidence highlights the centrality of the credit channel in shaping labour-market outcomes, particularly where financially constrained firms are prevalent. It also underscores the value of incorporating both firm and worker characteristics, as well as bank-firm credit relationships, into heterogeneous-agent models of monetary transmission. More broadly, the existing evidence also contributes to ongoing discussions about whether and how monetary policy should consider distributional consequences when evaluating its effectiveness. While the results do not point to any significant asymmetries, they do reveal state dependence: the effects of monetary policy on wage inequality through the credit channel are stronger in crisis periods than in normal times.

The distributional consequences of monetary policy also depend on the nature and origin of credit supply shocks. Using the interbank market freeze as an exogenous shock and matching bank-level data with household-bank relationships, Affinito et al. (2025) identify credit supply effects while controlling for demand. Households linked to more exposed banks reduced their liabilities by avoiding new debt and postponing purchases of durable goods, and they were also less likely to buy a first home. However, overall consumption and multiple-home ownership remained stable.

3.2 Monetary policy and consumption

Prepared by Afonso S. Moura (European Central Bank) and Stefano Pica (Banca d'Italia)

3.2.1 The short lags of transmission to consumption

High-frequency data show that the transmission of monetary policy to household consumption unfolds faster than previously thought. The speed of transmission depends on the environment, with high-debt, adjustable-rate environments showing faster responses to shocks.

It has long been established that monetary policy is transmitted with (long) lags (Friedman, 1961). However, several contributions to the ChaMP network have challenged this view, showing that there are actually very short lags in the transmission of monetary policy to household consumption. A unifying feature across these contributions is their reliance on novel, extensive and granular datasets capable of tracking household transactions in real time. Such datasets allow researchers to align monetary policy shocks with spending behaviour at much finer horizons, while capturing the full richness of actual consumption patterns. By uncovering adjustment dynamics that remain hidden in traditional low-frequency datasets, this recent work demonstrates that consumption reacts swiftly to policy changes, reinforcing the value of high-frequency, granular data in guiding policy decisions.

Buda et al. (2025) show that what appear to be long lags in the transmission to consumption at lower frequencies are largely artefacts of time aggregation: when observed with granular data, monetary policy triggers rapid consumption adjustments. The authors gather an unprecedented volume of high-frequency data for Spain to construct daily measures of aggregate consumption, output, investment and employment from bank transactions and administrative records. Contrary to the traditional view that consumption and output are slow-moving variables (Bernanke et al., 2005), Buda et al. show that these variables actually adjust within days or weeks following a monetary policy innovation, closely tracking the rapid movements of financial markets (Gürkaynak et al., 2005; Swanson 2021). By revealing that downstream, final-demand sectors respond almost immediately, while upstream sectors, employment and prices adjust only later, the paper reconciles fast short-run real effects with the long-run lags in inflation and labour markets (see Chart 5). Furthermore, the authors posit that the rapid deterioration of credit conditions – both in terms of expected access and materialised availability of credit – together with a significant decline in consumer confidence, is consistent with the observed fast decline in consumption.

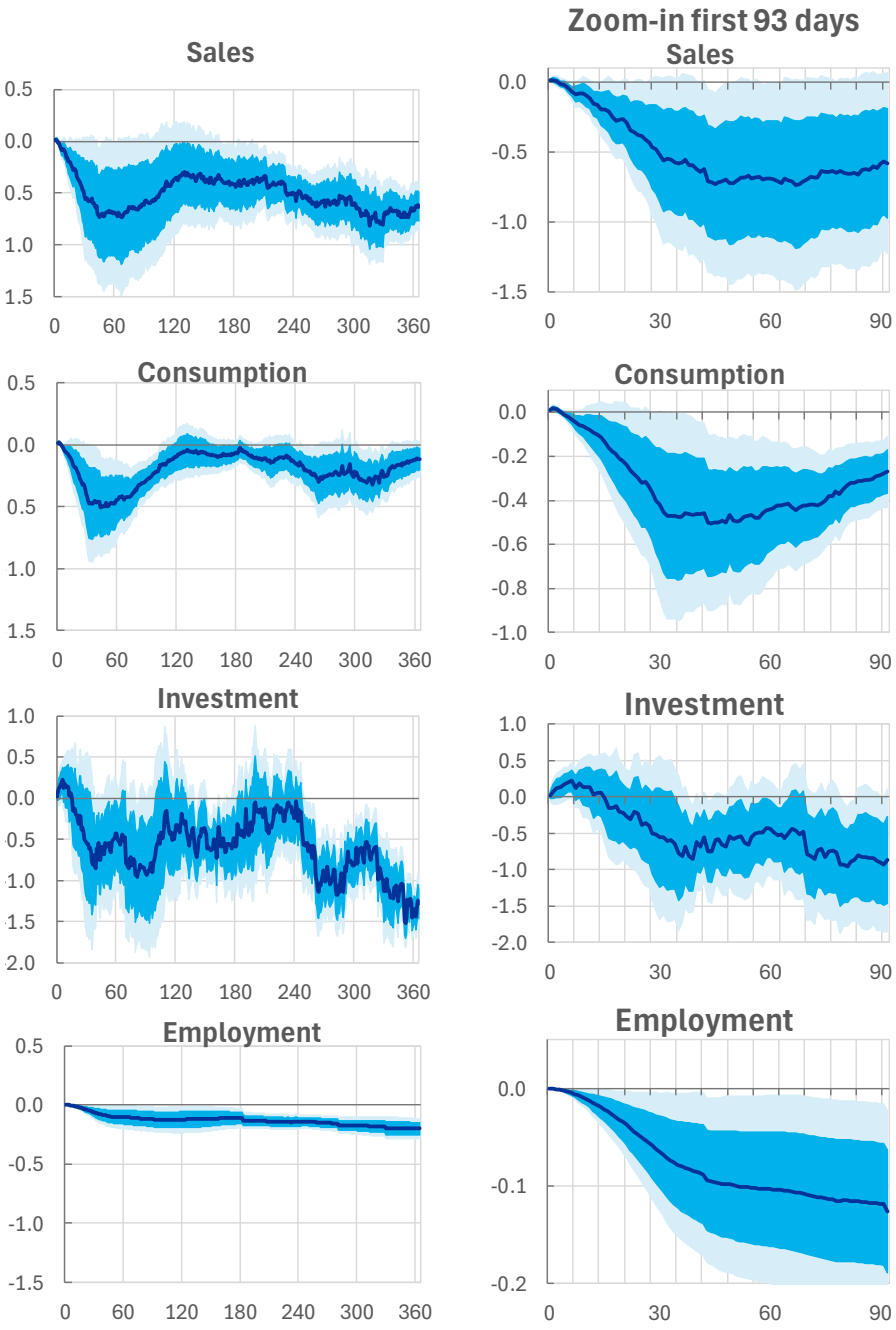
In turn, Ahn, Galaasen and Mæhlum (2024) show that short lags in the transmission of monetary policy to consumption are driven by changes in interest payments, making transmission substantially faster in high-debt, adjustable-rate environments. Using electronic transaction data for Norway, the authors show that cash-flow exposure, stemming from widespread adjustable rate borrowing, induces rapid consumption adjustments that continue to unfold gradually throughout the year following a monetary policy change. These findings point to a strong cash-flow

transmission channel, aligning with recent heterogeneous-agent models (Kaplan et al., 2018) and other empirical studies (Di Maggio et al., 2017; Flodén et al., 2021; Cloyne et al., 2020; Holm et al., 2021).

Chart 5

The short lags of monetary policy transmission

(percentage, x-axis: days)



Notes: Daily impulse response functions are standardised to a one-standard deviation high-frequency monetary policy shock. See Buda et al. (2025) for more information. The dark blue shaded area represents the 68% confidence band, while the light blue shaded area represents the 90% confidence band. The left panel charts consider impulse response functions over one year, while the right panel charts show the first 93 days.
Source Buda et al. (2025).

3.2.2 Interaction with mortgages

The transmission of monetary policy to consumption is strongest in countries with high household debt and adjustable rate mortgages, operating not just through cash-flow effects but also through borrower behaviour and housing-collateral amplification.

The effectiveness of monetary policy transmission to consumption and aggregate demand is shaped by country-specific features of housing and mortgage markets. Household indebtedness and the prevalence of specific mortgage types appear to be especially relevant (see, among others, Calza et al., 2013; Corsetti et al., 2022). Recent studies within the ChaMP network exploring this transmission mechanism converge on several crucial findings, emphasising the heterogeneous effects that are often mediated by borrower behaviour and collateral dynamics rather than operating solely through a purely mechanical cash-flow channel.

First, the transmission of monetary policy varies systematically with country-specific structural characteristics, such as the share of adjustable rate mortgages (ARMs), household indebtedness, loan-to-value (LTV) ratios and homeownership rates. In the euro area, Pica (2026) finds that economies with higher ARM shares, homeownership rates and LTV ratios exhibit stronger consumption responses and greater mortgage rate sensitivity following a monetary shock. By comparing households holding adjustable rate mortgages with variable payments with those holding adjustable rate mortgages with fixed instalments or fixed rate mortgages, both before and after the ECB's 2022 tightening cycle, Infante et al. (2026) document substantial increases in mortgage payments and large, economically meaningful consumption responses. Moreover, countries with higher levels of all these structural characteristics tend to exhibit stronger monetary policy transmission, as a larger share of high-marginal-propensity-to-consume households face tighter borrowing constraints while paying higher interest expenses on their existing mortgages. Similar patterns hold among a larger panel of advanced economies (Di Casola and Groethe, 2026), where transmission is shown to be stronger in countries with higher debt-to-disposable-income ratios and a larger fraction of young households living alone. These cross-country differences are further substantiated by analyses of granular credit registry data across European countries, which reveal pronounced heterogeneity in borrower characteristics, loan maturities and interest rate structures (De Jonghe et al., 2026). These institutional features fundamentally shape both the channels and speed of monetary transmission (see Section 3.1)

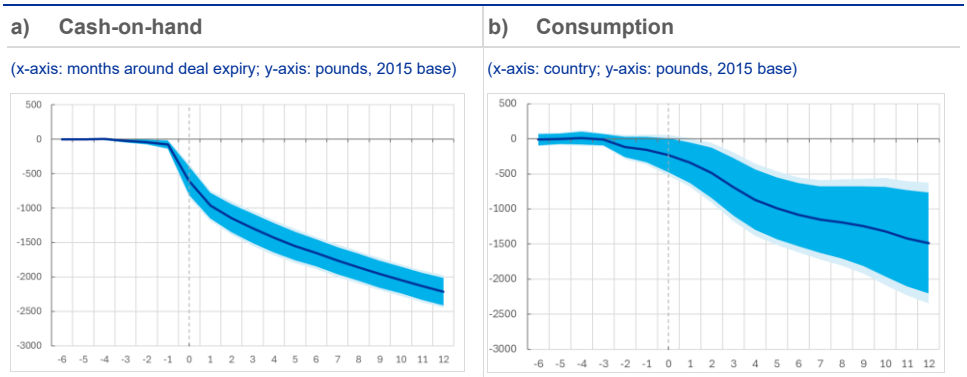
Bracke et al. (2024) examine mortgage refinancing behaviour in the United Kingdom, where mortgages require frequent and staggered refinancing. They find that when interest rates rise, approximately one-third of mortgagors actively adjust their loans by extending loan terms or extracting home equity. These adjustments enable households to sustain consumption, boost savings and consolidate unsecured debt. Households that successfully adjust their mortgages mitigate negative cash-flow shocks, while those that do not experience significant and persistent reductions in spending. Adelino et al. (2026), using data on the Portuguese mortgage market, likewise document active reactions among borrowers during tightening periods

aimed at mitigating the impact of rising instalments on their adjustable rate mortgages.

Finally, the household debt channel – through which interest rate changes affect consumption via household debt – plays a key role in monetary policy transmission. Using six million observations on the staggered expiration of UK mortgage deals, combined with administrative data on mortgages and consumption, Foulis et al. (2026) provide causal estimates of how rate cuts affect indebted households. A 1 percentage-point rate cut increases consumption by 3% among affected households, equivalent to 0.6% of GDP – comparable to the aggregate effect of monetary policy on consumption (see Chart 6). Importantly, the paper shows that roughly half of this large response operates through a "household financial accelerator": when rates fall, house prices rise, increasing collateral values and reducing mortgage spreads, thus enabling households to borrow more.

Chart 6

Impulse responses of cash-on-hand and consumption to interest rate changes



Notes: Each panel plots impulse responses from the baseline monthly regression. For horizons h∈[−6,12] relative to deal expiry (t=0), the figures plot the cumulative change in the outcome (pounds, 2015 base) per 1 percentage-point change in the interest rate. Outcomes are expressed relative to the pre-period mean over months h∈[−6,−4]. Shaded bands denote 90% and 95% confidence intervals. Panel a): cash-on-hand for the universe of mortgagors. Panel b): reweighted consumption for households with app-based spending data.
Source: Foulis et al. (2026).

3.3 Monetary policy and housing

Prepared by Alicia Aguilar (Banco de España) and Emil Bandoni (Central Bank of Ireland and University College Dublin)

Housing-related transmission of monetary policy is complex, heterogeneous and often non-linear, **reflecting** important interactions with household finance**s**, institutional frictions and climate risk, and with distributional implications.

The housing channel of monetary policy transmission has recently evolved beyond the classical collateral and credit mechanisms. The seminal work of Iacoviello (2005) emphasises how house prices affect borrowing constraints through their role as collateral. Jordà, Schularick and Taylor (2015) document the historical importance of credit and housing cycles for macroeconomic dynamics. A more recent contribution by Kaplan, Moll and Violante (2018) incorporates household heterogeneity and reveals that the effects of housing wealth on consumption vary significantly across the income and wealth distribution. ChaMP research builds on this literature by showing that the transmission strength, sign and distributional incidence vary

substantially with the composition of market participants, the structure of financial contracts, regulatory settings and exposure to climate risks.

Non-bank financial institutions, such as investment funds and insurance corporations, introduce new amplification mechanisms that deepen and reshape the traditional housing-related channels of monetary policy transmission. In addition to the well-known role of collateral constraints in amplifying housing and business-cycle fluctuations, ChaMP research points to the importance of housing market composition and home insurance features in shaping the transmission of monetary policy. Bandoni et al. (2025) document that demand shocks from institutional investors produce persistent effects on euro area house prices and mortgage lending, as these investors tend to purchase more assets following monetary easing. Using US data, Damast et al. (2025) show that tighter monetary policy raises homeowners' insurance premiums through its effects on insurers' balance sheets, thus amplifying the impact of rate hikes on house prices and mortgage applications.

Climate-related risk premia in mortgage and insurance pricing further link monetary policy to housing through long-duration, state-dependent channels. Bonfim and Zhao (2026) show that Portuguese banks charge a small, but systematic, wildfire risk premium on mortgages in high-hazard areas. This premium increases when monetary policy tightens, consistent with a climate risk-taking channel of monetary policy (Altavilla et al., 2024). Additionally, the insurance supply channel identified by Damast et al. (2025) using US data interacts with climate risk exposure and is particularly pronounced in areas highly exposed to the risk of natural disasters, where insurance costs account for a substantial share of housing costs.

The housing and employment channels, as well as conventional and unconventional monetary policy, play different roles in the transmission to the real economy. Battistini et al. (2025) explore the role of the housing market in the transmission of both conventional and unconventional monetary policy across euro area regions. The authors show that unconventional shocks produce larger and more delayed effects, particularly on the GDP deflator and house prices, and that, between 2015 and 2019, unconventional policy was the main driver of housing dynamics. Cañizares et al. (2026) study the non-linear effects of monetary policy shocks on housing prices and investment using Slovak data. The results point to a lack of contractionary response to conventional monetary policy tightening during recessions and in periods of low interest rates and low inflation.

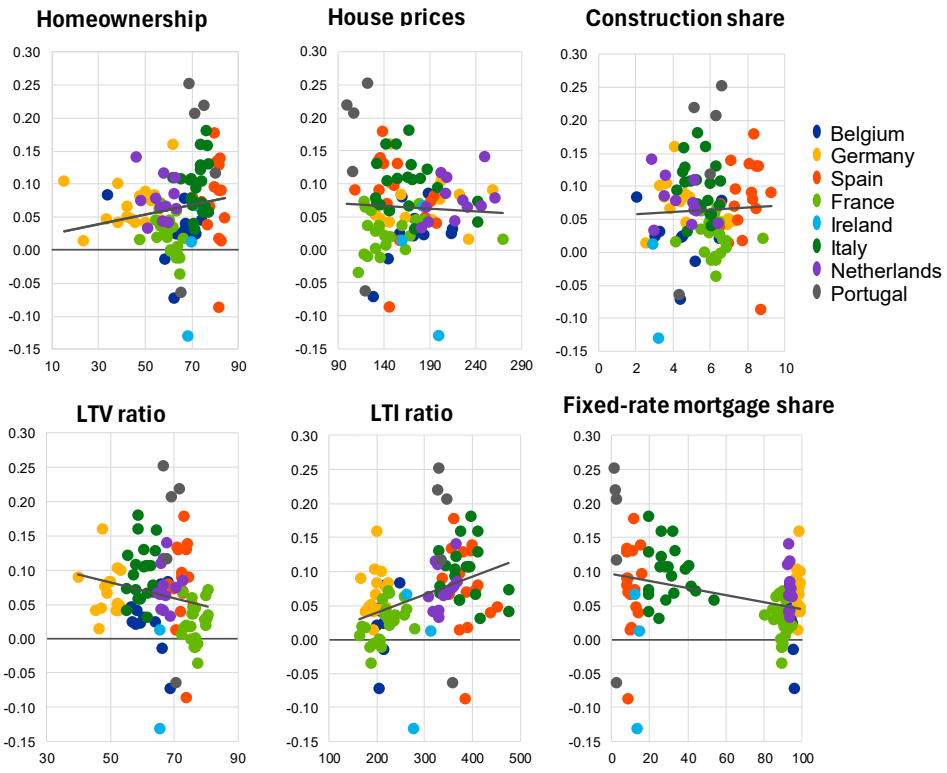
Heterogeneity in income, wealth, indebtedness, mortgage types and leverage – both within and across regions – significantly shapes the transmission of monetary policy. Battistini et al. (2025) find that house price responses to monetary easing are larger in regions with lower labour income and, albeit less so, in regions with higher homeownership. A similar effect is found to exist for regional GDP (see Chart 7). Battistini et al. (2025) also show that household indebtedness plays a limited role in house price transmission, while likewise showing, consistently with Iacoviello (2005), that household leverage matters. Herrero et al. (2024) use a Heterogeneous Agent New Keynesian model with housing and collateral constraints to show that more accommodative monetary policy substantially mitigates both the aggregate and distributional costs of leverage (loan-to-value) limits, especially among highly

leveraged borrowers, highlighting the importance of ensuring coordination between macroprudential and monetary policy (see Section 2.3). Both Battistini et al. (2025) and Cañizares et al. (2026) find that a higher prevalence of adjustable rate mortgages strengthens transmission to activity via cash-flow effects (Kaplan, Moll and Violante, 2018), while the empirical link to house price responses is mixed (see Section 3.2.2 for a broader discussion on the interactions between monetary policy and mortgages). Adelino et al. (2026) use data on the Portuguese mortgage market, where 92% of mortgages are variable rate. During the tightening cycle (2022-2023), rate resets triggered sharp borrower adjustments, with notable increases in mortgage renegotiations, borrowers switching banks and partial or full prepayments. These active adjustments collectively offset approximately 17% of the increase in scheduled payments implied by the full mechanical pass-through of policy rates, illustrating how borrower behaviour and market frictions can mitigate transmission in settings of almost perfect pass-through arising from variable interest rates (see Section 3.2.2).

Chart 7

Impact of monetary policy on regional GDP and regional housing-related factors

(y-axis: cumulative percentage change in GDP; x-axis: various units, see Notes)



Notes: The y-axis reports the cumulative percentage change in GDP three years after an accommodative monetary policy shock. The x-axis reports the homeownership rate (percent), house prices, construction share of GDP (percent), LTV ratio (percent), LTI ratio (percent), and the share of fixed rate loans (percent of total loans). Each dot represents a NUTS 2 region in a sample of eight euro area countries (Belgium, Germany, Spain, France, Ireland, Italy, the Netherlands and Portugal).
Source: Battistini et al. (2025).

3.4 Heterogeneous spillovers to entrepreneurs

Prepared by Annalisa Ferrando (European Central Bank)

The transmission of monetary policy to corporate and household borrowers is deeply intertwined, both through entrepreneurs' wealth and through adjustments in banks' balance sheets.

By shaping household wealth and cash flows, monetary policy transmission to households inevitably spills over to corporate borrowing, notably among small entrepreneurs. At the same time, banks' lending decisions to firms are also driven by the simultaneous effects on household borrowers. Two papers produced by the ChaMP network shed light on this dimension of monetary policy transmission by examining different channels through which monetary policy affects inequality among entrepreneurs (Delis et al., 2025) and the allocation of resources across firms (Agarwal et al., 2026).[1] A common theme is that monetary policy works through a heterogeneous bank credit channel. In the first paper, bank liquidity and capital determine how strongly an owner's wealth influences loan approval. In the second, banks' exposure to household mortgage cash flows shapes how they reallocate credit when interest rates change. During expansionary monetary policy episodes, less wealthy owners and smaller firms benefit disproportionately, as their chances of obtaining a loan improve the most. Conversely, they are the first to lose access to credit (being credit constrained) when policy tightens. The same monetary policy shock therefore has stronger real and distributional effects on SMEs and on entrepreneurs with low personal wealth than on larger firms or wealthy owners.

Owner wealth is a key transmission channel through which monetary policy affects credit extended to small businesses, with implications also for entrepreneurial inequality. Using detailed loan application data from a large Northern European bank, along with firm-level responses from the Survey on the Access to Finance of Enterprises (SAFE) covering several banks and euro area countries, Delis et al. (2025) show that expansionary monetary policy mainly increases the probability of loan approval for entrepreneurs at the lower end of the wealth distribution, with only a minimal effect on wealthier owners, whose approval rates are already high. These effects are driven by banks' credit supply rather than by firm quality. The authors also show that receiving a loan has a causal, positive effect on the applicant's future wealth, underscoring the distributional implications of monetary policy: by shaping credit access, policy indirectly influences the evolution of entrepreneurs' income and wealth.

Household mortgage cash flows can cushion or amplify the impact of monetary tightening on small-firm financing. Using Spanish credit registry data, Agarwal et al. (2026) show that when interest rates rise, some households accelerate mortgage amortisation or prepay their loans, thereby freeing up liquidity for banks. Rather than shrinking their balance sheets, banks reallocate this liquidity to business lending, particularly towards micro and small firms. Therefore, the transmission of monetary

[1] Several papers have shown that monetary transmission to households and entrepreneurs is tightly intertwined, as small businesses and their owners share balance sheets. Household wealth and entrepreneurship studies (Hurst and Lusardi, 2004; Avery, Bostic and Samolyk, 1998; Schmalz, Sraer and Thesmar, 2017) show that owners' personal wealth and housing collateral strongly shape business entry and investment.

policy depends not only on banks' funding costs and capital positions, but also on their exposure to, and the behaviour of, household borrowers.

Taken together, these findings reveal sizeable spillovers from monetary policy to SMEs and to entrepreneurs' wealth and opportunities. Despite their different emphases, both papers converge on the issue of monetary policy spillovers: SMEs and business owners' wealth are not a direct target of central bank decisions, yet they bear significant indirect consequences through multiple channels of the bank credit mechanism. This highlights the importance of incorporating distributional and sectoral effects into the design and evaluation of monetary policy.[2]

[2] See, for example, Auclert (2019) and Holm, Paul and Tischbirek (2021).

4 Main findings, policy implications and future research

Prepared by Diana Bonfim (European Central Bank) and Laura Moretti (Central Bank of Ireland)

The ChaMP research network has meaningfully advanced our understanding of the transmission of monetary policy to households through the financial system. While a significant part of the pre-existing literature focused on the United States or the United Kingdom, largely owing to data constraints in other regions, research conducted by economists at European central banks has helped deepen our understanding of how monetary policy is transmitted to households through their borrowing and saving decisions.

Banks play a key role in the transmission of monetary policy to households. Changes in policy rates affect banks' funding costs, which feed through to lending rates and credit supply. However, pass-through to household borrowing costs is incomplete and heterogeneous across several dimensions. As shown in the literature, European banks with substantial deposit market power or highly reliant on deposit funding adjust deposit and loan rates sluggishly, thereby dampening and delaying transmission. Novel research also emphasises the role of cross-selling strategies, showing that transmission goes beyond direct effects on interest rates. Banks anticipate future profits from bundling financial products and therefore have fewer incentives to offer attractive deposit rates when policy rates rise, as the expected net present value of future cross-selling profits is discounted more heavily. This affects their responses to monetary tightening and the subsequent provision of credit.

The increasing role of non-banks, both worldwide and in the euro area, carries important implications for the transmission of monetary policy to households. Different types of non-bank intermediaries, such as finance companies, investment funds and insurers, can either amplify or buffer monetary policy shocks. For example, deposit outflows from banks to money market funds during episodes of monetary tightening can serve to finance non-bank lenders, partly offsetting the contraction in bank credit. Insurers and pension funds also adjust their portfolios, as higher interest rates erode insurers' capital and drive up mortgage and home insurance costs, whereas quantitative easing induces institutional investors to buy housing-related assets, thus easing mortgage funding.

Given the prominent role played by the financial system in the transmission of monetary policy, its regulation inevitably shapes that transmission process as well. ChaMP research also helps shed light on the interactions between monetary and macroprudential policies, showing that an integrated view of these policies may be necessary, especially in environments characterised by high inflation, binding financial constraints or limited space for conventional policy.

A key contribution to our understanding of transmission to households has been to put together data comprising information from nine European credit registries on households, thus allowing for the first ever characterisation of monetary policy transmission through mortgages and consumer loans using granular cross-country data for Europe. While AnaCredit has significantly expanded our knowledge of transmission to firms, the lack of similarly detailed data on household borrowing has meant that transmission to households remains less well understood. This collective project documents uneven transmission across countries and borrowers. While the pass-through of policy rates to mortgage lending rates is relatively uniform across euro area members (despite large differences in mortgage design across countries), pass-through to consumer loan rates is far more heterogeneous. Institutional differences, such as the presence of interest rate caps, competition from non-banks and product diversity, mean that consumer credit rates in some countries react much less (or much more) to ECB policy changes than others. Demographics also play a role, as younger borrowers tend to face stronger interest rate pass-through on mortgages, whereas older borrowers experience larger rate effects on consumer credit.

ChaMP research also shows that monetary policy produces significant redistributive effects, which may have political economy implications by redistributing income and borrowing capacity across households. Monetary tightening disproportionately affects highly indebted, typically younger or lower-wealth households through higher debt service costs, while older savers or those with fixed rate debt are less affected. Conversely, during a monetary easing cycle, households with easier access to credit, who are often wealthier and own more collateral, borrow more and drive up asset prices, which can improve aggregate demand but also worsen affordability for others. Furthermore, monetary policy propagates via labour markets, as accommodative policy boosts credit to financially constrained firms, enabling them to expand employment and raise wages, thus reducing wage inequality between firms.

Households change their behaviour as consumers in response to monetary policy shocks. The ChaMP Research Network has made a valuable contribution in this regard by showing that these changes occur with much shorter lags than previously thought. The availability of novel high-frequency data on consumption allows researchers to document immediate reactions that are not visible with data at lower frequencies. These data show that monetary policy actually triggers rapid consumption adjustments, within days or weeks, closely tracking the rapid reactions observed in financial markets. However, there are differences in timing. Downstream, final-demand sectors adjust very quickly, while upstream sectors, employment and prices adjust with some degree of lag. The short lags in transmission to consumption are driven by changes in interest payments, making transmission faster in environments characterised by high debt and adjustable rate loans. In these environments, transmission to consumption is stronger not only through cash-flow effects, but also through changes in borrower behaviour and housing-collateral amplification. As such, the effectiveness of monetary policy transmission to consumption and aggregate demand is shaped by country-specific features of housing and mortgage markets.

Indeed, housing and mortgage markets are central to the transmission of monetary policy, as housing is typically households' largest asset and liability. Structural features of housing finance, such as the prevalence of adjustable rate mortgages (ARMs) relative to fixed rate mortgages, loan maturities, average loan-to-value ratios and homeownership rates, critically shape the strength and speed of transmission to consumption. In general, countries with a higher prevalence of variable rate debt and higher household leverage experience more immediate and potent effects of policy changes on household spending, while those with predominantly fixed rate mortgages see slower, more gradual impacts. Borrowers play an active role in responding to monetary policy, notably to rate hikes, by renegotiating or refinancing mortgages and prepaying debt. These adjustments absorb a sizeable share of the potential increase in interest expenses, thereby mitigating the impact on consumption.

Emerging structural challenges, such as climate-related financial risks, add new layers to monetary policy transmission. When policy tightens, banks tend to increase the extra interest premium they require for loans in high climate-risk areas, suggesting a possible "climate risk-taking" channel. Furthermore, higher interest rates adversely affect insurers' balance sheets, leading to higher insurance premiums, especially in disaster-prone regions, which in turn raises the cost of mortgage borrowing in those areas.

Taken together, these findings are informative in guiding policy decisions. First, the fact that the structure of banking markets matters for transmission highlights the need to be mindful of potential hurdles to achieving effective monetary policy transmission in less competitive markets. An integrated and competitive European banking market, together with a well-functioning Savings and Investments Union, can support the effective and even transmission of monetary policy across the euro area.

Second, the increasingly complex interplay between banks and non-bank intermediaries implies that policymakers should adopt a system-wide view of monetary transmission. Focusing solely on traditional banks may overlook important leakages or amplifiers of policy. At the same time, ChaMP research shows that there are deep connections between monetary and macroprudential policies. Taken together, these findings support a discussion on the need to extend oversight and data collection on non-banks, so as to better anticipate spillovers and the unintended effects of monetary policy decisions.

Third, ChaMP findings reinforce the now well-established view that heterogeneity needs to be acknowledged if we are to fully understand monetary policy transmission. While monetary policy is by design geared towards aggregate objectives, a growing body of research shows how uneven transmission can be. For example, a sharp rate hike might predominantly affect young, highly leveraged families, whereas older households with savings may see little change or even benefit slightly by earning higher returns on their deposits. Besides the redistributive impacts, which are more naturally addressed through fiscal policy, these heterogeneous effects (or even the fiscal policy response) may erode the effectiveness of monetary policy in achieving price stability over the medium term.

Moreover, being transparent about these effects in public communications can make policymaking more credible and easier to understand. Accounting for heterogeneity leads to more informed decision-making and can help anchor expectations and prompt complementary actions by other policymakers, thus ensuring that monetary policy achieves its goals with minimal unintended side effects. Greater availability of granular data on household borrowing, saving and consumption in the euro area would greatly enhance these efforts.

Despite the significant progress made in advancing our understanding of the transmission of monetary policy to households, several new challenges need to be addressed in future research. While ChaMP has been instrumental in moving from macro-based knowledge on transmission to granular-based evidence, the new findings that have emerged need to be embedded in macroeconomic models. In this sense, after having gone from macro to micro thanks to improved data and methodological tools, the next step should be to move from micro back to macro. The new evidence on heterogeneous household responses, bank market power and non-bank channels calls for richer models. Heterogeneous Agent New Keynesian (HANK) models augmented with banking sectors provide a natural setting for this to happen. By embedding features such as borrower and saver heterogeneity, differing marginal propensities to consume and bank balance sheet constraints into forecasting and policy analysis models, central banks will be better equipped to estimate the transmission and effectiveness of their decisions more accurately, capturing non-linear effects and distributional impacts.

Furthermore, recent developments such as digital assets and artificial intelligence have the potential to reshape the financial system, and indeed the broader economy. Further research is needed to understand whether these developments will ultimately strengthen or weaken monetary policy transmission.

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Diana Bonfim
European Central Bank, Frankfurt am Main, Germany; email: diana.bonfim@ecb.europa.eu

Laura Moretti
Central Bank of Ireland, Dublin, Ireland; email: laura.moretti@centralbank.ie

Alicia Aguilar
Banco de España, Madrid, Spain; email: alicia.aguilar@bde.es

Simone Auer
Banca d'Italia, Rome, Italy; email: simone.auer@bancaditalia.it

Emil Bandoni
Central Bank of Ireland, Dublin, Ireland; email: emil.bandoni@centralbank.ie

Tamás Briglevics
Magyar Nemzeti Bank, Budapest, Hungary; email: briglevicst@mnb.hu

Dominic Cucic
Danmarks Nationalbank, Copenhagen, Denmark; email: dc@nationalbanken.dk

Annalisa Ferrando
European Central Bank, Frankfurt am Main, Germany; email: annalisa.ferrando@ecb.europa.eu

Olivier De Jonghe
European Central Bank Frankfurt am Main, Germany; Nationale Bank van België/Banque Nationale de Belgique, Brussels, Belgium; email: olivier.dejonghe@ecb.europa.eu

Stephen Kho
De Nederlandsche Bank, Amsterdam, The Netherlands; email: s.s.h.kho@dnb.nl

Caterina Mendicino
European Central Bank, Frankfurt am Main, Germany; email: caterina.mendicino@ecb.europa.eu

Maria Rodriguez-Moreno
Banco de España, Madrid, Spain; email: maria.rodriguezmoreno@bde.es

Stefano Pica
Banca d'Italia, Rome, Italy; email: stefano.pica@bancaditalia.it

Afonso S. Moura
European Central Bank, Frankfurt am Main, Germany; email: afonso.smoura@ecb.europa.eu

Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

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