

STUDY

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Monetary Dialogue Papers, June 2023



Interaction between price stability and financial stability

Compilation of papers



Supporting monetary policy scrutiny



Economic Governance and EMU Scrutiny Unit (EGOV)
Directorate-General for Internal Policies
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Interaction between price stability and financial stability

Compilation of papers

Monetary Dialogue June 2023

Abstract

Following recent episodes of stress in the banking sector in the US and Switzerland, the ECB's role in safeguarding financial stability is under scrutiny. The ECB has claimed that no trade-off exists between its primary mandate on maintaining price stability and safeguarding financial stability. Furthermore, the 2021 monetary policy strategy review confirmed that financial stability is a pre-condition for financial stability, and vice-versa. Yet, further interest rate hikes may still give lead to headwinds for the financial sector.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, analysing the implications of financial stability on the ECB's conduct of its monetary policy.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

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Amid price stability and financial stability: Some questions and answers

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Two Sides of the Same Sparkly Coin? Disinflation and Financial Market Jitters amid Monetary Tightening

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CONTENTS

MONETARY POLICY AND FINANCIAL STABILITY	7
Karl WHELAN	
IS MONETARY TIGHTENING A THREAT TO FINANCIAL STABILITY?	29
Christophe BLOT	
Jérôme CREEL	
François GEEROLF	
AMID PRICE STABILITY AND FINANCIAL STABILITY: SOME QUESTIONS AND ANSWERS	61
Luigi BONATTI	
Andrea FRACASSO	
Roberto TAMBORINI	
TWO SIDES OF THE SAME SPARKLY COIN? DISINFLATION AND FINANCIAL MARKET JITTERS AMID MONETARY TIGHTENING	89
Christian GLOCKER	
Stefan SCHIMAN-VUKAN	
Thomas URL	



Monetary policy and financial stability

Karl WHELAN



Abstract

Monetary policy tightening has led to a sharp steepening of the yield curve and this has had a negative impact on banks that were not well-positioned to cope with this shock. This paper reviews current banking tensions and argues that they are unlikely to have a major impact on the ECB's monetary policy decisions in the current cycle.

This document was provided by the Economic Governance and EMU Scrutiny Unit at the request of the Committee on Economic and Monetary Affairs (ECON) ahead of the Monetary Dialogue with the ECB President on 5 June 2023.

CONTENTS

LIST OF ABBREVIATIONS	10
LIST OF FIGURES	11
EXECUTIVE SUMMARY	12
1. INTRODUCTION	13
2. THE ECB AND FINANCIAL STABILITY	14
3. INTEREST RATES AND BANK PROFITS	16
4. COMPARING THE US AND EURO AREA	20
4.1. Why has Europe been different?	20
4.2. Risks for euro area financial stability	22
5. IMPACT ON MARKET EXPECTATIONS	25
6. CONCLUSION	26
REFERENCES	27

LIST OF ABBREVIATIONS

BLS	Bank Lending Survey
BRRD	Bank Recovery and Resolution Directive
CMDI	Bank's crisis management and deposit insurance
ECB	European Central Bank
EDIS	European Deposit Insurance Scheme
ELA	Emergency Liquidity Assistance
Fed	Federal Reserve
FOMC	Federal Open Market Committee
LCR	Liquidity coverage ratio
MMMF	Money market mutual funds
NSFR	Net stable funding ratio
SVB	Silicon Valley Bank
TFEU	Treaty on the Functioning of the European Union
US	United States

LIST OF FIGURES

Figure 1: Cost of borrowing for non-financial corporations (orange) and for house purchase (blue)	18
Figure 2: Interest rates paid on commercial bank deposits of various maturities	18
Figure 3: Overnight deposits as a share of total euro area commercial bank deposits	19
Figure 4: Net percentage of banks reporting the impact of ECB interest rate decisions on different aspects of bank profitability	19
Figure 5: Year-over-year growth rate of deposits at US commercial banks	24
Figure 6: Year-over-year growth rate of deposits at euro area commercial banks	24
Figure 7: Forward rates for AAA-rated bonds in February (Blue) and May (Orange)	25

EXECUTIVE SUMMARY

- **The simultaneous monetary policy tightening from major central banks around the world has led to a sharp steepening of the yield curve.** This has had a negative impact on financial institutions that were not well-positioned to cope with this shock.
- **This is the first period of monetary tightening and banking tensions experienced by the ECB since it took over as supervisor of the euro area's banks.**
- **Financial stability and price stability are not preconditions for each other.** The global financial crisis occurred after a long period of price stability and previous eras of financial stability have coincided with relatively high inflation.
- **There are concerns that the ECB's joint mandates relating to price stability and financial stability could influence monetary policy in a way that sees inflation stay higher for longer.** This concern does not seem valid because the ECB has a clear legal mandate with price stability as its primary objective.
- **If financial tensions were to escalate substantially, then the right policy for both price stability and financial stability would involve cutting interest rates.** The ECB's price stability objective relates to the medium-term horizon and it would need to factor in the negative impact on inflation of severe financial tensions.
- **Traditionally, it was thought that monetary policy tightening was bad for bank profitability because bank assets have longer maturities than bank liabilities.** However, the current tightening in the euro area is improving bank profits because it is raising net interest margins. Interest rates on loans are rising faster than the interest rates banks pay on deposits.
- **Euro area banks are also holding large amounts in the Eurosystem's deposit facility because of the ECB's asset purchase programmes.** The switch from charging negative rates on deposits to compensating them at a positive rate is also providing a boost to bank profits.
- **This year's US bank failures do not necessarily signal a wave of bank failures in the euro area.** One reason is that banking supervisory standards and applications of regulations were weaker for the failing US banks than the approach that is being applied in the euro area.
- **The absence of a large retail money market mutual fund sector in the euro area may also explain the relative stability of bank deposits in Europe relative to the US.** The failing US banks experienced a "push" factor due to their poor risk management and also a "pull" factor due to the attractiveness of retail money market funds now paying higher interest rates.
- **Markets and analysts do not see the banking sector tensions as changing the ECB's monetary policy in the coming year.** As with a few months ago, markets think policy rates will peak in July and start to fall next year.
- **There are still some areas where the euro area could improve its policies in relation to bank crisis management and deposit insurance (CMDI).** The Commission's recent proposals are welcome but steps to establish a common euro area deposit insurance scheme and to streamline the lender of last resort process would also help.

1. INTRODUCTION

Like all central banks, the European Central Bank (ECB) has a responsibility for monetary policy as well as playing a key role in maintaining financial stability. The latter role has grown in recent years as the ECB has become the direct supervisor significant banks in the euro area, playing an important role in stress testing the banking system and in deciding how to deal with failing banks. These tasks have been added to the traditional role that all central banks play in acting as a lender of last resort to troubled banks.

One issue raised by these multiple roles is there may be times when the goals of monetary policy, such as price stability, come into tension with the right actions to ease financial instabilities. There is a modern tradition of central bankers suggesting that this tension does not exist. For example, the ECB's 2021 monetary policy strategy review states "*Financial stability is a precondition for price stability and vice versa.*" This is false on both counts. The global financial crisis of 2008/09 came after a long period of price stability. For the converse case, one can also look back to periods after the Second World War when high average rates of inflation coexisted with years of banking stability.

So, like most things in central banking, the relationship between price stability and financial stability is a complex one and may occasionally involve trade-offs. For the ECB, the choice as to which of its goals it needs to prioritise is simpler than for other central banks because it has a clear mandate of price stability being its primary objective. With banking sector instability evident in the United States in recent months and the controversial failure of Credit Suisse perhaps increasing concerns about the health of other large European banks, it is fair to ask whether the ECB continuing its aggressive monetary policy tightening will lead to a new European financial crisis.

My assessment is that, as of now, there is no great tension between price stability and financial stability. Higher interest rates are designed to slow inflation via many different mechanisms. Negative effects on various aspects of the banking sector, leading it to reduce the supply of credit, is one of those mechanisms. So, the impact on the banking sector is mainly a feature of monetary policy rather than a bug. If the current global banking tensions reach full-scale crisis level, then there will also likely not be tensions because banking crises have a very negative effect on the economy and such a crisis would likely result in a rapid decline in inflation, thus allowing monetary policy to ease.

This paper discusses the interaction between monetary policy and financial stability in light of recent tensions in the global banking sector. Section 2 discusses the Eurosystem's mandates in relation to price stability and financial stability. Section 3 describes the mechanisms through which monetary policy affects the stability of the banking sector, with a particular focus on the mechanisms at play as we emerge from a long period of very low interest rates. It is argued that the current euro area monetary tightening is having a positive influence on bank profitability. Section 4 discusses the recent banking tensions in the US and describes some differences between the failing banks in the US and banks in the euro area. Section 5 briefly discusses the impact of recent tensions on the outlook for the ECB's monetary policy.

2. THE ECB AND FINANCIAL STABILITY

If you based your assessment of the Eurosystem's role in relation to financial stability on the European Treaties, it may seem that this role was relatively minimal. Article 127 of the Treaty on the Functioning of the European Union (TFEU) states that the Eurosystem "*shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system*" while Article 25 of the ECB protocol states that "*the ECB may perform specific tasks concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings.*" Other articles state that the ECB may "hold consultations" or "offer advice" on financial stability issues.

Despite these minimalist beginnings, the ECB is now the crucial body charged with maintaining financial stability in the euro area. Since 2014, the ECB has been the direct supervisory authority for significant commercial banks. The ECB plays a key role in the European Systemic Risk Board, which is responsible for the macroprudential oversight of the EU financial system and the prevention and mitigation of systemic risk, with the ECB President chairing its board.

After the proposal to appoint the ECB as the direct supervisor of the euro area's banks was made at the June 2012 summit of euro area leaders, there was an active debate in European policy circles (including at the ECON committee) about this decision. Some felt that assigning the ECB responsibility for banking supervision could undermine its commitment to its goal of price stability. In my briefing paper on this topic, Whelan (2012), I argued for the benefits of central banks being banking supervisors and I think the arguments in that paper look stronger from today's perspective.

One reason why it is important for central banks to act as supervisors to the banking system is that central banks need to act as lenders of last resort. For public money to be used efficiently during a banking crisis, it is vital that the lender of last resort has a comprehensive picture of the institutions requesting liquidity. This facilitates the fast decision-making that is required during crisis periods and reduces the chances of making loans to institutions that are insolvent rather than just illiquid.

The crisis at Northern Rock in 2007 is a well-known example of how emergency lending decisions can be poorly executed. Supervision of all financial institutions in the UK had been given to a separate Financial Services Authority and the Bank of England was not well informed about Northern Rock's situation. This led to an inefficient response from the Bank of England to requests for liquidity assistance. This was one of the factors that contributed to the decision to return responsibility for banking supervision to the Bank of England.

The ECB's misadventures with Emergency Liquidity Assistance (ELA) during the euro crisis also point to the problems that occur when central banks are providing emergency lending to banks they are not fully informed about. Would the ECB Governing Council have approved the provision of enormous amounts of ELA for Anglo Irish Bank in 2009 and 2010 if they had a full appreciation of the bank's problems? Similarly, it is not clear that the ECB understood what it was getting in to when it approved ELA to the two largest banks in Cyprus in 2012.

Another benefit of central banks being bank supervisors is that information gained in the supervisory process can be useful in formulating monetary policy. Central banks monitor current bank lending conditions as well as future lending plans. The obvious external signs of this monitoring of lending conditions are surveys such as the ECB's Bank Lending Survey and the US Federal Reserve (Fed)'s Senior Loan Officer Survey.

While the ECB has ring-fenced communication between monetary policy and banking supervision, there is evidence to suggest that more qualitative information from the supervisory process is also

useful for monetary policy purposes. Federal Reserve economists Peek, Rosengren and Tootell (1999) showed that confidential information from supervisors can improve forecasts of inflation and unemployment. They argued that this information was actively used by members of the Federal Open Market Committee (FOMC) and that the information is best accessed directly by the central bank rather than indirectly through a separate regulator. For these reasons, I believe the so-called “Chinese walls” system that was set up to limit communication between the supervisory section of the ECB and the monetary policy section was possibly a mistake.

The ECB’s monetary policy strategy review in 2021 acknowledged the important role that financial sector issues should play in the formulation of monetary policy and recommended *“a more systematic evaluation of the longer-term build-up of financial vulnerabilities and imbalances and their possible implications for the tail risks to output and inflation.”*

But what about conflicts in pursuing the two different goals of price stability and financial stability? Could monetary policy decisions be distorted by a central bank having close involvement with the banking sector so that it decides to set low interest rates to assist weak banks?¹ These circumstances seem unlikely to ever apply to the ECB. Its clear primary objective of maintaining price stability means concerns such as financial stability cannot be used as reasons to set monetary policy in a way that deliberately allows inflation to be higher than necessary over the medium-term.

As of now, there is no obvious contradiction for the ECB between the pursuit of price stability and financial stability. Monetary policy is being used to cool an economy to restrain inflation and tighter financial conditions that induce difficulties for some financial institutions are part of this process. If this results in individual banks getting into difficulties, then the tools made available via the Bank Recovery and Resolution Directive (BRRD) can be used to solve them.

Of course, if financial difficulties reach a point where these problems are acting as a serious constraint on the economy or we are moving towards a systemic banking crisis, one could imagine the possibility of greater tensions between the goals of price stability and financial stability. However, monetary policy must be set in a forward-looking manner and the ECB’s strategy has a medium-term rather than short-term orientation for its goal of targeting price stability. Systemic banking crises have a large deflationary effect on economies. Most likely, if banking tensions were to accelerate, then cutting interest rates would be the right policy both for financial stability and for medium-term price stability.

¹ See Goodhart (2000) for a comprehensive summary of both sides of this debate from a pre-global-financial crisis viewpoint.

3. INTEREST RATES AND BANK PROFITS

It has long been understood that one of the mechanisms through which monetary policy affects the economy is through its impact on the banking sector. Higher policy rates increase the interest rates that banks charge on loans and usually result in a restricted supply of credit. But there are ongoing research questions around how exactly monetary policy interacts with the banking system. For example, there is the question of how increases in interest rates affect the profitability and solvency of banks.

The traditional answer to this question was that monetary policy tightening was bad for both bank profitability and solvency. Banks engage in what is known as “maturity transformation”, meaning the average maturity of their assets exceeds the average maturity of their liabilities. This can mean that the interest costs associated with a bank’s liabilities tend to rise more during monetary tightening episodes than the corresponding interest earnings from their assets. This will be particularly true if banks hold a lot of long-term fixed-rate assets previously purchased at low yields, such as fixed-rate mortgages or government bonds. Downward re-valuations of these assets could threaten a bank’s solvency. Banks that wish to maintain their capital ratios will tend to respond to lower profits and a reduction in their capital by tightening credit. Also, to the extent that threats to solvency raise concerns for those who provide funding to the bank, a monetary tightening could lead to liquidity problems. These mechanisms have been seen at work in recent US bank failures.

Another negative aspect of monetary tightening for bank profits is the increase in the credit risk of their loans. With higher costs of funding, banks have to raise interest rates on loans and this makes it more likely that borrowers will default. This additional risk also makes banks more reluctant to issue loans and thus adds to a tightening of credit conditions.

However, there are counterpoints to this traditional view of banks as being negatively affected by monetary tightening. Dreschler, Savov and Schnabl (2019) presented evidence showing that net interest margins for US banks did not vary much with the federal funds rate. On the liability side, short-term deposit funding from retail customers has always tended to be “sticky” and not very sensitive to market interest rates. For this reason, interest rates on deposits move less than one-for-one with monetary policy rates. On the asset side, banks also have assets that can be re-priced as interest rates increase such as variable rate mortgages and short-term securities. Dreschler, Savov and Schnabl show that net interest margins for US banks have historically not varied much with monetary policy rates.

There are also several unique factors about the current monetary tightening that point towards it most likely having a positive impact on bank profits, particularly in the euro area. First, the current tightening follows an unprecedented period for monetary policy in which interest rates were very low and expected to stay that way for a long time. Unlike previous times when monetary policy rates were expected to only be temporarily low, the low-for-long environment meant the yield curve was largely flat rather than upward sloping. This made it harder for banks to earn profits just by having assets with longer maturities than their liabilities.

Second, in contrast to the traditional story, the current increase in market rates is allowing banks to increase their net interest margins.² In the era when interest rates were very low, banks would have had to charge negative interest rates on deposits to maintain historical net interest margins. This was particularly true in the euro area due to the ECB’s policy of imposing negative interest rates on deposits

² ECB Vice-President Luis de Guindos made this point at the 16 March 2023 post-Governing Council press conference. <https://www.ecb.europa.eu/press/pressconf/2023/html/ecb.is230316~6c10b087b5.en.html>

with the Eurosystem. However, while it was possible for banks to apply negative rates to large corporate deposits, they decided it was not possible to impose such charges on retail depositors.

Figures 1 and 2 illustrate how net interest margins for euro area banks are increasing. Figure 1 shows the average cost of borrowing for non-financial corporations and for households purchasing homes, as calculated by the ECB. Since early 2022, both have risen by at least 200 basis points. Figure 2 shows interest rates offered by euro area banks on deposits of various maturities. ECB statistics show that overnight deposits currently account for about 60% of total deposits and interest rates on these accounts have remained below 0.25%. Interest rates on longer-term deposits have risen by more, but still by less than the interest rates being charged by banks. Taken together, these figures imply a substantial increase in net interest margins.

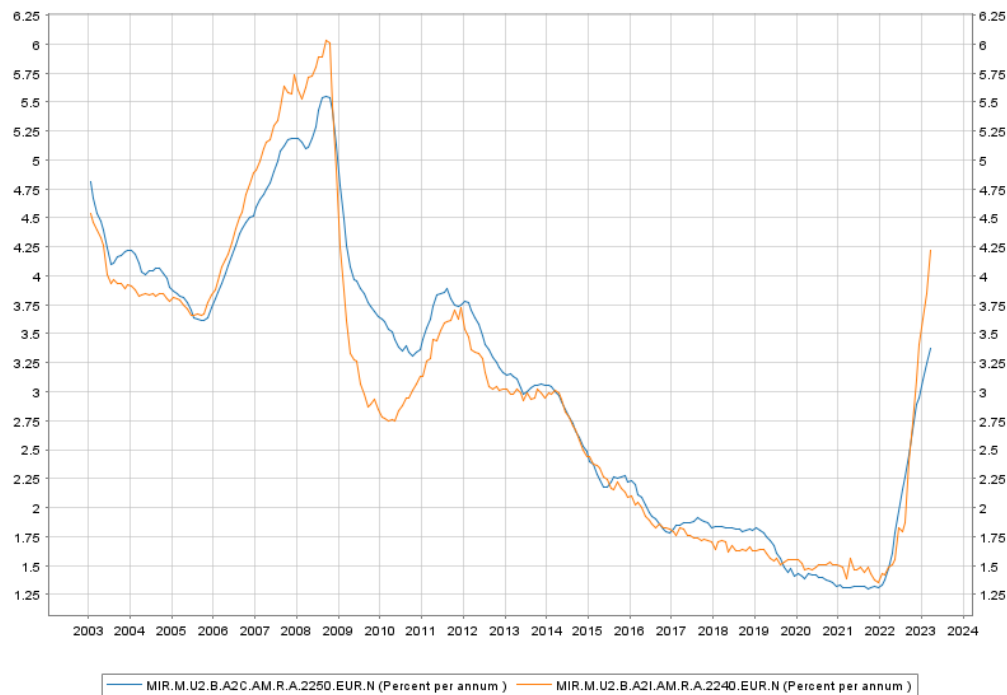
Over time, if interest rates remain above the historically low levels that prevailed in recent years, there will likely be upward pressure on bank funding costs due to depositors shifting away from overnight deposits to longer-term deposits with higher interest rates. Figure 3 shows the share of euro area bank deposits that have an overnight maturity. This share has declined a bit in recent months but it is still well above the levels that prevailed prior to 2015 and the introduction of quantitative easing programmes.

In addition to higher net interest margins on their lending activities, banks are also benefiting from the large stock of deposits they hold with the Eurosystem, which were created by the ECB's asset purchase programmes, going from costing them the negative deposit rate of minus 0.50% to earning them (at present) 3.25%. With over €4 trillion in the deposit facility, this change on its own will raise annual profits of euro area banks by about €160 billion.

Further evidence of the positive impact of monetary policy on bank profits comes from the ECB's Bank Lending Survey (BLS). For the latest survey, taken during the first quarter, the ECB added some ad hoc questions about how its policies have affected banks. Figure 4 repeats the figure from the survey describing how banks believe monetary policy is affecting their profit margins. The chart reports net percentages values, so a positive number here shows the percentage of banks stating the item has been positively affected minus the percentage stating it has been negatively affected. The chart shows that while banks expect tighter monetary policy to have some negative effects on profits due to its effect on factors such as lending volumes, capital losses and loan impairments, the overall impact on bank profitability is positive due to its impact on net interest margins.

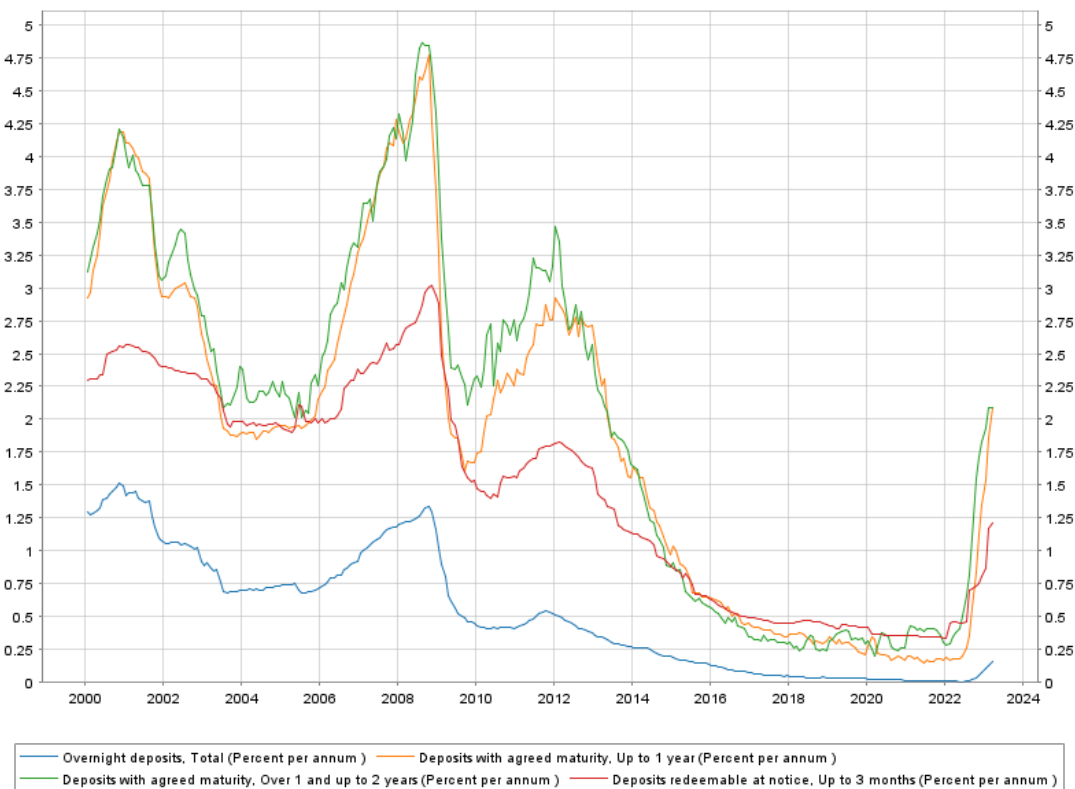
Elsewhere, the BLS reports widespread declines in the demand for credit from firms and households, with higher interest rates reported by banks to be the principal reason. Banks are also reporting tightening of lending standards and higher rejection rates for loan applications, with higher credit risk and changes in the bank appetite for risk being cited as the principal reasons. So, while the current monetary tightening has been good for bank profits, its overall effect on the supply of credit has been in line with what we would expect.

Figure 1: Cost of borrowing for non-financial corporations (orange) and for house purchase (blue)



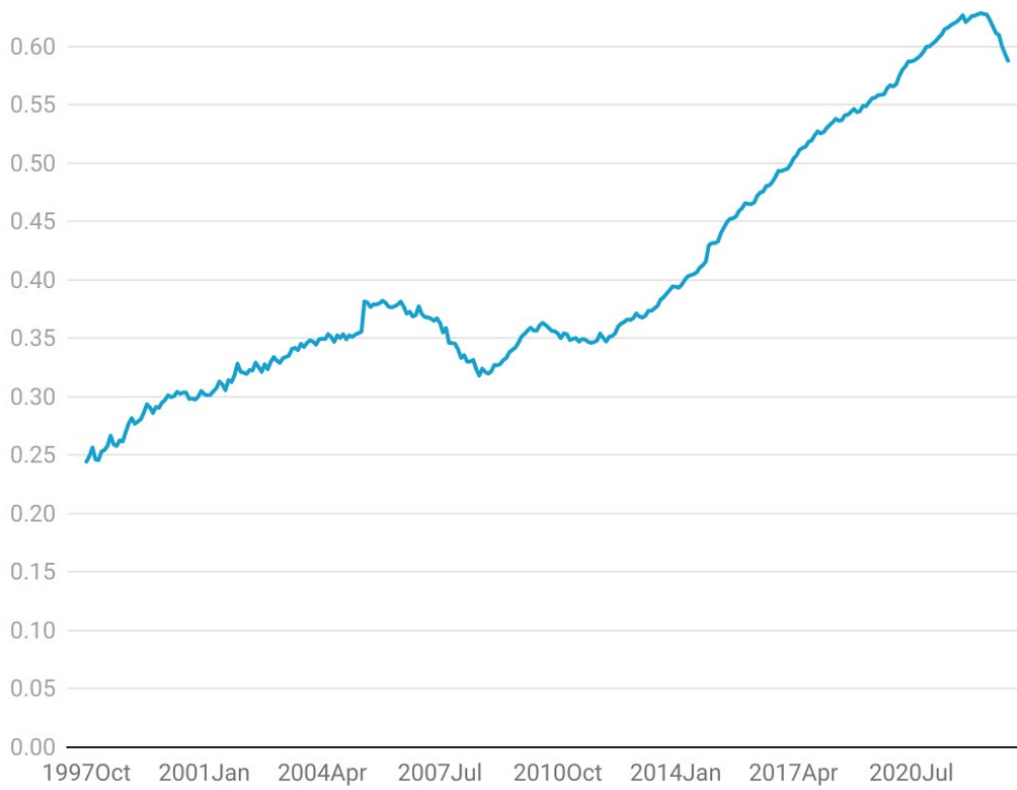
Source: ECB Statistical Data Warehouse.

Figure 2: Interest rates paid on commercial bank deposits of various maturities



Source: ECB Statistical Data Warehouse.

Figure 3: Overnight deposits as a share of total euro area commercial bank deposits

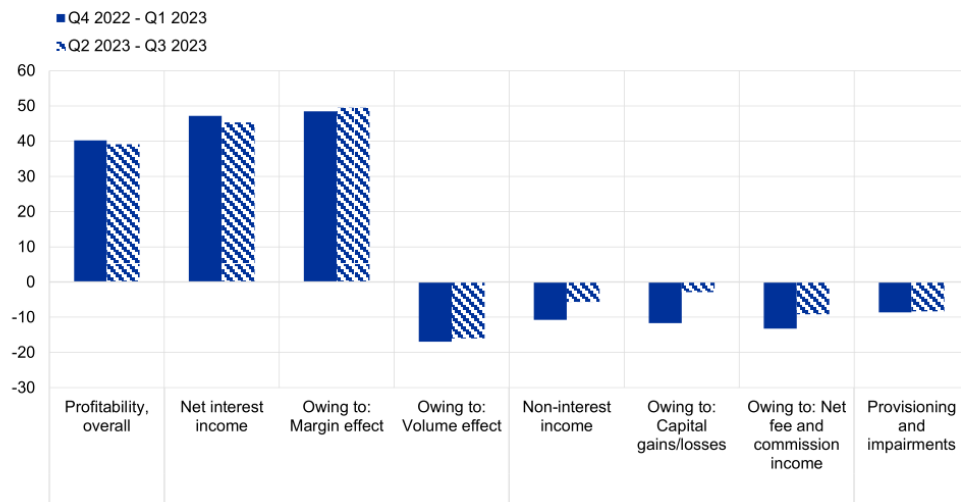


Source: Author's calculations based on data from ECB Statistical Data Warehouse.

Figure 4: Net percentage of banks reporting the impact of ECB interest rate decisions on different aspects of bank profitability

Impact of ECB interest rate decisions on euro area bank profitability

(net percentages of banks; over the past six months and the next six months)



Notes: The net percentages refer to the difference between the sum of the percentages of banks responding "increased considerably" and "increased somewhat" and the sum of the percentages of banks responding "decreased somewhat" and "decreased considerably". The dashed bars denote expectations indicated by banks in the current round.

Source: ECB Bank Lending Survey.

4. COMPARING THE US AND EURO AREA

Here, I compare the banking situation in the US and the euro area. First, I discuss the banking tensions in the US and discuss why the euro area has not experienced the same problems. Second, I describe some remaining risks that exist for banking stability in the euro area.

4.1. Why has Europe been different?

While I have stressed that the current monetary tightening has largely been positive for bank profitability in the euro area, it still needs to be acknowledged that global monetary tightening has caused some serious tensions in parts of the banking system, most notably in the United States.

There have been three high-profile bank failures in the US (Silicon Valley Bank, Signature Bank and First Republic) and recent months have seen a significant reduction in deposits in the US banking system. The most recent data show deposits at US commercial banks down about 5% relative to a year earlier (see Figure 5). This type of deposit contraction is unusual and did not occur in the US during the global financial crisis. Deposits are also contracting in the euro area but at a slower pace than in the US and slower than seen in Europe during the global financial crisis and the euro crisis. (See Figure 6). More generally, there are fewer signs of financial stress in the European banking system than in the US.

There are a few potential explanations for this difference.

1. Better banking supervision in Europe

A recurring theme in the information released about the three US banks that have failed in 2023 is that the banks were badly run and poorly supervised. The Fed's report on Silicon Valley Bank (SVB) acknowledges both the extensive management failures within the bank and the negligence of the Fed's supervisors.³ SVB made a series of risk management mistakes, including relying too much on a particular type of technology business to provide most of its deposit base, having a high share of its deposits be uninsured and investing a large fraction of its assets in long-term fixed rate securities without hedging any of the corresponding interest rate risk. With the latter a threat to solvency and the former a threat to liquidity, the bank was an accident waiting to happen.

The poor nature of the Fed's supervision of SVB was not an accident. In response to President Trump's Economic Growth, Regulatory Relief, and Consumer Protection Act in 2018, the Fed shifted its supervisory approach in a way that, to quote the Fed's SVB report *"impeded effective supervision by reducing standards, increasing complexity, and promoting a less assertive supervisory approach."* In particular, the Fed only maintained its "enhanced prudential standards" for the eight US banks labelled as global systemically important banks. Crucially, this meant that banks like SVB no longer had to satisfy the Liquidity Coverage Ratio (LCR) or Net Stable Funding Ratios (NSFR), which were key liquidity requirements brought in as part of the Basel 3 process. The LCR requires banks to have a stock of "high-quality liquid assets" that will allow it to meet their short-term obligations during a stress scenario of 30 days of significant outflows. The NSFR placed restrictions on the extent to which banks could fund themselves with "non-sticky" funding such as uninsured deposits.

Enforcement of these requirements would have uncovered serious problems with the SVB's liquidity management and perhaps have prevented it from failing. Weak management and supervision could also be seen with the other two failing banks, with Signature Bank being too reliant on business from the failing cryptocurrency sector and First Republic relying too much on uninsured deposits.

³ The Fed's report on SVB is available at <https://www.federalreserve.gov/publications/files/svb-review-20230428.pdf>

In contrast, all of the euro area's major banks have to satisfy the LCR and NSFR. These banks also have to co-operate with regular stress tests that run through the implications of various risky scenarios. These scenarios have included how European banks would respond to a large increase in interest rates.⁴ There may well be some European banks that will fail in the coming months but, at present, it appears the ECB's supervision of the sector has been superior to the corresponding US agencies.

The other banking event that has created concerns is the failure of Credit Suisse, leading to its takeover by UBS and the write-off of subordinated bonds. The fact that Credit Suisse's equity was not written to zero while subordinated bonds were written off raised concerns about how any future European bank failures would be handled but the euro area authorities have been clear to signal that the hierarchy of creditor claims established by the BRRD will be respected in any future resolution of a euro area bank.

The failure of Credit Suisse also raised questions about whether other large European banks could fail in a similar way. I can't claim to know the business models of all large European banks but my assessment is that Credit Suisse was most likely a *sui generis* case. It was an extremely large and complex bank with many different business lines and, over time, it had accumulated substantial reputational damage from a series of scandals. The most obvious comparator among euro area banks is Deutsche Bank. Like Credit Suisse, Deutsche Bank has been through various scandals leading to fines and reputational damage but the consensus among banking analysts is that the bank has moved in the right direction in recent years, streamlining its operations and improving the health of its balance sheet.⁵ It seems likely that the ECB's supervisory regime has played a role in this improvement.

2. Money market mutual funds

The US has a thriving retail money market mutual funds (MMMF) sector. These funds invest in short-term high-quality securities and provide investors with easy access to their money while earning higher interest rates than on bank deposits. The sharp increase in short-term retail interest rates due to the Fed's tightening has made MMMFs highly attractive, particularly to those who have large uninsured deposits with commercial banks. Data from the Federal Reserve show that retail MMMFs have increased their assets by about \$400 billion over the last year. This has likely accounted for about half of the outflows from commercial bank deposits.

In contrast, Europe does not have a well-developed MMMF sector, perhaps due to the limited supply of AAA-rated short-term securities. So, while the absence of the chronic management problems that created the "push" factor from banks like SVB has played a role in Europe's banks being more stable, the absence of the "pull" factor of attractive money market funds has also been relevant.

3. Differences in asset holdings

European banks also differ from US banks in having somewhat different exposures on their balance sheets. For example, long-term securities tend to account for a larger fraction of the assets of US banks than European banks. This is due to the more developed nature of US securities markets and the central role securitisation plays in the US mortgage market. American commercial banks are more likely to sell their mortgages to be securitised with more of their exposure to interest risk being via holding of Treasuries and mortgage-backed securities.

⁴ At a recent ECON committee meeting, the Chair of the ECB's Supervisory Board, Andrea Enria, described the recent stress testing of interest rates increases and some of the actions that the ECB took in response to the results. His remarks are available at https://www.bankingsupervision.europa.eu/press/speeches/date/2023/html/ssm.sp230321_1.en.html

⁵ This recent article by Financial Times journalist Olaf Storbeck provides a useful summary of the situation with Deutsche Bank. <https://www.ft.com/content/06158598-daa0-4560-b072-a57bcbd7697c>

To the extent that banks hold mortgages on their balance sheets, US mortgages are predominantly fixed rate, whereas the importance of these mortgages varies across euro area members. Albertazzi, Fringuellotti and Ongena (2019) report that fixed-rate mortgages are dominant in countries such as Belgium, France, Germany and the Netherlands, while adjustable-rate mortgages are standard in countries such as Austria, Greece, Italy, Portugal and Spain. For countries where the mortgages rates are adjustable, there are unlikely to be problems with the value of these bank assets being written down.

4.2. Risks for euro area financial stability

Despite the positive points just noted, there are clearly some risks ahead for European banking stability. Bank balance sheets tend to be opaque so it can be hard to judge the extent to which banks have managed risks. There may well be some large European banks who are sitting on large as-yet-unrealised losses related to fixed-rate mortgages or long-term securities that could threaten their solvency. Other sources of vulnerability include commercial property lending (with loans for office projects performing badly due to the switch to working from home) and investments by banks in non-bank entities that have taken on risks that regulatory policy has discouraged banks from taking. Moreover, the effect of the sustained monetary tightening on household and corporate credit quality will take time to appear, so there will likely be a pattern of banks gradually writing down asset values over the next few years.

More generally, the banking sector is innately prone to bouts of instability, particularly when there are large amounts of uninsured deposits. Continued banking stresses in the US may lead to liquidity problems for institutions that appear to have operating models similar to failing American banks. Indeed, uninsured depositors may now feel less safe in the euro area than in the US because the Fed guaranteed that all deposits (both insured and uninsured) in the failed banks would be made whole. In contrast, the European resolution rules put in place by the BRRD explicitly include uninsured deposits among the class of bank liabilities that can be bailed-in and people can point to the haircut of depositors in Cyprus in 2013 for an example of how uninsured deposits can suffer large losses. In addition, the thresholds for deposit insurance are lower, at €100,000 compared with \$250,000.

One can also point to weaknesses in the euro area's deposit insurance schemes. The European Commission has tabled proposals to reform the existing bank crisis management and deposit insurance (CMDI) framework which would strengthen aspects of deposit insurance, such as ensuring that depositor protection extends to public entities and client money deposited in certain types of funds as well as harmonising the protection of temporary high balances on bank accounts in excess of €100,000 linked to life events such as inheritances.⁶ However, in the absence of a common euro area scheme (the so-called European Deposit Insurance Scheme, EDIS), the perceived adequacy of the insurance provided by states may vary depending on the beliefs of depositors about the fiscal capacity of states. Despite the bold proclamations of euro area leaders in 2012, we have not necessarily broken the loop between banks and sovereigns.

The euro area could also strengthen its decision-making process around failing banks. The recent Commission CMDI proposal is also intended to make resolution tools, rather than public funds, be used to deal with failing medium-sized and smaller banks but these reforms are not yet in place. The current arrangements for lender of last resort in the euro area are also unsatisfactory since they still feature

⁶ The Commission's proposals can be found at https://ec.europa.eu/commission/presscorner/detail/en/ip_23_2250

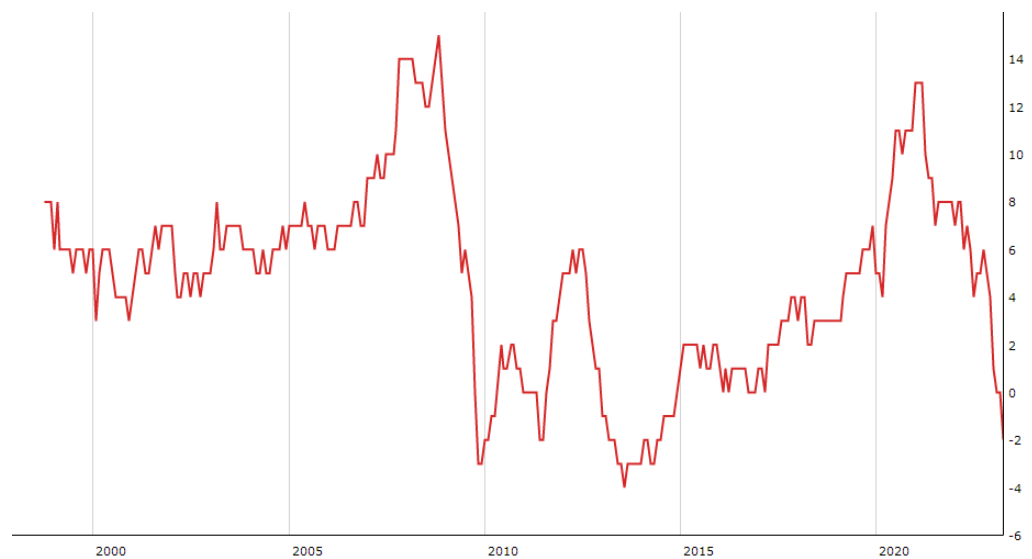
national central banks providing ELA, which can then be ended by a two-thirds vote of the ECB Governing Council. I have written a lot in these briefing papers over the years about flaws in the ECB's policies towards ELA. Here, I will just say that we are long past time for the responsibility for all ELA decisions to be made by the ECB Governing Council. Huertas (2022) discusses a range of reforms to the euro area's CMDI framework, including the ECB making all ELA decisions and the automatic triggering upon an ELA request being made of an examination by the ECB's supervisory arm of whether the bank was "failing or likely to fail". This could speed up the resolution of failing banks and perhaps limit losses for creditors.

Figure 5: Year-over-year growth rate of deposits at US commercial banks



Source: Federal Reserve Bank of St. Louis.

Figure 6: Year-over-year growth rate of deposits at euro area commercial banks



Source: ECB Statistical Data Warehouse.

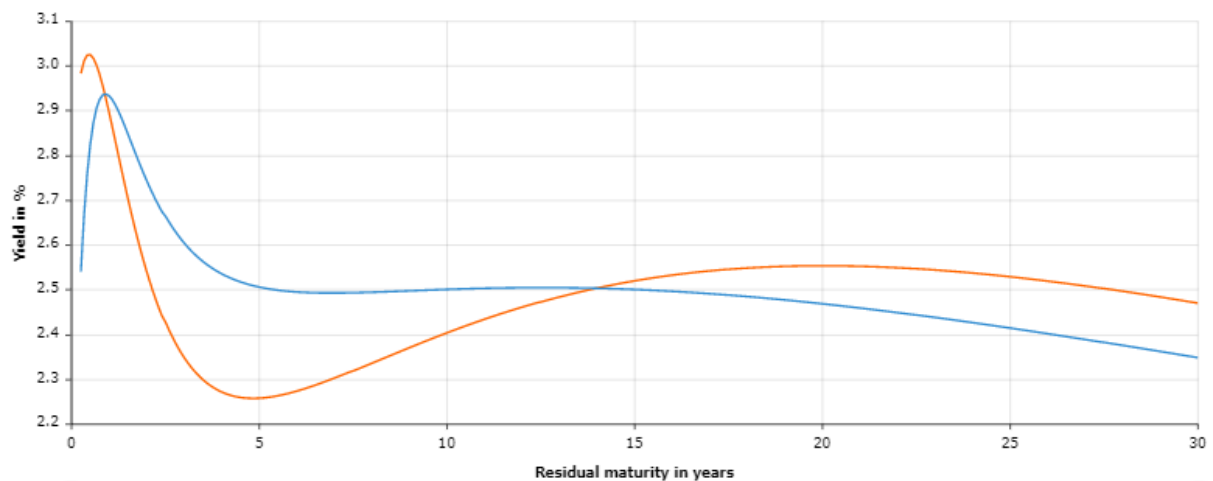
5. IMPACT ON MARKET EXPECTATIONS

The tensions in the global banking system have had, at most, a modest impact on market expectations of the ECB's monetary policy. The ECB's current policy rates are a little higher than expected by markets and analysts a few months ago, reflecting ongoing high inflation readings, but the overall pattern of expected policy has not changed much. For example, in the ECB's May survey of monetary analysts, median expected deposit facility rate now peaks at 3.75% compared with 3.25% in the February survey. However, both surveys forecasted that the peak rate would be reached in July and rates would start to fall in the second quarter of next year.

The euro area AAA-rated yield curve shows a bit more sign of changing expectations at a longer horizon. The figure below shows forward rates derived from yield curves from 15 February and 15 May. In other words, it shows the market-implied future short-term yields suggested by the pricing of bonds of various maturities. The May curve is a bit higher in the shorter-term but a bit lower from one year onwards, indicating markets seem to believe that policy will be loosened a bit more next year than they had believed a few months ago.

These modest movements suggest that the key factor driving market expectations in the coming months will be incoming inflation data rather than banking sector tensions.

Figure 7: Forward rates for AAA-rated bonds in February (Blue) and May (Orange)



Source: European Central Bank.

6. CONCLUSION

The simultaneous monetary policy tightening from major central banks around the world has led to a sharp steepening of the yield curve and this has had a negative impact on financial institutions that were not well-positioned to cope with this shock. It is understandable that there is a lot of nervousness around the world about the tensions evident in the US banking sector given our memories of the global financial crisis. However (and being wary of the risks that come with saying “this time is different” ...) the current banking sector tensions seem unlikely to cause major macroeconomic difficulties over the next year. The high-profile failures of Credit Suisse and a number of US banks do not seem likely to be repeated across the euro area and the ECB will most likely be able to focus on returning inflation to its target levels without having to cope with a banking crisis along the way.

This is not to say there will be no tensions or bank failures in the coming years. Banking is an innately unstable business and failures of individual institutions are inevitable. It is to be hoped that improved supervision and the higher capital levels built up in recent years will limit the extent of future bank failures in the euro area but, when they happen, it is important that swift and appropriate action is taken to resolve them in ways that preserve financial stability while minimising public costs.

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Is monetary tightening a threat to financial stability?

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Abstract

The rise of policy rates in the euro area has led to a tightening of financing conditions raising concerns for financial stability. The risk of financial crisis should be neither ignored nor overstated. The euro area is not facing conditions for which there would be the highest probability of a crisis. The risk faced by banks depends on the share of adjustable-rate mortgages. At this stage, net interest margin of banks and profitability have slightly improved.

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CONTENTS

LIST OF ABBREVIATIONS	32
LIST OF FIGURES	33
LIST OF TABLES	33
EXECUTIVE SUMMARY	34
1. INTRODUCTION	35
2. THE LINK AND INTERACTION BETWEEN PRICE STABILITY AND FINANCIAL STABILITY	36
2.1. The Treaties	36
2.2. Why price stability can be important for financial stability	37
2.3. Possible trade-offs	38
3. THE INTERCONNECTION BETWEEN PRICE AND FINANCIAL STABILITY	40
3.1. Financial conditions in the euro area	40
3.2. Monetary policy, financial cycle and price stability	42
3.3. Does monetary policy tightening always increase the risk of financial crises?	45
4. THE IMPORTANCE OF ADJUSTABLE-RATES VS FIXED-RATES LOANS	48
4.1. Theoretical considerations	48
4.2. Importance of Adjustable-Rate Mortgages in the Euro Area	49
4.3. The recent evolution of average interest rates paid by households and corporations in the Euro Area	51
4.4. What about banks' health?	52
CONCLUSION	57
REFERENCES	58
ANNEX	60

LIST OF ABBREVIATIONS

APP	Asset purchase programme
ARM	Adjustable-rate mortgage
CET	Common Equity Tier
ECB	European Central Bank
EP	European Parliament
ESRB	European Systemic Risk Board
EU	European Union
FRM	Fixed-rate mortgage
GFC	Global financial crisis
GDP	Gross domestic product
IMF	International Monetary Fund
LCR	Liquidity coverage ratio
NPL	Non-performing loans
NSFR	Net stable funding ratio
HICP	Harmonised index of consumer prices
PEPP	Pandemic emergency purchase programme
RWA	Risk-weighted asset
TEU	Treaty on European Union
TFEU	Treaty on the Functioning of the European Union
TLTRO	Targeted longer-term refinancing operations
TPI	Transmission protection instrument
SVB	Silicon Valley Bank
USD	US dollar

LIST OF FIGURES

Figure 1: Monetary policy transmission, the business cycle and financial stability	39
Figure 2: Term structure of interest rates in the euro area (in %)	41
Figure 3: Retail banking interest rates (in %)	41
Figure 4: Net percentage of banks responding that they have tightened credit conditions	42
Figure 5: Monetary policy tightening in the US and the equity price cycle (deviation from a statistical trend in %)	44
Figure 6: Monetary policy tightening in the US and the house price cycle (deviation from a statistical trend in %)	45
Figure 7: The credit-to-GDP in the euro area (in %)	46
Figure 8: Stock and housing price bubbles in the euro area (Standardised variables)	47
Figure 9: Core inflation and share of ARMs across euro area countries	52
Figure 10: Credit cycles in the United States and in the euro area (deviation from a statistical trend in %)	60

LIST OF TABLES

Table 1: Share of adjustable-rate mortgages (ARMs) for households	50
Table 3: Interest rates for households and corporations in the euro area	51
Table 3: Net interest margin and Return on Equity in euro area banks (profitability)	53
Table 4: Tier 1 ratio and Common Equity Tier 1 (CET1) ratios (solvency)	55
Table 5: Liquidity Coverage Ratio and Net Stable Funding Ratio (liquidity)	56
Table 1: Correlation of the financial cycles and the inflation gap	60

EXECUTIVE SUMMARY

- Despite the role of the ECB in the financial supervision of the banking sector, the distinction remains between the authority in charge of the implementation of monetary policy – the Governing Council – and the authority in charge of the supervision of the European banking sector – the Supervisory Board. **An important issue is whether, the implementation of monetary policy should consider the risks for financial stability.**
- The hierarchy of the objectives of the ECB, as laid down in Treaties, highlights that price stability may be conducive to financial stability. However, there can be trade-offs between price stability and financial stability as **financial stability may be hurt by monetary policy decisions.**
- Since the increase of the policy rates in July 2022, market interest rates have increased at all maturities, retail banking interest have risen, credit conditions have tightened and credit growth has decreased.
- Based on historical data for the United States, we show that not all tightening periods are followed by adjustments of stock prices, house prices and the ratio of credit-to-GDP. **The financial cycle is not correlated with the inflation gap.**
- Recent evidence show that the probability of a financial crisis rises in the first two years following the increase of interest rates. More importantly, **the risk of financial crisis is amplified when there has been an excessive credit growth or asset price bubbles.** In the current context, **the risk of financial crisis in the euro area should be limited** because the ratio of credit-to-GDP has diminished and there is rather weak evidence of stock and house price bubbles.
- The trade-off between financial stability and price stability may also be addressed through the share of adjustable-rate mortgages (ARMs). With ARMs the interest rate risk would be passed through to homeowners, whereas **with fixed-rate mortgages (ARMs) more risk is born by the banking system.** There is substantial heterogeneity in the share of ARMs among euro area countries. The share of ARMs also changes substantially over time. This implies of course that monetary policy is being transmitted very unevenly across countries and that the risk for banks is unevenly distributed.
- **Net interest margin in the euro area is on the rise in conjunction with rising interest rates.** This can be explained by the fact that banks enjoy low rates on sticky deposits, while they increase interest rates on credits. Anecdotal evidence in fact also seems to suggest that **banks tend to “like” higher interest rates.** Finally, return on equity also seems to be on the rise (overall) in 2022-Q4 compared to a year ago.

1. INTRODUCTION

Since July 2022, the key ECB policy rates have been increased at each Governing Council with the aim to bring inflation back to target. These decisions are part of a worldwide monetary tightening cycle. Since the bulk of the rise in euro area inflation stems from the direct and indirect effects of rising energy prices, the ECB has faced the well-known trade-off when the economy is hit by energy shocks. Dealing with inflation as requested by its mandate may be at the cost of amplifying the economic slowdown.

Yet, the rise of interest rates has also given rise to another trade-off as there may be a risk that the tightening of financial conditions will ultimately lead to financial instability and a banking crisis. The *souvenir* of the Global financial crisis has indeed resurfaced after the recent setbacks of banks in the United States and of Credit Suisse in Switzerland. These events remind us that financial crises are often preceded by interest rate increases, even though whether interest rate increases really cause financial crisis is open to debate. The banking crisis in Scandinavian countries, in the beginning of the 1990s, was for instance preceded by a tightening of monetary policy as central banks were aiming to reduce inflation.⁷ This was also the case in 2008. The Global financial crisis followed a tightening of monetary policy cycle that started in June 2004 in the United States with the Federal fund target reaching a peak in June 2006. Will this time be different? Are interest rate increases always followed by financial risks such that central banks would not be able to reach price stability without endangering financial stability? This concern contradicts the “conventional wisdom”, which prevailed before the Global financial crisis according to which price stability is a sufficient condition for financial stability (see section 2). While this view has clearly been questioned after 2009, it remains true that monetary policy inevitably affects both price and financial stability as its transmission fundamentally hinges on its pass-through to asset prices and bank credit.

The risks of financial crisis may not only be rooted in credit variables and asset prices. Financial fragilities also stem from the risk exposure of the banking system. Financial crises indeed occur when the level of risks taken by the system as a whole is excessive, which may not only be seen through the dynamics of credit but also through macroprudential indicators.

With the sharp rise of interest rates in the euro area as well as other countries, notably in the United States, it is crucial for central banks to monitor not only inflation but also how asset prices, banking credits and banks’ ability to deal with tightened financial conditions react. Although the aim of the central bank is to slow down the economy, the central bank is not looking for a financial crisis. This would probably push the economy too far into depression, which would eventually lead the central banks to a sudden reversal of the monetary stance. It is therefore crucial to document the interconnection between monetary policy, financial stability and price stability. To complement this analysis, we also aim to gauge the risks through macroprudential indicators.

⁷ See Blot et al. (2009).

2. THE LINK AND INTERACTION BETWEEN PRICE STABILITY AND FINANCIAL STABILITY

2.1. The Treaties

According to the Treaty on the Functioning of the European Union (TFEU, Article 127(1) and Article 282(2)), the primary objective of the European Central Bank (ECB) is to maintain price stability within the Eurozone. Following its latest strategy review in 2021, the ECB Governing Council *“considers that price stability is best maintained by aiming for two per cent inflation over the medium term. The Governing Council’s commitment to this target is symmetric. Symmetry means that the Governing Council considers negative and positive deviations from this target as equally undesirable. The two per cent inflation target provides a clear anchor for inflation expectations, which is essential for maintaining price stability”*.

Without prejudice to the price stability objective and beyond the secondary objectives as laid down in Article 3 of the Treaty on the European Union (TEU), *“the European System of Central Banks shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system”*.

While the ECB has neither an exclusive power in the achievement of financial stability nor competence to act on its own, in practical terms, the ECB performs its financial stability role through a number of tools and activities. These include:

- Conducting regular macro-prudential assessments to identify and monitor systemic risks in the financial system;
- Participating in international discussions and agreements on financial regulation and supervision;
- Providing liquidity support to the banking system in times of stress;
- Supervising significant banks directly through the Single Supervisory Mechanism (SSM);
- Coordinating closely with national supervisors and other European institutions to ensure a consistent approach to financial stability issues.

By promoting financial stability and ensuring a sound banking system, the ECB is meant to create the conditions necessary for price stability to be maintained in the euro area over the long term.

In addition to the tools and activities mentioned, the ECB also oversees and evaluates financial market infrastructures to minimise risks and improve their overall functioning in the euro area. Furthermore, the ECB collaborates with other central banks to trade, lend, and provide monetary policy operations.

Despite the ECB’s role as financial supervisor of the banking sector since 2012, the distinction remains between the authority in charge of the implementation of monetary policy – the Governing Council – and the authority in charge of the supervision of the European banking sector – the Supervisory Board. Moreover, the supervision focuses on banks while the issue of financial stability is more general.⁸ An important issue is therefore whether and how the ECB considers the risks for financial stability in the conduct of the monetary policy. Should it be considered as a second objective?

On this peculiar topic, at this stage, it is certainly important to recall the strategic change elaborated by the ECB after its Strategy Review in 2021. Financial stability is a precondition for price stability and vice

⁸ See Allen and Wood (2006) for a discussion.

versa⁹. This statement is at odds with the former strategy that assumed that price stability was a precondition for financial stability, but not the other way round (see below). This new strategy allows the ECB to argue that there is no trade-off between both objectives or, following Isabel Schnabel's recent speech in London (19 May 2023), that there is a separation principle. According to Schnabel, this separation principle "posits that monetary policy stance considerations can be separated from financial stability concerns" if different monetary instruments are used to achieve different targets according to the Tinbergen principle¹⁰. With unconventional measures such as liquidity interventions targeted at banks' stability and conventional measures targeted at price stability, the ECB would have been able to achieve both objectives with none of its policies hurting any of them. Does it always work this way? Isabel Schnabel answers yes in most cases, except during the Silicon Valley Bank (SVB) turmoil which is unfortunately quite topical at the moment.

2.2. Why price stability can be important for financial stability

The hierarchy of the objectives of the ECB, as laid down in Treaties, highlights that price stability may be conducive to financial stability. Why might it be so? There are five common lines of argument that would go in such a direction.

- Greater predictability: when prices are stable, it is easier for people and businesses to plan and make decisions. Uncertainty around prices can make it harder for investors to make informed choices, and for businesses to make accurate financial projections.
- Lower risk of asset bubbles: during periods of high inflation, investors may look to put their money balances into assets like property or stocks, which can drive up their prices to unsustainable levels. When inflation is low and stable, there is less pressure to chase higher returns through riskier investments, and bubbles can be avoided.
- Encourages responsible borrowing and lending: when interest rates are low and inflation is stable, borrowers are more likely to borrow a lot while lenders are more likely to lend only a little. This reduces the risk of financial instability caused by excessive borrowing and lending.
- Maintains confidence in the currency: when prices are stable, people have more confidence in the currency and are more willing to use it for transactions. This reduces the risk of a currency crisis, which can lead to financial instability.
- Promotes economic growth: when prices are stable, the economy can grow more predictably and with lower risks. This can lead to job creation, increased investment, and higher standards of living for citizens. Overall economic stability promotes financial stability.

The latter points give the mainstream view about the causation from price stability to financial stability that prevailed at least since the global financial crisis (GFC). It originated in a few academic contributions that went under more scrutiny after the GFC (see Blot et al., 2015, for a critical review of these early contributions).

Actually, the causal relationship between monetary and financial stability gave rise to a conventional wisdom: "*A monetary regime that produces aggregate price stability will, as a by-product, tend to promote stability of the financial system*" (Borio and Lowe, 2002, p.27). This conventional wisdom originates in Schwartz (1995). She highlights the detrimental effects of inflation (price instability) on asset prices. She

⁹ See Financial Stability Review, November 2021: <https://www.ecb.europa.eu/pub/financial-stability/fsr/html/ecb.fsr202111~8b0aebc817.en.html>

¹⁰ Tinbergen (1956) showed that to achieve n targets, policymakers need to control at least n instruments.

notably argues that inflation brings distortions, uncertainty, shortened investment horizons, and governments' nominal gains via the inflation tax that gives an incentive to raise government expenditures, deficits, and debts.

Before the GFC, the "conventional wisdom" had already come under criticism, e.g. by Borio and Lowe (2002), Rajan (2005), White (2006) and Leijonhufvud (2007), although it had had no concrete consequences on the mandate of central banks. The afore-mentioned authors claimed that monetary stability could lead to financial instability because low interest rates ("cheap money") favour risk-taking in the choice of projects (see also Adrian and Shin, 2009). They also pointed out that major economic and financial crises were not preceded by inflationary pressures. This is the "paradox of credibility": central banks have gained credibility in curbing inflation, which has ultimately led to an increase in the vulnerability of the financial system. Consequently, inflation is not a good predictor of banking or financial crises (IMF, 2009) whereas larger credit-to-GDP ratios are (Schularick and Taylor, 2012).

2.3. Possible trade-offs

There can be trade-offs between price stability and financial stability. At least three kinds of reasons may make it complicated to achieve one of those two objectives without hurting the other.

First, financial stability may be hurt by monetary policy decisions. While central banks may increase interest rates in order to maintain price stability, this can also lead to a tightening of credit conditions which can affect financial stability. The transmission of monetary policy actually hinges on its effects on financial conditions. The literature on those transmission channels emphasizes the role of the interest rate channel, the credit channel and the asset price channel. All the variables on which these channels rest may affect financial stability.¹¹ The impact of monetary policy on asset prices can also modify financial risk (see Drechsler et al., 2018). Besides, a change in aggregate demand after a monetary contraction can trigger a change in the demand for credit, in interest rates and asset prices. An economic slowdown and a recession may trigger losses in the financial market. It may increase the risks of financial instability (Figure 1). Finally, there is a feedback loop of financial instability on the economic downturn as emphasised by Bernanke et al. (1999) with the financial accelerator: the tightening of credit conditions to dampen an adverse shock ultimately amplifies its propagation. With the adoption of the Transmission Protection Instrument (TPI), the ECB intends to limit this feedback loop to the economy. Yet, it rests on the purchases of public, rather than private, securities. The trade-off between financial and price stability may still arise with the current monetary instruments.

Second, financial sector vulnerabilities like rising non-performing loans (NPL) may be detrimental to price stability. However, the mere decision to limit the share of NPL in total credit, via an overall limit on banking credit or higher interest rates, will inevitably weigh on economic growth. The "leaning against the wind" policy (see Woodford, 2012)¹² would end up increasing rates beyond the level that would be required by the macroeconomic variables and the central bank could then undershoot the inflation target.

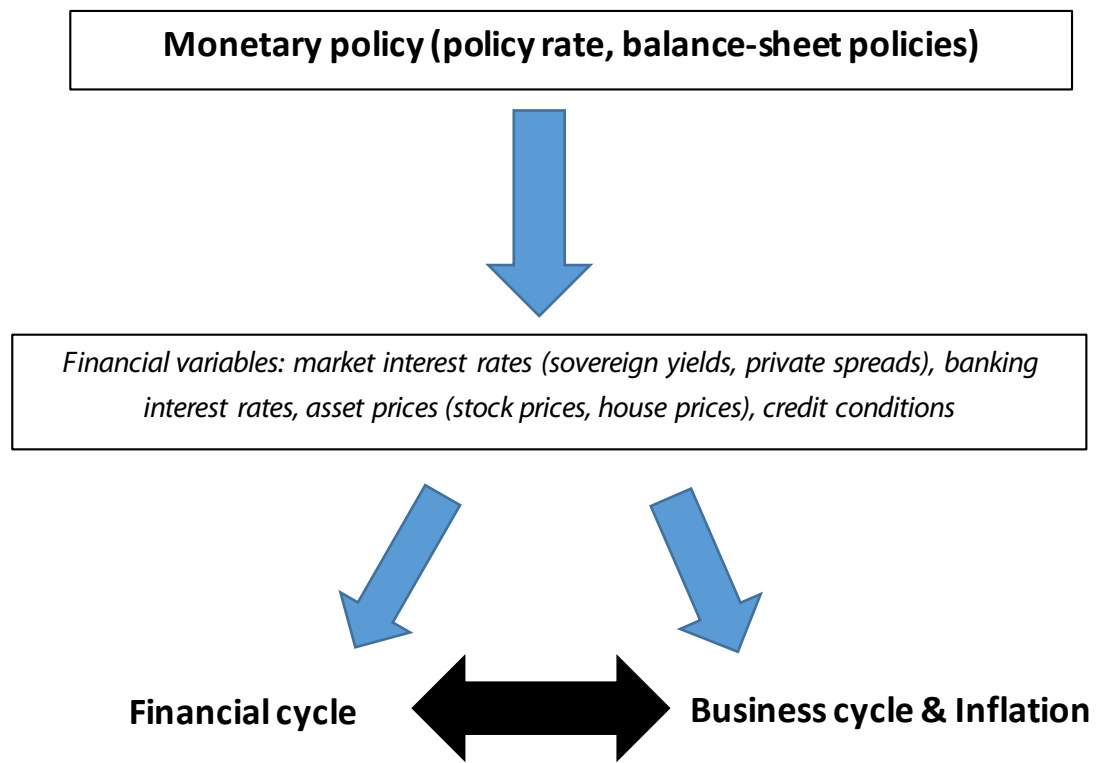
Third, although this is much less relevant for a large and advanced area like the Eurozone, external shocks may have an impact on the balance of payments. Global economic shocks like an oil price surge or economic sanctions can translate into an abrupt drain on a country's foreign reserves. Any uptick in

¹¹ This may call for a better coordination of monetary policy and macroprudential policy as emphasised by Malovaná and Frait (2017).

¹² After a boom in credit, a "leaning against the wind" policy consists in raising policy rates substantially, in a kind of "whatever it takes" policy to curb the credit cycle, regardless of the business cycle position or the inflation rate.

interest rates designed to mitigate such shocks could strain the economy and financial markets and feed financial instability (see e.g. IMF, 2020).

Figure 8: Monetary policy transmission, the business cycle and financial stability



Source: Authors.

3. THE INTERCONNECTION BETWEEN PRICE AND FINANCIAL STABILITY

3.1. Financial conditions in the euro area

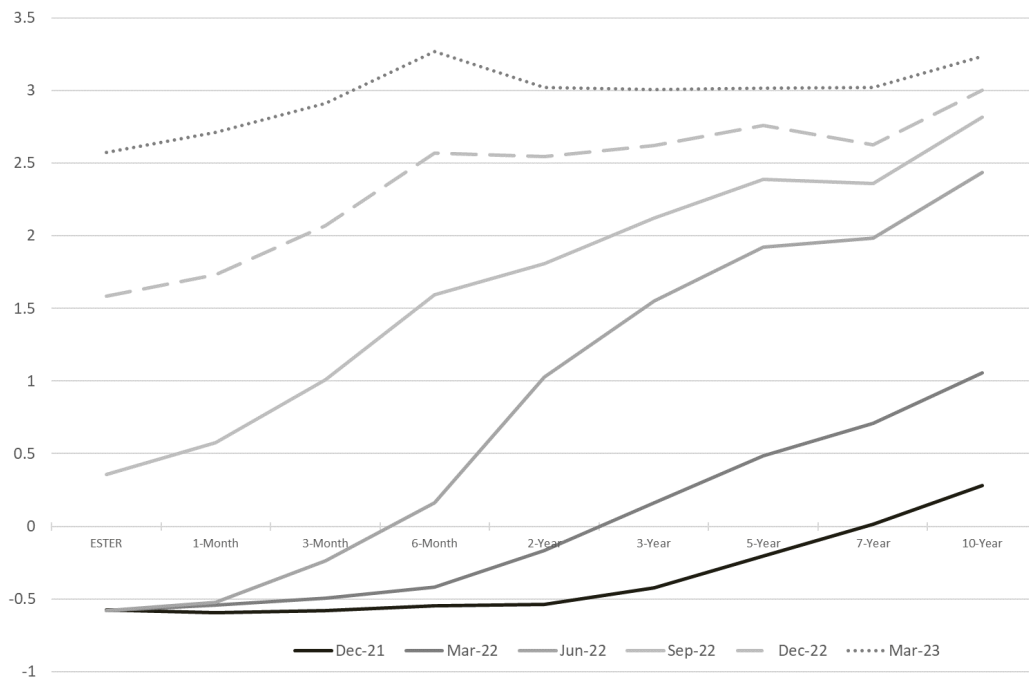
The role of financial variables in the transmission of monetary policy can be easily seen in the recent context of policy tightening. The ECB started to increase its policy rate in July 2022. Figure 2 highlights the terms structure of interest rate in the euro area. More precisely, for some selected dates, it shows the level of interest rates at different maturities: the overnight rate (ESTER), the interbank interest rates for maturities below two years and the sovereign yields for maturities from two years to ten years. It shows that long-term interest rates increased *before* the first policy rate hike as illustrated by the difference in the term structure of interest rates in December 2021, in March 2022 and in June 2022. It reflects the fact that the decision was expected. Actually, it was announced in a forward guidance statement 9 June 2022¹³ ahead of the July meeting of the Governing Council. The stance of monetary policy was also modified through the announcements regarding the phase out of asset purchases. According to the term structure of interest rates, the yield on a sovereign bond for a given maturity accounts for the expected policy rate. With the rise of inflation in the euro area, financial investors started to anticipate the future increase in the policy rate from the beginning of 2022. From September 2022 onwards, the change in the term structure has mainly resulted from the change of interest rates at short maturities whereas the increase in the 10-year sovereign rate did not exceed 1 percentage point.

As banks obtain refinancing from the Eurosystem, the change in the policy rate increases their cost of funding, which is then passed through to the retail market banking interest rates (Figure 3). For credit granted at longer maturities, the interest rate set by banks not only depends on the policy rate but also on market rates. Thus, the decisions on the policy rate are passed through to the banks either “directly” or indirectly through market interest rates.

Monetary policy is also expected to be transmitted to other asset prices, notably to stock and house prices. The DJ Euro Stoxx 50 index decreased from the end of 2021 until October 2022, potentially also reflecting (at least in part) the effect of policy announcements. Since Bernanke and Kuttner (2005), it has been largely documented that policy decisions, and mainly unexpected decisions, affect stock prices. Yet, daily prices may react to the flow of new information that are priced in by financial investors. Thus, the decrease of the stock prices in the euro area would also be the consequence of the Russian war against Ukraine, as it was expected that this event would amplify the energy crisis and weigh on the economic outlook. Beyond the decision taken by the ECB about the policy rate, the information conveyed by central banks when taking decisions and communicating about their economic forecasts may also trigger a reaction of stock prices.

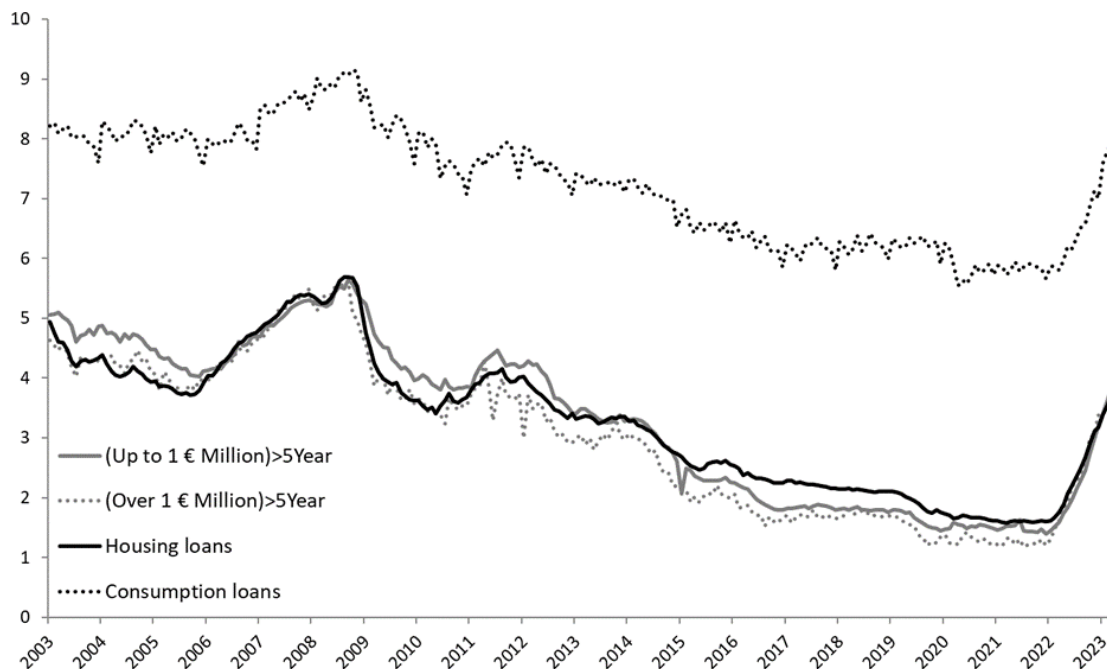
¹³ During the press conference, Christine Lagarde stated explicitly that “Accordingly, and in line with our policy sequencing, we intend to raise the key ECB interest rates by 25 basis points at our July monetary policy meeting.”

Figure 9: Term structure of interest rates in the euro area (in %)



Source: Refinitiv Eikon Datastream.

Figure 10: Retail banking interest rates (in %)

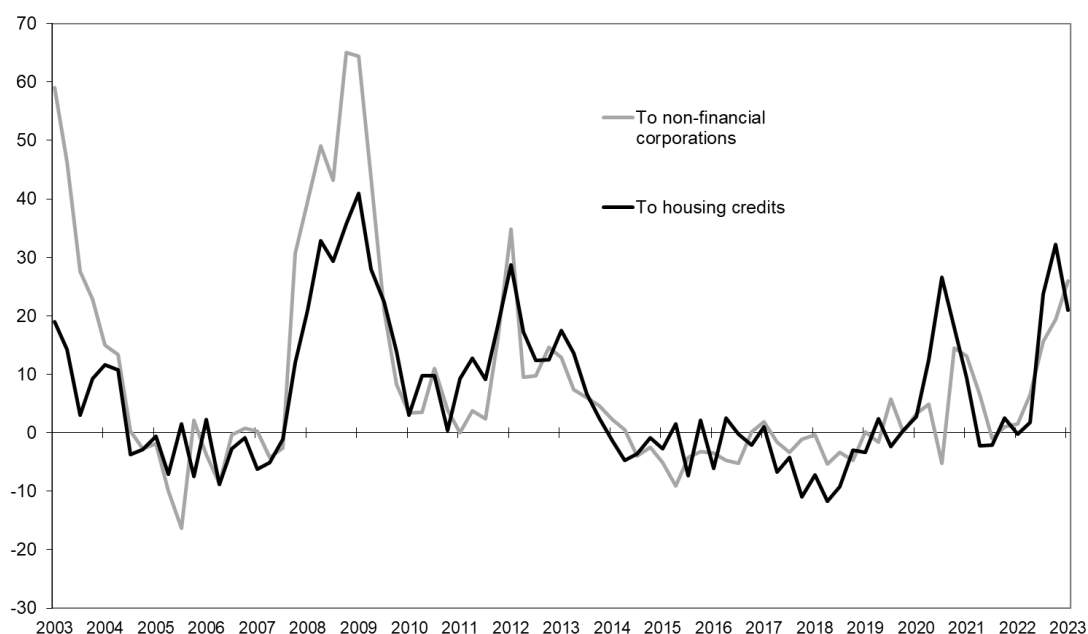


Source: ECB.

Regarding the effect on house prices, the transmission channel is different notably because housing prices are not continuously quoted and do not react immediately to news (the housing market is not as liquid as the stock market). The effect of monetary policy is transmitted with more delay and may notably depend on the retail banking interest rates and on the credit conditions set by banks, beyond

the interest rates. According to the credit channel of monetary policy, banks may choose to reduce the supply of credit by asking for more collateral requirements before granting credits, taking additional margins on loans, notably on riskier loans, and tighten any other factor so that a given borrower with the same risk profile finds it harder to get some credit from banks. The Banking Lending Survey conducted by the ECB provides information on those conditions by asking whether banks have (and will) tightened or eased credit conditions for housing loans, consumption loans and loans to non-financial corporations (Figure 4). It shows that banks in the euro area have tightened credit conditions since March 2022. Consequently, the credit dynamics may slow-down either because of higher interest rates reduce demand or because banks constrain access to credit. According to the ECB, the yearly growth of the outstanding amount of credit to households and firms in the euro area was 3.1 and 4.8% respectively in March 2023 against a peak at 4.8% for household in July 2022 and 8.3% for non-financial corporations in October 2022.¹⁴

Figure 11: Net percentage of banks responding that they have tightened credit conditions



Source: ECB (Bank Lending Survey).

3.2. Monetary policy, financial cycle and price stability

Even if financial variables are expected to react to monetary policy decisions, the key issue is whether those reactions do increase financial instability and the risk of financial crisis as well as whether there may be a conflict with the price stability objective of central banks. To that end, we may have better insight on the connection between monetary policy, financial stability and price stability by looking at US data available over a longer period, which may then account for several tightening episodes and therefore more financial cycles.¹⁵ To that end, we first identify periods of tightening (and easing)

¹⁴ In March 2023, the production of new credits was 40% and 3.5% lower for house purchase and consumer loans compared to March 2022.

¹⁵ For instance, the credit-cycle computed by the BIS for the euro area is only available from 2009-Q1 whereas it is calculated since 1957-Q4 for the United States. Consequently, it only covers one financial cycle for the euro during which monetary policy was almost always expansionary. Over the common period, Figure 10 in the Annex shows that both cycles are correlated. In both areas, there was a peak in the

monetary policy and financial cycles computed for the stock, the housing and the credit markets. We disentangle periods during which the policy rate (the effective federal funds rate) set by the Federal Reserve increases from those during which it decreases. The identification of the financial cycle is trickier as financial instability may be captured by several variables. As in Drehman et al. (2012), we focus on equity prices, house prices and the credit-to-GDP ratio. For the credit market, the BIS calculates a credit cycle as the difference between the credit-to-GDP ratio and statistical trend aimed to capture what would be the level of this ratio in “normal conditions”. We resort to a close methodology to compute the housing and stock price cycles.¹⁶ The data are collected from Shiller for the real equity and housing prices.¹⁷

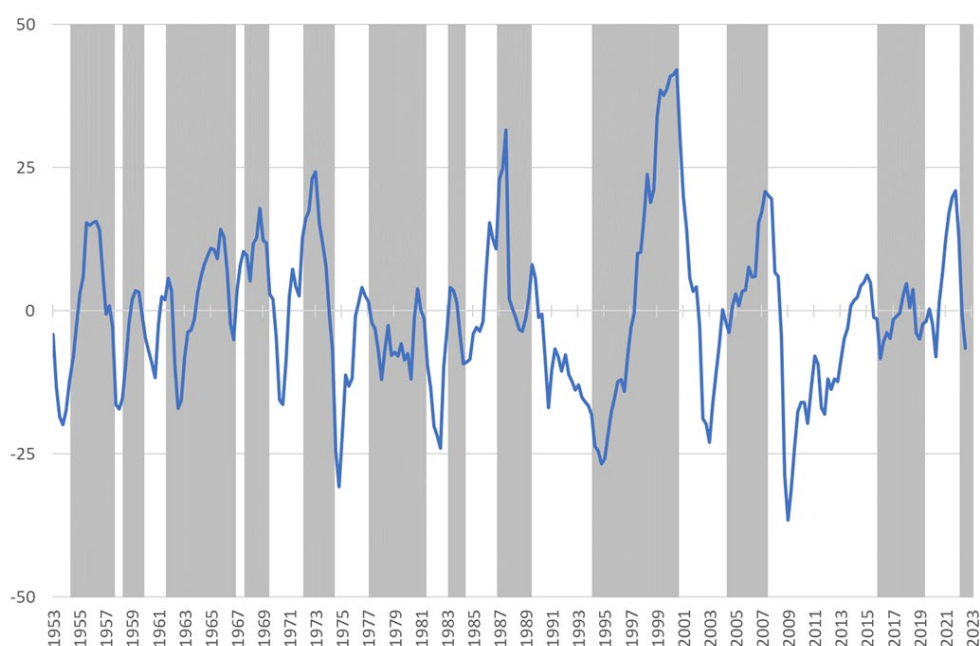
We show that not all tightening periods are followed by adjustments of stock and house prices (Figure 5 and Figure 6). The equity cycle may switch from a dip to a boom during the period in which the Federal Reserve tightens the US monetary policy. This is notably the case in the 1950s and 1960s. In 1987, the beginning of the tightening period coincides with – if not triggers – a sharp contraction in stock prices. Yet, during the 1990s, the Federal Reserve started increasing interest rates in a period of low stock prices and, despite several interest rates hikes, a boom of equity prices was observed. From 1953 to 1963, the housing cycle was very flat despite three episodes of tightening monetary policy and two periods of easing. The tightening cycle that started in 1972 has been followed by the end of the boom in housing prices but, during the 1990s, there has been a long decline in house prices despite a period during which the Federal Reserve did ease monetary policy. The housing boom that preceded the GFC started in the end of the 1990s despite a rise of the policy rate. The boom amplified in the early 2000s when the Federal Reserve loosened its monetary policy stance following the dotcom crash. From 2004, the central banks started to tighten the monetary policy stance as inflation had increased above 3 %. The housing boom did however continue until the end of 2006. The increase of interest rates did certainly play a role in bursting the housing bubble, but it did also prevent its start in the 1990s so that the duration of the boom has not always been related to monetary policy.

credit cycles occurred in the early 2021. The last dip would have occurred earlier in the United States (2013) compared to the euro area (2018).

¹⁶ The identification is based on a statistical (Hodrick-Prescott) filter.

¹⁷ Both variables are deflated by the consumer price index (CPI). The stock price is the S&P composite index.

Figure 12: Monetary policy tightening in the US and the equity price cycle (deviation from a statistical trend in %)

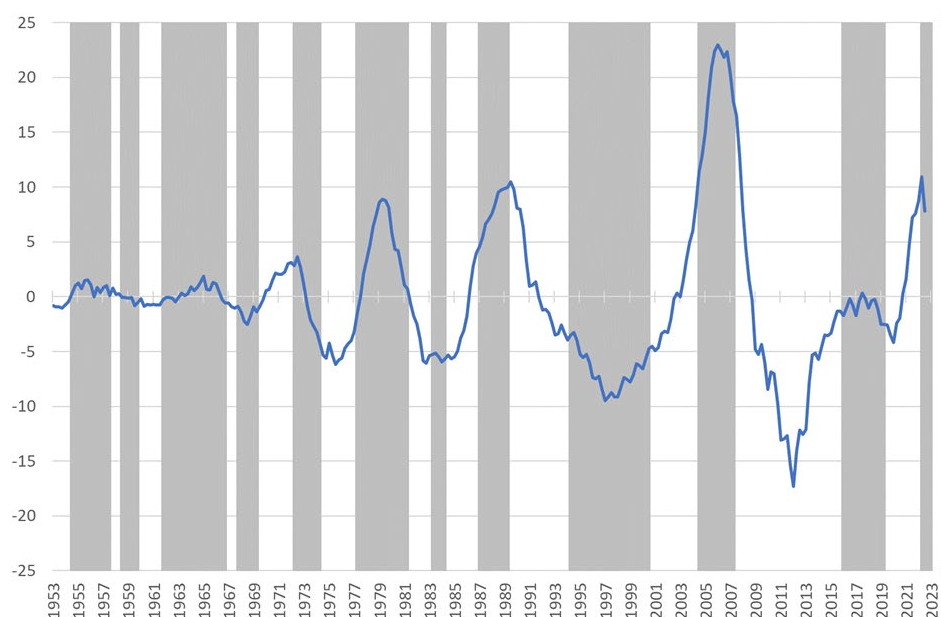


Source: Refinitiv Eikon Datastream, Robert Shiller's [online data](#) and authors' calculations.

Note: the grey bar represents periods of monetary policy tightening. The deviation from the statistical trend is the gap in % between the equity price at each date and a trend computed with the Hodrick-Prescott filter and aimed to represent "normal conditions".

The same patterns can be observed with the credit cycle. This notably reflects the fact that the housing and the credit cycles are correlated (See Table 1 in the Annex). More importantly, data suggest that the financial cycles, either identified for the stock market, the housing market or the credit market, is not correlated with the inflation gap. Drehmann et al. (2012) reached a similar conclusion regarding the correlation between the financial cycle and the business cycle. They notably highlighted that the duration of the financial cycle was much longer than for the business cycle. These conclusions are also in line with Blot et al. (2015) who find no correlation between price stability and financial stability. It is crucial for monetary policy as it implies that achieving the price stability objective does not help to achieve financial stability nor does it systemically create a trade-off between both objectives. Even though monetary policy affects domestic demand and inflation through its transmission through financial variables, achieving price stability cannot be considered as detrimental for financial stability.

Figure 13: Monetary policy tightening in the US and the house price cycle (deviation from a statistical trend in %)



Source: Refinitiv Eikon Datastream, Robert Shiller's [online data](#) and authors' calculations.

Note: the grey bar represents periods of monetary policy tightening. The deviation from the statistical trend is the gap in % between the house price at each date and a trend computed with the Hodrick-Prescott filter and aimed to represent "normal conditions".

3.3. Does monetary policy tightening always increase the risk of financial crises?

The key issue is thus whether and under which circumstances, a monetary policy tightening threatens financial stability and may increase the risk of financial crisis. It must be reminded that financial crises include several kinds of events but all involve severe disruptions of financial intermediation either because asset prices plummet, the volume of credits falls or some financial institutions suffer from balance sheet problems (Claessens and Kose, 2013). Not all asset price or credit decreases are crashes and financial stability becomes an issue only occasionally. Let us contemplate two early episodes of monetary tightening. It may be considered that the interest rate increases implemented by the Bank of Japan in 1989 triggered the burst of the housing and stock market bubbles. In the United States, the tightening cycles of the end of the 1970s and 1983-1984 revealed the fragility of the Savings and Loans associations. There is yet a difference between those two episodes of monetary policy tightening. Differently from the Bank of Japan, the Federal Reserve did not seem aware of the financial boom in the United States at the end of the 1970s when interest rate increases aimed at reducing inflation, which had exceeded 10%.

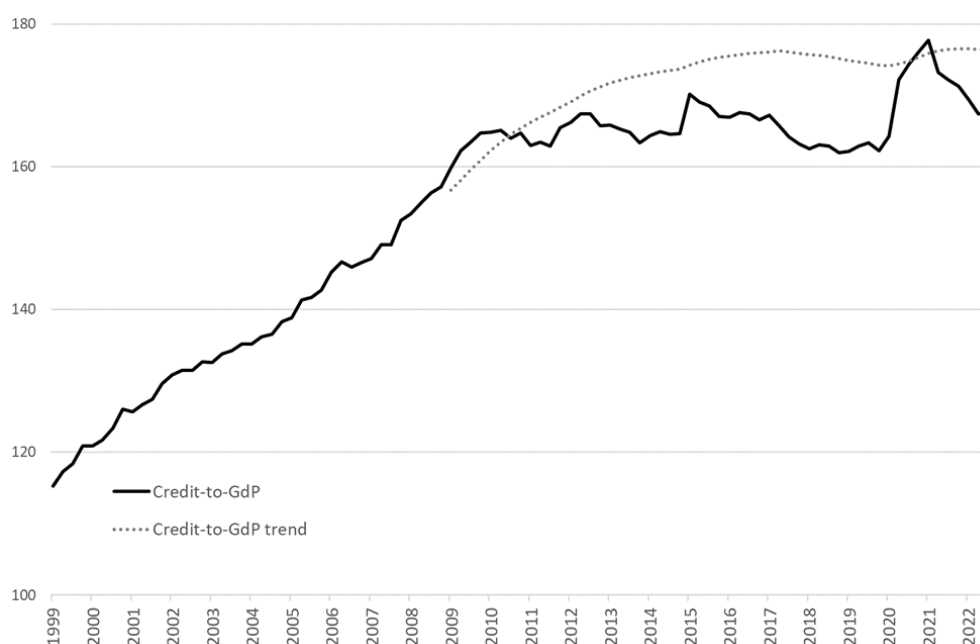
To assess the risk associated to monetary policy tightening decisions, Schularick et al. (2021) estimate the effect of interest rate increases for a large sample of countries over a long historical period. They show that the probability of a financial crisis rises by 2 percentage points after a 1-percentage point increase in the policy rate.¹⁸ The highest risk would occur during the first two years. More importantly,

¹⁸ These results are consistent with Bauer and Granziera (2017) who find that restrictive monetary policy shocks increase the debt-to-GDP ratio and as a consequence, the risks of a financial crisis.

the risk of financial crisis is amplified under some circumstances. When there has been an excessive credit growth or asset price bubbles, the probability of a crisis can be 8 percentage points higher.

With these results in mind, we might assess whether the current monetary policy tightening in the euro area, which aims at reducing inflation, threatens financial stability. The risk would notably be heightened in case of a credit boom and asset price bubble. In 2022-Q3, the credit-to-GdP ratio in the euro area reached 167.4% (Figure 7).¹⁹ It has yet decreased by 10 percentage points since a peak observed in 2021-Q1. The BIS also computes a statistical trend and assesses a credit-to-GdP gap. This gap may indicate whether there is a credit boom or not. The recent decline in the ratio below its trend suggests that there is no credit boom in the euro area.

Figure 14: The credit-to-GDP in the euro area (in %)



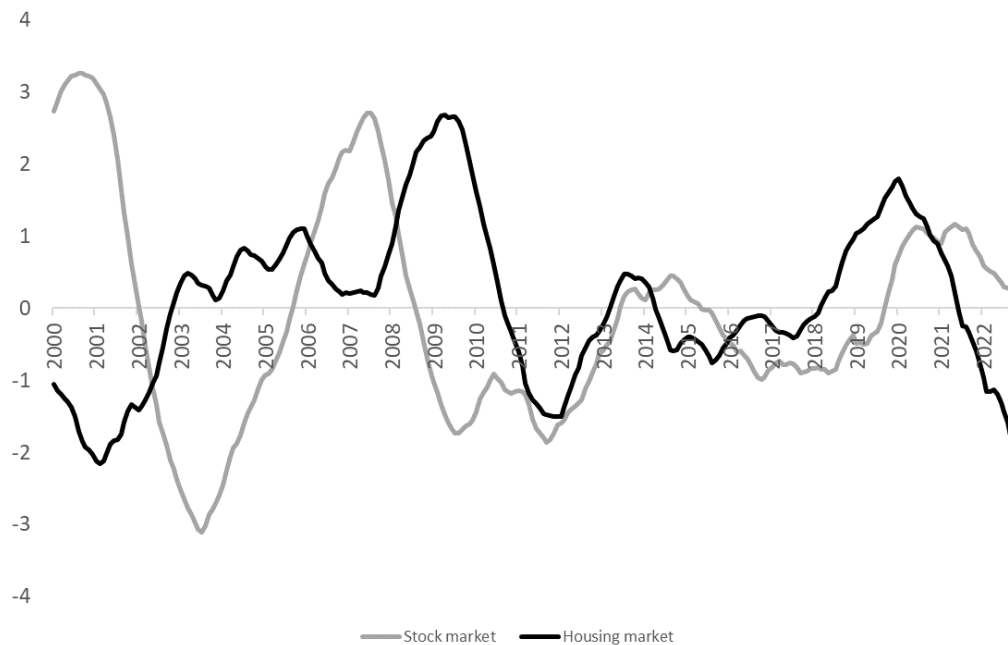
Source: BIS.

Finally, Blot et al. (2020) build an indicator of stock and house price bubbles that is based on alternative approaches. These indicators estimated until December 2022 suggest that there would be no bubble on the housing market and only a small bubble in the stock market, that would be much less important than in 2000 and 2007 (Figure 8). However, we should remain careful when looking at this indicator. First, the bubble is estimated for the euro area, however the possibility of national bubbles should not be dismissed. Second, the model may underestimate the size of the bubble.

¹⁹ Household debt has notably decreased according to Eurostat data. In the end of 2022, it was 94.2% of the gross disposable income, 3 points lower than in 2021-Q3. The peak for household debt was observed between the end of 2010 and 2011-Q3 when it reached 100% of gross disposable income.

House prices in the euro area have increased continuously from 2014 to the early 2022, leading the ESRB to issue warnings on potential vulnerabilities for the residential and the commercial real estate. Consequently, and by looking at aggregate financial indicators for the euro area, it seems that the risk of financial crisis that would be triggered by the current monetary policy tightening should not be ignored; however, the situation is not one of heightened risk.

Figure 15: Stock and housing price bubbles in the euro area (Standardised variables)



Source: OFCE from Blot, Hubert and Labondance (2020).

4. THE IMPORTANCE OF ADJUSTABLE-RATES VS FIXED-RATES LOANS

Even though, credit volumes and asset prices do not point to a critical situation, vulnerabilities of the financial system may be embedded in other indicators of the soundness of banks. Banks are intrinsically exposed to many risks and notably to the change of interest rates. The crucial issue is yet about the consequences of monetary policy tightening on their activity and their profits. Finally, in case of losses, what would be their ability to deal with them.

4.1. Theoretical considerations

Thinking about interest rate risk is particularly important, and even more so on the side of households: for example, it may have played an important role in First Republic's recent demise.²⁰ Paradoxically, the trade-off between price stability and financial stability could in theory be much less severe when there are more adjustable-rate mortgages (ARMs), as interest rate risk would then be passed through to homeowners, and at the same time not impair banks' balance sheets, as in the case of fixed-rate mortgages (FRMs). Thus, contrary to what is often being heard, less ARMs and more FRMs are not necessarily a source of strength and stability.²¹ As John Campbell has recently argued in a presentation entitled "Mortgage choice and financial stability"²², the problem with ARMs is that the rise in households' interest rate on mortgages is the probably main channel through which monetary policy pass-through occurs, and interest rates increases affect consumption. This has indeed been confirmed by research analysing the aftermath of the 2008 US financial crisis, and which has confirmed indeed how important the mortgage market was for the pass-through of monetary policy. In particular, Di Maggio et al. (2017) showed that when interest rates go down, households with an ARM benefit from a reduction in mortgage payments, and this tends to increase their consumption.²³ It should be noted, to complicate things further, that Wong (2015) has provided compelling evidence that refinancing of FRMs at lower rates (on the way down) could lead to a substantial increase in consumption; but of course no such effect is to be expected on the way up because there is no refinancing possibility.

To summarise, monetary policy rate hikes are less effective with more FRMs: in his presentation, John Campbell even argues in such a context that having FRMs is a bad idea, because it forces the central bank to increase interest rates by even more for a given desired effect on consumption. In so doing, central banks put more financial strain on banks' balance sheets, which is probably not something which is desirable. In other words, to the extent that aggregate demand is being slowed down more with more ARMs, and that a slowdown in aggregate demand implies less inflation, monetary policy is

²⁰ In the financial press for example, see:

First Republic's Jumbo Mortgages Brought On Bank's Failure. Bloomberg. May 1, 2023. <https://www.bloomberg.com/news/articles/2023-05-01/first-republic-s-history-of-jumbo-mortgages-led-bank-to-failure-sale>.

First Republic handed out billions in ultra-low-rate mortgages to the wealthy. It backfired horribly. April 25, 2023. <https://finance.yahoo.com/news/first-republic-handed-billions-ultra-023833711.html#:~:text=Business%20Insider,First%20Republic%20handed%20out%20billions%20in%20ultra%2Dlow%2Drate%20mortgages,It%20backfired%20horribly>

²¹ This argument has for example been recently made in a recent blog by the OECD (2022): "Overall, financial stress among households should be contained in most OECD countries due to relatively strong balance sheets and the moderate use of Adjustable-Rate Mortgages (ARM)". See: OECD (2022). Damien Puy and Kimiaki Shinoz. Mortgage Rates are rising: should we be concerned? August 23, 2022. <https://oecdscope.blog/2022/08/29/mortgage-rates-are-rising-should-we-be-concerned/>

²² See Campbell, J. Mortgage choice and monetary policy. Markus' academy. May 4, 2023. <https://bcf.princeton.edu/wp-content/uploads/2023/05/Markus-Academy-John-Campbell-4-May-2023.pdf>

²³ Their identification strategy is extremely clean and convincing: they exploit quasi-experimental variation in the timing of resets of ARMs, showing that an instrumented decline in mortgage payments led to a significant increase in durable purchases.

both more effective with more ARMs and there is less of a trade-off between financial stability and price stability in that context.


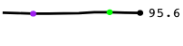

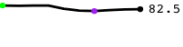














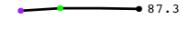











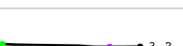



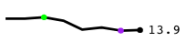



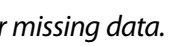
However, one perhaps needs to qualify this statement of ARMs improving the trade-off between price stability and financial stability. First, because with ARMs, some households may default on their mortgages altogether if they cannot meet their higher payments, rather than reduce their consumption. This rise in default rate, if substantial, can be a threat to financial stability and potentially have detrimental effects on banks' balance sheets. When foreclosure is less easy (households cannot go as much into bankruptcy), then it is a good thing for banks' health, but it means that households suffer more from the increase in mortgage payments which they cannot escape. In a sense, there is no free lunch: the fact that banks are in trouble also reflects the fact that households are shielded from interest rate risk. One cannot get both: either households get hurt (and this is supposed to be one channel through which monetary policy works to reduce economic activity – and therefore inflation) or alternatively banks get hurt, which may perhaps in some cases reduce bank lending, but is also potentially a direct threat to financial stability. Of course, this discussion neglects an important further complication in the euro area: that of substantial heterogeneity in the share of ARMs in different countries. The following paragraph documents this heterogeneity and discusses the consequences for the conduct of monetary policy and for the trade-off between price stability and financial stability in the euro area.

4.2. Importance of Adjustable-Rate Mortgages in the Euro Area

Table 2 shows that there is indeed substantial heterogeneity in the share of ARMs issued each period (as flows) in different countries of the euro area for households. Moreover, this share of ARMs changes substantially over time, as shown in the last column, with sometimes quite hectic evolutions (see in Greece or Slovenia). Other countries have more stable shares of ARMs: at one extreme Finland, with almost all mortgages being issued as ARMs, around 98% most recently. At the other extreme, France, with a very low stable share of ARMs issued (at least recently), below 5%.

This implies of course that monetary policy is being transmitted very unevenly across countries, and that monetary policy leads to a much more important slowdown in aggregate demand in Finland (or in Lithuania, Estonia, and Latvia) than in France (or in Germany, Belgium, Slovenia, Slovakia). At the same time, as was discussed previously, this implies that there is probably less residual interest rate risk on bank's balance sheets in Finland and the Baltic countries, than there is in countries with higher shares of FRMs. Of course, as is discussed in OECD (2021) and van Hoenselaar, F., et al. (2021), FRMs are very heterogeneous themselves, depending on the recourse character of the loan, their duration, etc.

Table 1: Share of adjustable-rate mortgages (ARMs) for households

		MARCH 2023 ¹	MARCH 2022	MARCH 2008	2008-2023 ²
	Finland	98,0%	96,7%	96,7%	 95.6
	Lithuania	96,2%	95,8%	60,6%	 82.5
	Estonia	91,7%	85,0%	86,7%	 84.9
	Latvia	90,1%	95,4%	52,7%	 95.5
	Cyprus	84,5%	99,0%	72,8%	
	Portugal	74,6%	62,8%	97,4%	 65.8
	Malta	68,5%	62,2%	85,9%	 62.9
	Austria	51,0%	28,4%	60,8%	 32.4
	Luxembourg	39,1%	36,4%	86,6%	 31.4
	Italy	36,6%	16,6%	33,0%	 15.8
	Greece	35,9%	NA	29,6%	 87.3
	Spain	25,7%	22,6%	92,0%	 21.9
	Netherlands	19,7%	8,5%	17,6%	 9.6
	Germany	16,1%	8,4%	13,2%	 8.6
	Ireland	8,8%	18,8%	88,3%	 20.3
	Belgium	8,3%	5,6%	11,3%	 5.0
	Slovenia	7,8%	8,8%	79,8%	 10.1
	France	3,5%	2,7%	12,8%	 3.2
	Slovakia	3,3%	1,3%	73,6%	 1.3
	Croatia	NA	10,7%	NA	 13.9

¹ Share of ARMs in the flow of new mortgage loans in March 2023





















² Share of ARMs: Time series from March 2008 to March 2023

Source: ECB, Risk Assessment Indicators, authors' own elaboration. "NA" for missing data.

4.3. The recent evolution of average interest rates paid by households and corporations in the Euro Area

Table 3 shows the evolution of interest rates since the outbreak of the Russian war against Ukraine in February 2022 until February 2023. It allows to gauge the evolution of interest rates in different countries thus far, which is consistent with the above data on the share of ARMs across countries, and shows that interest rates increases have been higher in countries with larger shares of ARMs. This confirms also that there is a correlation between the stock and the flow of credit.

Table 2: Interest rates for households and corporations in the euro area

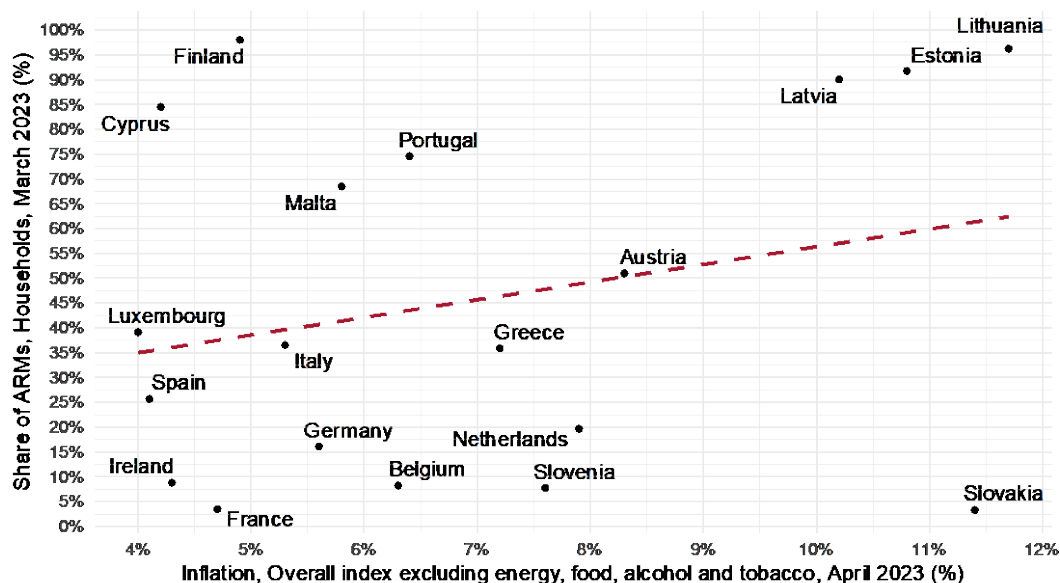
		HOUSEHOLDS			CORPORATIONS		
		FEBRUARY 2022	FEBRUARY 2023	CHANGE IN %	FEBRUARY 2022	FEBRUARY 2023	CHANGE IN %
	Estonia	2,7%	4,9%	2,2%	2,5%	4,8%	2,3%
	Lithuania	2,7%	4,8%	2,1%	2,6%	4,7%	2,1%
	Latvia	3,5%	5,5%	2,0%	2,8%	4,6%	1,8%
	Portugal	2,0%	3,9%	1,9%	2,0%	3,8%	1,8%
	Finland	1,3%	3,0%	1,7%	1,2%	3,1%	1,9%
	Austria	1,8%	3,2%	1,4%	1,5%	3,2%	1,7%
	Cyprus	2,5%	3,7%	1,2%	3,0%	4,8%	1,8%
	Spain	2,3%	3,5%	1,2%	1,6%	3,1%	1,5%
	Luxembourg	2,2%	3,4%	1,2%	1,4%	3,1%	1,7%
	Italy	2,6%	3,6%	1,0%	1,6%	3,7%	2,1%
	Slovenia	3,2%	4,2%	1,0%	1,8%	3,8%	2,0%
	Ireland	3,1%	3,7%	0,6%	2,8%	4,5%	1,7%
	Croatia	4,0%	4,2%	0,2%	2,2%	3,1%	0,9%
	Slovakia	2,2%	2,4%	0,2%	2,2%	4,1%	1,9%
	Belgium	1,9%	2,0%	0,1%	1,5%	2,7%	1,2%
	Netherlands	2,3%	2,4%	0,1%	1,7%	3,0%	1,3%
	France	1,8%	1,9%	0,1%	1,4%	2,5%	1,1%
	Germany	2,2%	2,3%	0,1%	1,6%	2,6%	1,0%
	Malta	5,2%	3,5%	-1,7%	3,6%	4,4%	0,8%
	Greece	NA	NA	NA	3,1%	5,3%	2,2%

Source: ECB, MFI Interest Rate Statistics, authors' own elaboration. "NA" for missing data.

Among the largest countries of the euro area, a great divide is under way between, on the one hand, Germany and France where banking rate hikes are quite limited, and Italy and Spain, on the other hand, where rates have increased quite substantially because of ARMs. It should be noted that there exists a positive correlation between the share of ARMs and inflation (as measured here by core inflation

excluding energy and food, but it is true also for headline inflation), as shown on Figure 9. This implies that monetary policy in the end bites more where it is probably more needed to cool off inflation: inflation is particularly high in the Baltic countries.

Figure 16: Core inflation and share of ARMs across euro area countries



Source: Eurostat, ECB, authors' own calculations. Missing share of ARMs in 03/2023 for Croatia.

4.4. What about banks' health?





















As was stated before, the assessment of financial stability is very challenging even conditional on tighter monetary policy, even in countries with large shares of FRMs, as we do not have any information on how and how much banks are able to hedge their interest rate risks. For this, one would for example need detailed data on derivatives, swaps, etc. and their counterparties for which there is very limited information. Moreover, derivatives themselves have different levels of embedded leverage which correspond to different risk exposures, and also heterogeneous beliefs about the future course of interest rates for banks.²⁴

This leads us to turn to other potential measures of risks for banks, and in particular supervisory statistics for these banks. As shown on Table 4, aggregate measures of profitability do not seem to point to particular difficulties for banks. Rather to the contrary, net interest margin, which is one measure of banks' profitability, is on the rise with rising interest rates. This can be explained (among other things) by the fact that banks enjoy low rates on sticky deposits, which they can use to earn increasing returns even on short-term securities. In such a situation, and even if they suffer some (accounting) losses on FRMs, they will gain from rising interest rates. Anecdotal evidence in fact also seems to suggest that banks tend to "like" higher interest rates²⁵, which can be explained by the fact that European banks on average have more diversified activities so what they lose on the one hand can be recovered in some other business segment. While they gain on unit profits, demand for loans drops (by households and by firms), because credit is more expensive, so the effect on total profits is more ambiguous.

²⁴ Geerolf (2018) develops a purely speculative model of leverage on financial markets.

²⁵ There has also been ample anecdotal evidence that bankers dislike low interest rates because of the so-called flattening of the yield curve.

Table 3: Net interest margin and Return on Equity in euro area banks (profitability)

		NET INTEREST MARGIN			RETURN ON EQUITY		
		2022, Q4	2021, Q4	CHANGE IN %	2022, Q4	2021, Q4	CHANGE IN %
	Spain	2,2%	1,9%	0,3%	10,3%	10,8%	-0,5%
	Slovenia	2,2%	1,9%	0,3%	16,9%	10,5%	6,4%
	Greece	2,1%	2,1%	0,1%	14,4%	-20,4%	34,9%
	Austria	2,1%	1,7%	0,4%	12,8%	8,1%	4,6%
	Estonia	2,0%	1,6%	0,4%	10,1%	8,3%	1,8%
	Portugal	1,9%	1,4%	0,5%	8,5%	4,1%	4,4%
	Latvia	1,9%	1,7%	0,2%	12,3%	10,5%	1,7%
	Lithuania	1,5%	1,1%	0,4%	15,0%	10,7%	4,3%
	Malta	1,5%	1,2%	0,2%	4,1%	3,3%	0,7%
	Italy	1,5%	1,2%	0,3%	9,2%	5,1%	4,1%
	Netherlands	1,4%	1,3%	0,1%	8,0%	8,3%	-0,3%
	Belgium	1,3%	1,2%	0,1%	11,4%	9,4%	2,1%
	Ireland	1,3%	1,1%	0,2%	3,5%	5,9%	-2,4%
	Finland	1,1%	1,0%	0,1%	9,8%	9,3%	0,4%
	France	1,0%	1,0%	0,0%	6,0%	7,2%	-1,1%
	Germany	1,0%	0,9%	0,1%	5,7%	4,1%	1,6%
	Luxembourg	0,9%	0,6%	0,3%	4,2%	3,5%	0,8%
	Cyprus	NA	1,5%	NA	NA	1,0%	NA
	Croatia	NA	NA	NA	NA	NA	NA
	Slovakia	NA	NA	NA	NA	NA	NA

Source: ECB, Supervisory Banking Statistics, authors' own elaboration. "NA" for missing data.

Moreover, return on equity also seems to be on the rise (overall) in 2022-Q4 compared to a year ago. Again, this would tend to suggest that, depending on their interest rate management, interest rate increases might not necessarily be bad for banks, and that overall, their speculative positions with respect to duration risk were not as bad as their American counterparts. Moreover, European banks tend to be more universal banks with more diversified activities and clients on average. As is well-known, the European financial system is also much less market-based and much more bank-based, more intermediated, which also implies that the financial system as a whole might be less sensitive to adverse market movements.





















We may also look at prudential ratios across Euro area banks, as well as their evolution, both with regards to solvency issues as well as with regards to liquidity issues. In terms of solvency issues, Table

5 shows that Tier 1 ratios and Common Equity Tier 1 ratios (CET1)²⁶ are well above 15% in most Euro area countries. However, there has been a slight deterioration in these prudential ratios in the last few quarters.

Finally, liquidity ratios, which are part of the Basel 3 standards applying to EU banks, such as Liquidity Coverage Ratio (LCR) or Net Stable Funding Ratio (NSFR) are also important. For reference, their evolution between 2021-Q4 and 2022-Q4 are again shown on Table 5. It is worthy to note for example that SVB did not apply these key Basel standards.





















²⁶ The highest quality of regulatory capital is called Common Equity Tier 1 (CET1), which is intended to absorb losses of banks immediately when they occur. The CET1 ratio is equal to CET1 divided by risk-weighted assets (RWA), so it is expressing by how much (risk-weighted) assets need to drop for CET1 to be wiped out. RWAs calculate assets weighted by risk. Under Basel 3, US government debt and securities are given a 0% risk weight, whereas residential mortgages (which are not guaranteed by the US government) are weighted between 35% to 200% depending on their risk. Finally, Tier 1 capital also includes Additional Tier 1 capital such as perpetual contingent convertible capital instruments, which are not included in CET1.

Table 4: Tier 1 ratio and Common Equity Tier 1 (CET1) ratios (solvency)

		TIER 1 RATIO			COMMON EQUITY TIER 1 RATIO		
		2022, Q4	2021, Q4	CHANGE IN %	2022, Q4	2021, Q4	CHANGE IN %
	Estonia	22,9%	25,9%	-3,1%	22,9%	25,9%	-3,1%
	Latvia	21,6%	25,3%	-3,7%	21,6%	25,3%	-3,7%
	Luxembourg	20,6%	19,0%	1,6%	19,9%	18,6%	1,3%
	Ireland	20,2%	21,4%	-1,1%	19,1%	20,1%	-1,0%
	Malta	19,3%	19,9%	-0,5%	19,3%	19,9%	-0,5%
	Finland	18,8%	19,5%	-0,7%	17,3%	17,9%	-0,6%
	Belgium	18,0%	19,4%	-1,4%	16,9%	18,4%	-1,4%
	Lithuania	18,0%	22,3%	-4,3%	18,0%	22,3%	-4,3%
	Netherlands	17,6%	19,0%	-1,4%	15,7%	17,0%	-1,3%
	Italy	17,3%	16,8%	0,5%	15,7%	15,3%	0,4%
	Germany	17,1%	16,9%	0,1%	15,7%	15,5%	0,2%
	France	16,5%	16,9%	-0,4%	15,4%	16,1%	-0,6%
	Austria	16,4%	15,9%	0,6%	14,9%	14,3%	0,7%
	Slovenia	16,1%	17,0%	-0,9%	15,8%	17,0%	-1,2%
	Greece	15,2%	14,2%	1,0%	14,8%	13,8%	1,0%
	Portugal	15,0%	14,2%	0,8%	14,4%	13,7%	0,8%
	Spain	14,1%	14,7%	-0,6%	12,6%	12,9%	-0,3%
	Cyprus	NA	19,0%	NA	NA	17,1%	NA
	Croatia	NA	NA	NA	NA	NA	NA
	Slovakia	NA	NA	NA	NA	NA	NA

Source: ECB, Supervisory Banking Statistics, authors' own elaboration. "NA" for missing data.

Table 5: Liquidity Coverage Ratio and Net Stable Funding Ratio (liquidity)

	LIQUIDITY COVERAGE RATIO (LCR)			NET STABLE FUNDING RATIO (NSFR)		
	2022, Q4	2021, Q4	CHANGE IN %	2022, Q4	2021, Q4	CHANGE IN %
 Malta	396,1%	419,3%	-23,2%	187,6%	178,3%	9,2%
 Lithuania	268,3%	379,9%	-111,6%	163,3%	203,2%	-39,9%
 Portugal	251,1%	283,9%	-32,8%	155,2%	148,1%	7,1%
 Slovenia	246,7%	293,1%	-46,4%	174,9%	178,3%	-3,4%
 Latvia	227,1%	347,1%	-120,0%	160,3%	180,1%	-19,9%
 Greece	201,8%	200,7%	1,1%	132,2%	124,3%	7,9%
 Ireland	190,1%	167,2%	22,9%	160,7%	150,8%	9,8%
 Italy	185,2%	192,4%	-7,2%	132,1%	132,0%	0,1%
 Finland	176,7%	179,2%	-2,5%	118,7%	116,2%	2,4%
 Spain	171,1%	203,1%	-32,0%	129,8%	135,5%	-5,7%
 Belgium	165,7%	186,2%	-20,5%	140,4%	146,7%	-6,3%
 Austria	163,0%	176,4%	-13,4%	136,0%	142,0%	-6,0%
 Luxembourg	160,8%	173,6%	-12,7%	143,5%	149,9%	-6,3%
 Germany	153,5%	162,5%	-9,1%	123,2%	125,9%	-2,8%
 Netherlands	149,7%	159,2%	-9,6%	132,9%	135,2%	-2,2%
 France	148,0%	158,2%	-10,2%	115,4%	121,3%	-5,9%
 Estonia	142,8%	156,7%	-13,9%	137,2%	141,1%	-3,9%
 Cyprus	NA	333,3%	NA	NA	159,3%	NA
 Croatia	NA	NA	NA	NA	NA	NA
 Slovakia	NA	NA	NA	NA	NA	NA

Source: ECB, Supervisory Banking Statistics, authors' own elaboration. "NA" for missing data.

Of course, one must be extremely cautious in discussing this, as banking has become extremely complicated and no single indicator is able to convey how well banks manage risk. However, at the macroeconomic level, traditional indicators of bank health do not seem to point to a worrying picture for the euro area as a whole, either in terms of profitability, solvency or liquidity.

CONCLUSION

The sharp rise in ECB policy rates since July 2022 has been primarily motivated by the inflation surge and the requirement to slow it down towards the inflation target at two percent. The wave of bankruptcies in the US banking system has, meanwhile, spurs the threat that monetary contraction (in the US) may have triggered banking and financial stability.

Indeed, there can be trade-offs between the achievement of price stability and the achievement of financial stability. For instance, financial stability may be hurt directly by monetary policy decisions via sudden shifts in banking rates, credit supply and asset prices.

We report evidence that the channels of monetary policy towards banks and the financial system in the euro area seem at work: the yield curve has steepened, banking rates have increased, and credit conditions have tightened. These trends shall not be automatically associated with heightened risk of banking and financial stability though. We report evidence on the US that financial cycles and inflation gap are not that much correlated: a trade-off between financial stability and price stability is not easy to identify in the data. Moreover, by scrutinising aggregate financial indicators for the euro area (recent evolutions in credit, housing and stock prices), it appears that the risk of financial crisis should be neither ignored, nor overstated: the euro area is not facing the conditions for which the probability of a financial crisis would be at its highest.

Finally, we report evidence on the share of adjustable vs fixed rates on loans (or mortgages) across euro area countries. Keeping in mind that monetary policy rate hikes are more (resp. less) effective when the share of adjustable rates is high (resp. low), we show that the monetary channels of transmission to interest rates on households and on corporations have been stronger in countries with larger shares of adjustable rates and also higher inflation, like the Baltic States.

The stabilisation property of monetary policy on inflation may make the end of the restrictive monetary stance more likely. This would then alleviate the possible risk of a pass-through to financial stability. According to the latest available figures, it can be stressed that the health of banks in the euro area has improved between 2021 and 2022, hence during the restrictive stance of the ECB: net interest margins of banks have slightly increased in all countries, while in most of them, returns on equity have also increased. The end of the restrictive ECB policy coupled with European banks in overall good health should, in theory, remove the risk of financial instability. Caution requires to wait for what happens in practice though before disregarding this risk.

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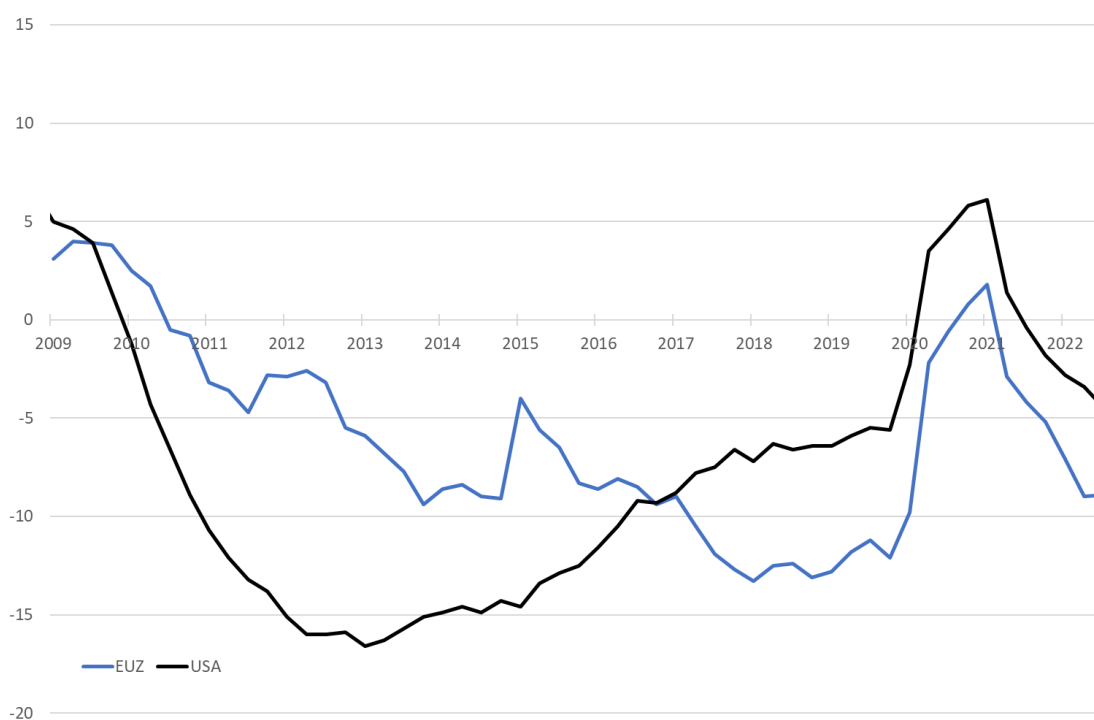
ANNEX

Table 6: Correlation of the financial cycles and the inflation gap

	Credit-to-GdP gap	Stock price cycle	House price cycle	Inflation gap
Credit-to-GdP gap	1			
Stock cycle	0.27	1		
Housing cycle	0.59	0.21	1	
Inflation gap	0.01	-0.07	0.09	1

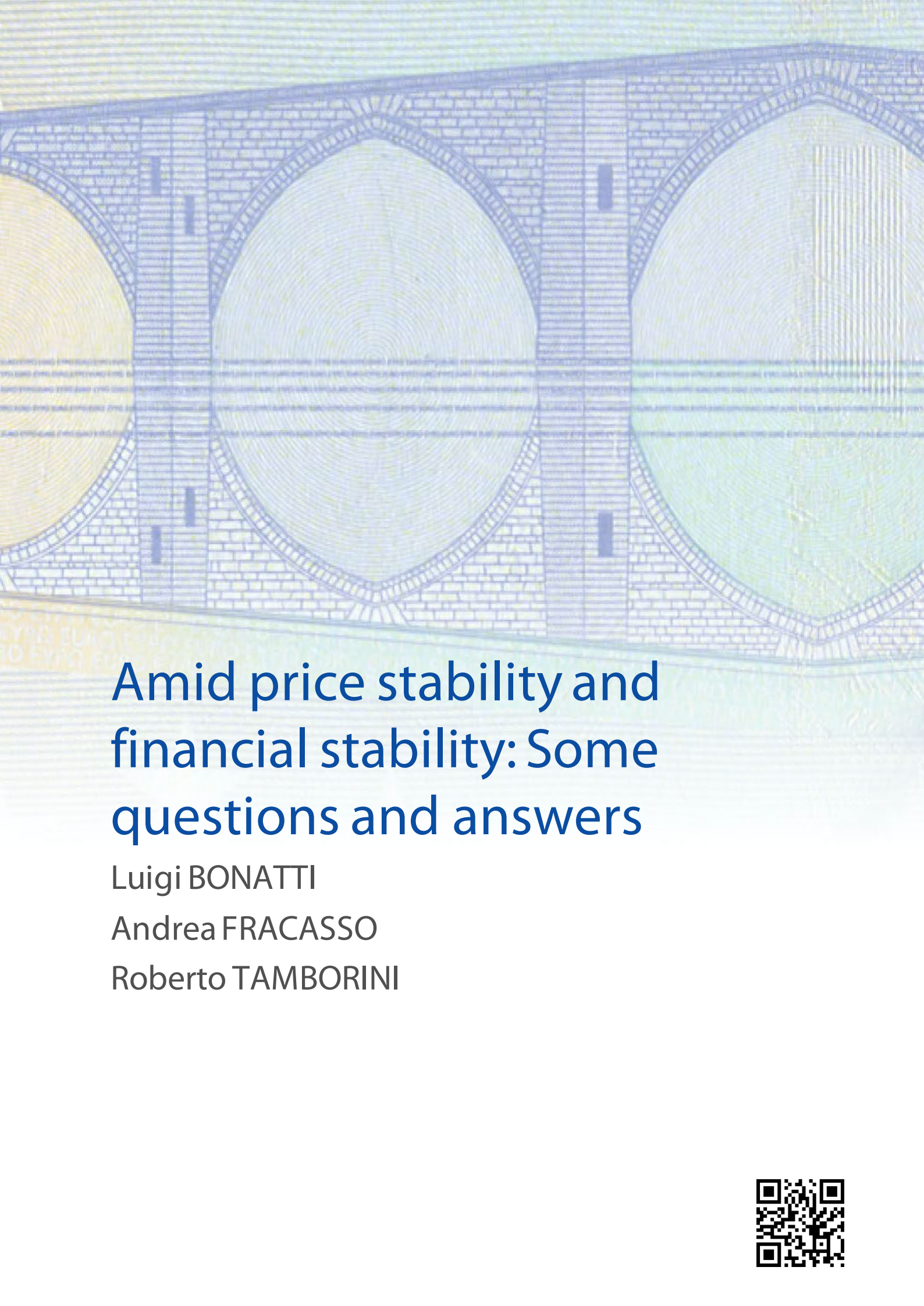
Source: Refinitiv Eikon Datastream, Robert Shiller online data and Authors' calculations.

Figure 17: Credit cycles in the United States and in the euro area (deviation from a statistical trend in %)



Source: BIS.

Note: The deviation from the statistical trend is the gap in % between the credit-to-GDP ratio at each date and a trend computed by the BIS with the Hodrick-Prescott filter and aimed to represent “normal conditions” for credit.



Amid price stability and financial stability: Some questions and answers

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Abstract

We argue that a hard stagflation scenario is still possible. This would have the potential to create a conflict between price stability and financial stability. We therefore address four questions. Why should central banks be concerned with financial stability? What financial imbalances should central banks be worried about? Are monetary policy and macroprudential regulation two tools for two goals? Is the ECB poised to face the price stability vs. financial stability trade-off?

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CONTENTS

LIST OF ABBREVIATIONS	64
LIST OF FIGURES	65
EXECUTIVE SUMMARY	66
1. INTRODUCTION	67
2. WHY ARE CENTRAL BANKS CONCERNED WITH FINANCIAL STABILITY, AND SHOULD THEY?	68
2.1. Price stability and financial stability: a paradigm shift	68
2.2. Four reasons for concern	70
3. WHAT FINANCIAL IMBALANCES SHOULD CENTRAL BANKS BE WORRIED ABOUT?	73
4. MONETARY POLICY AND MACROPRUDENTIAL POLICY: TWO TOOLS FOR TWO GOALS?	75
5. IS THE ECB POISED TO FACE THE TRADE-OFF BETWEEN PRICE STABILITY AND FINANCIAL STABILITY?	78
6. CONCLUSION	83
REFERENCES	84

LIST OF ABBREVIATIONS

BIS	Bank of International Settlements
ECB	European Central Bank
EU	European Union
GDP	Gross domestic product
HICP	Harmonised index of consumer prices
IMF	International Monetary Fund
MRO	Main refinancing operations
SGP	Stability and Growth Pact
TLTRO	Targeted longer term refinancing operations
TPI	Transmission protection instrument
US	United States

LIST OF FIGURES

Figure 1: Channels between the monetary and the macroprudential domains	75
Figure 2: Real interest rates in the euro area	78
Figure 3: Credit and money growth in the euro area	79
Figure 4: Euro area HICP inflation	80
Figure 5: Sectoral wage and profit developments	81

EXECUTIVE SUMMARY

- **Monetary authorities have four connected but distinct, concerns for financial stability** when they set the policy stance. (i) Financial turmoil may impair the transmission of monetary policy, (ii) they may need to support financial stability in times of economic contraction and financial distress, (iii) they may ignite by themselves the conditions for a financial crisis, (iv) they may consider whether or not to be engaged in pre-emptive financial stabilisation.
- **The trade-off between price and financial stability goals is inherently state-contingent.** Monetary policy should not be directed to prevent the emergence of imbalances per se because these latter are not necessarily associated with financial disruptions. The nature and the extent of financial imbalances, together with the intensity and the characteristics of the shocks, determine whether a trade-off between monetary and financial stability goals may materialise.
- **The adoption of an enhanced monetary policy-oriented financial stability analysis** capable of balancing all the current and future price stability risks associated with financial instability conditions is consistent with the pursuit of financial stability.
- **Macroprudential policy is also key to overcome the potential conflicts between price stability and financial stability** in compliance with Tinbergen's principle of two instruments for two goals. There are, however, a few stumbling blocks along the way, in particular in the euro area.
- **An accurate design is necessary to the effect that the three levers - microprudential, macroprudential, macropolicy - are moved consistently.** Such a design is highly sensitive to a wide range of contingent factors, from the financial structure of the economies to the most relevant "frictions" therein, from the origin of instability to the evolution of inflation expectations.
- **The euro area is particularly weak on this front because of the incomplete set of supranational financial institutions that further constraints the implementation of the possibly better solution.** An inconsistency exists between the quest for narrow inflation targeting on the part of the ECB and the resistance on the part of national authorities towards supranational devolution of micro- and macroprudential regulation.
- **The ECB dispels concerns to be caught amid price stabilisation and a financial turmoil** because it deems it likely to complete the disinflationary process in a reasonable time without causing a recession. Moreover, the ECB is endowed with the tools and the capacity to calibrate monetary policy against the risks of financial instability and provide liquidity to the financial system in emergency situations.
- **We warn that an adverse scenario of hard stagflation may still materialise.** Because of the fragmentation of the macroprudential and microprudential arms in the euro area, this scenario **could create conflictual objectives for monetary authorities**, severely testing the resilience of the banking sector, and, we add, the integrity of the euro area once again.

1. INTRODUCTION

Recent episodes of bank distress in the United States (US) and in Europe have brought to the forefront the concern whether monetary policy committed to keeping inflation at bay may generate financial instability. The aim of our paper is to address both the theory, explaining the possible existence of a trade-off between price stability and financial stability, and its practical implications for the conduct of monetary policy, with a special focus on the European Central Bank (ECB) and the likely scenarios that it has to face in the next future. To this end, we combine an overview of the relevant academic literature on the topic and a discussion of current hot issues concerning the ECB's policy.

Section 2 deals with the paradigm shift determined by the US financial crisis of 2007-2009 first and the European debt crisis then: the twin ideas that financial markets are efficient and that price stability is sufficient for ensuring financial stability were undermined. The necessity to design appropriate microprudential and macroprudential regulations as well as institutions came to the forefront, with a special attention to the specific problems of financial markets fragmentation in the euro area. This section also sets forth the reasons explaining why monetary authorities should have concerns for financial stability.

Section 3 explains why financial stability is not the lack of imbalances, but it is the condition in which the unravelling of financial imbalances can be faced by the system without major disruptions. Then, the section discusses the implications of this understanding of financial imbalances for monetary policy, focusing in particular on the euro area and the introduction of the new "Transmission Protection Instrument" (TPI), the tool introduced by the ECB to support the effective transmission of monetary policy across all jurisdictions.

Four alternative regimes governing the division of objectives, tasks and tools between the central bank and the macroprudential regulator are outlined in section 4, which is devoted to the relationship between monetary and macroprudential policies. We end this section by noticing that the search of the best regime is highly sensitive to a wide range of contingent factors, and that in the euro area the incomplete set of supranational financial institutions further constraints the implementation of the possibly better solution.

Section 5 elaborates on the possible scenarios that the ECB is likely to face in the next future, wondering under what circumstances it will have to face a trade-off between price stability and financial stability. Our answer is that one cannot rule out this possibility, especially if core inflation will remain persistently higher than the level consistent with its gradual return to the 2% target in accordance to the timescale envisaged by the ECB.

Section 6 concludes.

2. WHY ARE CENTRAL BANKS CONCERNED WITH FINANCIAL STABILITY, AND SHOULD THEY?

2.1. Price stability and financial stability: a paradigm shift

When the monetary integration process leading to the creation of the European System of Central Banks and to the launch of the euro was put on track, the dominant issue was "**one size doesn't fit all**" (e.g. Dornbusch et al., 1998; Buti and Sapir, 1998; Angeloni et al., 2003). The euro-area stabilisation policy was, in principle, a division of labour between the ECB, focused on symmetric shocks to price stability for the area as a whole, and the governments of the Member States that could take care of national asymmetric shocks by means of fiscal policy tools. Confidence in the system's resilience to dis-integration forces, thus keeping the ECB's strict mandate of price stability immune from other concerns, rested on a mixture of theoretical presumptions and empirical extrapolations.

First, there was optimism about the adequacy of the 3% room for cyclical deficit/GDP ratios as stabilisers of asymmetric shocks established by the Stability and Growth Pact (SGP). Optimism was largely empirical, resting on the past experience of future member countries, when, however, they also could avail themselves of independent monetary policy and adjustable exchange rates (Buti and Sapir, 1998). Scepticism was instead already prevailing with regard to the internal consistency of the SGP with more general principles (Buitter et al., 1993; Kenen, 1995; Feldstein, 1997). The SGP envisaged and addressed only one type of externality, namely excess debt and/or deficit by one or more countries jeopardising the Union's financial stability, generating pressure on the ECB for debt monetisation or transfers between Member States to save one or the other from default. The Pact ignored other externalities, such as those of unilateral changes in the fiscal policy implemented by a single country (especially a large one) in a continent where trade is intense and value chains are increasingly integrated, or those triggered by simultaneous implementation of fiscal consolidations across interdependent countries.

Second, since also ideas matter (Brunnermaier et al., 2016), the conception of monetary policy for the euro area was debtor to the advent of the "New synthesis" between neo-classical and neo-Keynesian ideas, emerged from the macroeconomic quarrels of the Seventies and Eighties (Goodfriend, 1997; Blanchard, 2000). Monetary policy was grafted onto models of self-regulating and self-stabilising markets, except for some price stickiness giving rise to temporary real effects of aggregate demand shocks to be stabilised by appropriate, rule-based changes in interest rates. Among the critical postulates of these models was the **efficiency of financial markets**, the same one also underpinning their role as watchdogs of fiscal discipline (Leijonhufvud, 2007; Stiglitz, 2014). A corollary of this postulate was that **price stability would also ensure financial stability**, and consequently there was no need for central banks to have explicit financial stability targets (Bernanke and Gertler, 2001), also known as **Jackson Hole Consensus** (Smets, 2014). As Stiglitz wrote later, "To me, the strangest aspect of modern macroeconomics was that central banks were using a model in which banks and financial markets played no role" (2014, p. 9).

These fault lines yawned in the euro area, not as a consequence of asymmetric shocks, but in the aftermath of the **first large systemic shock of 2008-09**, imported from the United States through financial markets, when it became blatant that the blueprint on how to govern and keep the whole system together was largely incomplete (De Grauwe, 2013).²⁷ In particular, a dis-integration process of the euro area financial markets was taking hold.

²⁷ "From my perspective as President of the ECB, I remember clearly the huge uncertainty about where we were and which direction we should head in. I remain convinced that had central banks across the globe in the advanced economies not come together to chart a course out of the crisis, the outcome could have been a repeat, if not worse, of the '30s (...). At the same time, in the euro area, the crisis revealed major deficiencies in its governance, ranging from the refusal by some member states to comply with the fiscal rules of the

It is worth recalling the whole passage of the speech of the then ECB President Mario Draghi (2012) containing his celebrated "whatever it takes" promise.

"[...] we think the euro is irreversible. And it's not an empty word now, because I preceded saying exactly what actions have been made, are being made to make it irreversible. But there is another message I want to tell you. Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough. There are some short-term challenges, to say the least. The short-term challenges in our view relate mostly to the financial fragmentation that has taken place in the euro area. Investors retreated within their national boundaries. The interbank market is not functioning. It is only functioning very little within each country by the way, but it is certainly not functioning across countries. And I think the key strategy point here is that if we want to get out of this crisis, we have to repair this financial fragmentation". (p. 2).

One reason for the ECB's modification, not only of its operation tools from "conventional" to "unconventional", but also of its attitude towards financial stability was provided worldwide. After the earlier consensus that price stability was a necessary and sufficient condition for financial stability collapsed with the global financial crisis, central bankers' conventional wisdom was turned upside down. Great impulse came from research at the Bank of International Settlements (BIS) (White, 2006; Borio, 2008, 2012). The shock of the celebrated Great Moderation of the 1990s - stable inflation and sustained growth worldwide - ending up with a global financial collapse raised the doubt that the surface success of "narrow" reaction functions of central banks would hide, if not feed, cumulative **financial fragility**, typically **excess leverage of intermediaries** and of the private sector as well.²⁸ One effect of financial fragility is that intermediaries are **overexposed to (miscalculated) risks**, especially of systemic nature, and/or **cannot withstand restrictive twists** of the monetary policy stance - indeed, the twin triggers of the subprime mortgage crisis in the United States. As the self-regulatory hypothesis of financial markets was set aside, the interconnections among the regulation of individual intermediaries (**microprudential**), the regulation of the intermediaries as a system (**macroprudential**), and the monetary macro-policy came to the forefront.²⁹

A second reason was more specific to the euro area, namely the incompleteness of its financial integration mechanisms and institutions, in particular those devoted to micro- and macroprudential regulation (ECB 2021). In a sense, this was a fault bound to magnify the "one size doesn't fit all" problem.

Since Draghi mentioned **fragmentation** as a major impediment to the proper functioning of monetary policy in the pursuit of its mandate, the ECB pedagogy about its various "unconventional" programmes, up to the creation of the new TPI in July 2022, has hinged on financial stability, and prevention of fragmentation, as a precondition for price stability (Schnabel 2020, 2021, ECB 2021, 2022). The post-pandemic surge of inflation has made this approach more, rather than less, cogent in order to come to terms with the trade-offs between price and financial stability (Wyplosz 2022). **An accurate design is necessary to the effect that the three levers - microprudential, macroprudential, macropolicy - are moved consistently.** The quest for "narrow" inflation targeting to the ECB is hardly consistent with Member States' resistance towards further supranational devolution of micro- and macroprudential regulation.

Stability and Growth Pact to a benign neglect of the major divergences in price and cost competitiveness, from the absence of a crisis management and resolution framework, and, finally, to the lack of a banking union" (Trichet 2015)

²⁸ The notion of financial fragility was introduced by Hyman P. Minsky in his studies of the macro-finance nexus of the 1970s (e.g. Minsky 1982), and was revived after years of oblivion.

²⁹ In this respect, too, the seminal work was done at the BIS (e.g. Crockett 2000).

2.2. Four reasons for concern

At risk of simplifying a very complex issue, it could be argued that monetary authorities have **four, connected but distinct, concerns for financial stability** when they set the policy stance. As an ordering device one may begin from the spillovers from financial stability to monetary policy and then consider the spillovers in the opposite direction.

First, central banks may be concerned that (actual or expected) financial turmoil may negatively affect, or even impair, the correct transmission of monetary policy. Monetary and financial policy domains operate through common transmission mechanisms, and impact each other. It goes unchallenged that central banks may suffer from the impact of financial turmoil on the transmission of monetary policy.

Eisenschmidt et al. (2018) and Schnabel (2020) provide a useful account of the specific problems that may arise, and actually arose, in the transmission channels in the euro area in the aftermath of the global financial crisis. Most of the rings in the chain from the rate on Main Refinancing Operations (MRO) to the long-term interest rate(s) went broken. As a typical example, banks stopped lending to each other in the inter-bank market and drew on central bank's liquidity as a hedge against risk instead of a backup for lending (the so-called "liquidity trap"). It is worth stressing that recent research still detects symptoms of fragmentation in the euro area a decade later (Eisenschmidt et al., 2018; Arce-Alfaro and Blagov, 2022)

As Eisenschmidt et al. (2018) explain, these cases of fragmentation of the transmission channel(s) may well arise in stand-alone countries, but in a multi-country monetary system like the euro area they also assume the peculiar form of breakdown of cross-country operations, that is to say a failure of the "law of one price" of capitals on a grand scale. As said above, this can only exacerbate the "one size doesn't fit all" problem.

Second, consequently, the monetary authorities may feel committed to providing support to financial stability in times of economic contraction and financial distress. According to ECB (2021), this can be done in the first place by stabilising economic activity and inflation during slowdowns, as well as by containing the debt burdens in real terms. Yet, as seen in the last decade worldwide, in periods of outright financial stress, central banks need to adopt extraordinary measures to enforce their desired stance when financial instability jeopardises the ordinary transmission mechanism.³⁰ Monetary policy can prevent the materialisation of bad equilibria associated with uncoordinated fire sales or bank runs or other forms of market overreaction. The adoption of unorthodox quantitative measures, such as asset purchases programmes, to ensure the circulation of the additional liquidity and the reduction of market interest rates are the typical measures undertaken.

As shown by Della Posta and Tamborini (2022), the commitment of central banks to provide backstops against financial distress enhances the resilience of the system. First, larger shocks can be accommodated within the fiscal sustainability boundaries of governments. Second, the anticipation of the no-break-up intervention keeps interest rates lower for any shock. Third, monetary and fiscal devices are synergic: the activation of both reduces the extent of activation of each. Moreover, under any of these circumstances, the stance of the monetary authorities does not diverge from the optimal one because there is no trade-off between price, output and financial stability. Economic, monetary and financial stabilisation efforts go in the same direction because the financial and economic cycles are synchronised.

Admittedly, this set of policy tools may eventually lead to the problem of exiting from a long-lasting and accommodative stance, and more in general, the commitment of central banks to provide backstops

³⁰ See e.g. the earlier Monetary Dialogue papers: European Parliament (2021)

against financial distress is counterbalanced by consideration of the moral hazard problem (see also the fourth point below). In the euro area, moreover, the central bank faces the statutory prohibition to bail out the sovereign debt of Member States. On the other hand, the move of the ECB into the uncharted territory of unconventional monetary policies during the bank-sovereign doom loop was key to the rescue of euro area integrity (Wyplosz, 2014). The same happened again at the outbreak of the pandemic (Schnabel, 2020; Della Posta and Tamborini, 2022).

Third, the authorities may be weary of igniting by themselves the conditions for a financial crisis upon changing their monetary stance. This concern, also dubbed "financial/fiscal dominance" (Benigno et al., 2012), is critical as it arises when a trade-off exists, at least potentially, between pursuing price stability and preserving financial stability. In fact, it has materialised recently, as central banks worry about increasing the policy rates fast, though in the face of a remarkably and persistently high inflation, because of the possible implications for the liquidity and solvency of the banking sector, the private sector or the public sector (International Monetary Fund, 2023).

It is matter of discussion whether the trade-off is unavoidable, and the central bank should state where it strikes the balance *ex-ante* (Wyplosz, 2022), or whether it only arises when underlying financial imbalances pre-exist, in which case the problem is one of (missing) pre-emptive regulation (see e.g. Calomiris, 2023, with regard to bank crises during the Volcker disinflation of the 1980s and now). On the other hand, ECB President Christine Lagarde has argued that there is no such a trade-off, probably meaning that the ECB has the means to address both goals (Lagarde, 2023; also ECB, 2021).

As explained by Schnabel (2023), central banks can take financial stability considerations into account by exploiting the entire length of the medium-term horizon over which price stability is to be achieved: they could thus accept longer deviations from price stability (i.e. higher inflation than desired) if these were necessary to achieve lower risks of financial stability. However, even this strategy could be costly in the long term because it could contribute to undermine the credibility of the central bank and the disanchoring of inflation expectations.

In fact, this solution could be viable only on paper. As mentioned before, pre-emptive policies may not succeed in preventing the emergence of imbalances and/or their smooth unravelling. In these cases, monetary policymakers inevitably come to terms with the financial imbalances and their disorderly correction. Under these circumstances, thus, financial stability concerns cannot but affect the stance of monetary policy, in particular because the authorities must consider the scenarios in which their decisions may turn out to be the very factors igniting a financial crisis. This kind of situations is more likely to occur the greater is the importance of macro-financial amplification channels, the larger the existing imbalances and the more likely the materialisation of bad equilibria.

Finally, should central banks be engaged in pre-emptive financial stabilisation? Should they assess monetary conditions against the risk they build up financial imbalances? Hazards may arise in good times, like during the Great Moderation as was discovered afterwards, as well as in bad times, e.g. the past decade when most observers were concerned with the impact of low interest rates for long periods on the profitability (i.e., lending margins) and resilience of banks, and on excessive risk-taking.³¹ On the other hand, the Jackson Hole Consensus that monetary policy should not systematically "lean against the *financial wind*", as this could compromise its ability to fulfil its mandate, remains well alive, if anything because the extent to which central banks should "lean against the wind" is difficult to gauge due to the costs imposed on economic activity and inflation.

³¹ See e.g. the earlier Monetary Dialogue papers: European Parliament (2020a, 2020b).

While each of these concerns taken by itself seems justified, at least on the grounds of experience, the challenge in view of a solid design of policy-making lies in finding an encompassing and coherent framework. The academic as well as policy-based literature has grown rapidly but substantial consensus is not yet discernible. In the next two sections we seek to offer an overview of the main issues under discussion on two grounds. The first regards the notion itself of "**financial imbalances**", the identification of which may justify the central banks' concerns. The second regards the role of the policy domain that has been developed in response to the global financial crisis, namely the **macroprudential one**. How far can this policy arm go in coping with financial stability concerns *vis-à-vis* the conventional priorities in central banks' mandate?

3. WHAT FINANCIAL IMBALANCES SHOULD CENTRAL BANKS BE WORRIED ABOUT?

In our previous account of the potential trade-off between price and financial stability goals, the role played by accumulated financial imbalances is of great importance. The very word “imbalances” elicits the idea of a prolonged processes of accumulation that culminates into an abrupt and disruptive adjustment, which in turn creates serious financial turmoil or fully-fledged financial crises. According to ECB (2021, p. 85),

“financial stability can be seen as a condition in which the financial system is capable of withstanding both shocks and the unravelling of financial imbalances without major disruption and while continuing to provide its essential services to the economy.”

Financial stability is not the lack of imbalances, but it is a condition in which the unravelling of financial imbalances can be faced by the system without major disruptions.

This understanding of financial instability is not trivial. First, the presence of imbalances or lack thereof does not by itself identify the degree of financial instability. Second, this interpretation puts the emphasis on the severity of the dysfunctions induced in the financial sector and in the real economy by the unravelling of the imbalances. The nature and the extent of the imbalances, together with the intensity and the characteristics of the shocks, determine whether a trade-off between monetary and financial stability goals may materialise. These considerations entail that **monetary policy should not be directed to prevent the emergence of imbalances per se** because these latter are not necessarily associated with financial disruptions. A third aspect to consider is that financial instability can emerge even in good times if credit institutions and financial markets are fragile or if the redressing of small imbalances has a high impact on the economic environment.

In sum, this understanding of financial instability suggested by the ECB staff implies that **the trade-off between price and financial stability goals is inherently state-contingent**. And this in turn means that monetary authorities, in choosing the stance, cannot but consider both i) how it affects the probability of generating instability, and ii) how the transmission is modified in a context of instability. Any unanticipated monetary policy that weakens financial intermediaries also changes the probability that financial instability emerges, for any given combination of pre-existing imbalances and shocks.

The ECB staff (ECB 2021)– see also Schnabel (2021) – offered a pragmatic suggestion by advocating the adoption of an **enhanced monetary policy-oriented financial stability analysis** capable of balancing all the current and future price stability risks associated with financial instability conditions. This solution is consistent with the interpretation of financial stability given above. Such enhanced monetary policy-oriented financial stability analysis, however, should consider properly the extent of financial imbalances, the implications of their disorderly evolution on the economy, and the interaction between these and changes in the monetary stance.

This seems to entail that central banks need complex analytical models that capture nonlinear relationships and envisage multiple equilibria associated with financial market excesses and with animal spirits. Moreover, they need to understand all the complex interactions and spillovers between macroprudential measures and monetary decisions. As these are daunting tasks at the moment, we recommend that authorities continue to use judgment, caution, gradualism and experimentation.

Assuming that adequate analytical models do exist, it should be noted that the information regarding the potential side effects of monetary decisions on financial instability would be, most of the times, immaterial. Most monetary decisions do not impact on financial stability either because the imbalances

are not excessive or because the change in the monetary stance is not large enough to cause their unravelling. However, under certain circumstances, learning that prospected changes in monetary policy might have the potential to weaken financial intermediaries and/or spur existing imbalances could be of utmost importance.

It is the effectiveness, completeness and conservativeness of the macroprudential policy that determine the probability that such circumstances occur. The quality of macroprudential measures does affect the probability that any given change in the monetary stance might provoke an episode of instability, as well as the probability that the trade-off between price and financial stability goals may emerge.

A recent example of this observation has been offered by the diverse impact of interest rate hikes on the banking system in the US and in the European Union. The higher quality of the surveillance and regulatory systems in the EU prevented the emergence of those tensions observed in the US. Not only the severity of the imbalances in the balance sheets and in the business models of the banks across the Atlantic were different, but also the impact of interest rate hikes on banks' liquidity and solvency varied considerably.

Notably, the differentiated impact of increase in policy rates on the perceived sustainability of government debt has long been a source of financial risk in the euro area. This is known as the risk of financial fragmentation associated with disorderly market dynamics across jurisdictions. In July 2022 the ECB decided to introduce an *ad hoc* tool to support the effective transmission of monetary policy across all jurisdictions, the TPI. The timing and the rationale of the TPI reveal that the European authorities were highly concerned with the potential effects that the normalisation of monetary policy could have had on European sovereign bond markets and on the banking sector. The TPI can thus be seen as an emergency backstop for financial stability that, as a matter of fact, **widens the ECB's room of manoeuvre** in the control of inflation.

On the other hand, aware of the risk of a potential interference between the TPI and the appropriate monetary policy stance, the Governing Council committed to conducting only operations that do not cause persistent impact on the overall Eurosystem balance sheet and on the monetary policy stance. This caveat on the limitations of the TPI makes sense, and it is credible because risks of financial fragmentation regard only few euro area countries. Hence, the overall policy stance can be preserved while highly focused measures of support are undertaken. Such a self-constraining caveat, however, would not be credible had the ECB to envisage some destabilising effects of the appropriate stance on the stability of the entire banking sector. In such a case, the trade-off would between price and financial stability would likely re-emerge, as argued before.

4. MONETARY POLICY AND MACROPRUDENTIAL POLICY: TWO TOOLS FOR TWO GOALS?

“The birth of macroprudential policy was a recognition that price stability and microprudential policies were not sufficient to ensure financial stability, and that financial stability was a necessary precondition for price stability”.

(Schnabel, 2021, p.1).

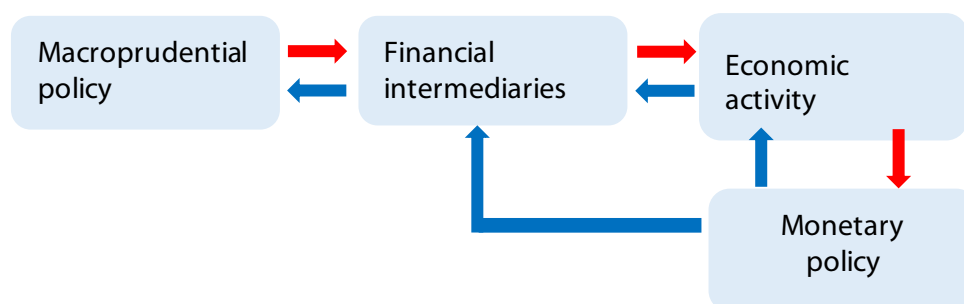
Macroprudential policy seems to offer the leeway to overcome the potential conflicts between price stability and financial stability in compliance with Tinbergen's principle of two instruments for two goals. There are, however, a few stumbling blocks along the way, in particular in the euro area.

The first fundamental fact to be considered is, in the words of Frank Smets (2014, p. 265), that

the relationship between monetary and macroprudential policies also hinges, however, on the ‘side effects’ that one policy has on the objectives of the other and how perfectly each operates in the pursuit of its own primary goal .

The diagram in Figure 1 sketches the main channels of the two-way relationship between the monetary and the macroprudential domains.

Figure 18: Channels between the monetary and the macroprudential domains



Source: Authors' elaboration

Macroprudential policy impinges on monetary policy by way of its effects on the financial intermediaries and then on economic activity (red arrows). In turn monetary policy impinges on macroprudential policy through two channels (blue arrows): indirectly, i.e. through its effects on economic activity and then on the financial intermediaries, and directly, through the effects of the policy rate and liquidity supply on the financial intermediaries.

The second knot lies in understanding how the above two-way channels actually work, i.e. what are the relevant variables and how they are affected by the respective policy decisions. Indeed, the relevant literature has been constantly growing offering a wide range of theoretical results and empirical findings (e.g. Cecchetti et al., 2009; Smets, 2014; Bassi and Boitani, 2023). Among these, the role played by the **banks' balance sheets** stands out on the basis of the theoretical arguments put forward in the seminal works by Bernake and Blinder (1988) and in subsequent developments (Bernanke, 1993; Woodford, 2010).

A synthetic indicator of the banks' balance sheet that is relevant to the transmission channels in Figure 1 in both ways is the **loan-to-equity (L/E) ratio**, i.e. a measure of the leverage of the banking sector. It also figures prominently among the empirical indicators of financial cycles (Borio, 2012; Borio et al., 2012). The L/E ratio measures the lending capacity of banks and its sustainability at the same time. A rising L/E ratio boosts economic activity but it may also anticipate a banking crisis. When the crisis precipitates the

collapse of the L/E ratio shatters the economy. A booming economy consolidates the L/E ratio, whereas braking the economy may deteriorate it.

The third issue is how, and how well, the objectives of the two policies are defined. If "flexible inflation targeting" (a combination of price and output stability with different weights) provides a sufficiently well-established identification of monetary policy's priorities, on the side of macroprudential policy the translation of the goal of financial stability into objectives and instruments is more in a state of flux (see also section 3 above). In this respect, the institutional setup of the euro area is particularly cumbersome since responsibilities concerning financial stability are shared at the supranational level (ECB and European Systemic Risk Board) and at the level of national institutions, with both objectives and instruments that may vary across jurisdictions.

To a greater extent than in the past, the Basel Agreements now provide an overall common ground, and one advantage of the L/E ratio as focal point of the macroprudential-monetary policy nexus is that it is also the inverse of the **Basel III capital adequacy (CA) ratio** (after risk-weighting assets)³². A stylised sequence of events in Figure 1 may start from the macroprudential side by tightening (loosening) the normative CA ratio, with the consequence of braking (spurring) the lending capacity of banks and the level of economic activity.

Therefore, a system where financial stability matters *vis-à-vis* price and economic stability typically supplements the canonical business-cycle indicators of inflation and output with a synthetic indicator of the financial cycle, e.g. the **credit/GDP ratio**. (e.g. Ueda and Valencia, 2012; Smets, 2014; Bassi and Boitani, 2023). The three variables interact, and overall stability is achieved when all three are on target. The two policy authorities are the central bank, which controls the interest rate, and the macroprudential regulator (MPR) which controls the L/E ratio. Next, the classic "assignment problem" to the two policy agencies arises. What is the best allocation of the three objectives across the central bank and the MPR?

An extended analysis of this question exceeds the limits of this paper. As a means to organise ideas, drawing on Smets (2014) and Boitani and Bassi (2023), we can identify four main allocation regimes.

Regime 1: the narrow stabilisation scope of the central bank is maintained, though it may be supplemented with the MPR setting a constraint to the intermediaries' L/E ratio.

Regime 2: the MPR sets a target L/E ratio, but the central bank should actively pursue overall stability.

Regime 3: the central bank still pursues narrow stabilisation, but the MPR acts independently to pursue financial stability (and possibly its spillovers with output)

Regime 4: the central bank and the MPR act jointly to achieve overall stabilisation, and the reciprocal spillovers are taken into account simultaneously in the optimal decision on the respective policy response.

As it may be intuitive, the introduction of an active MPR and the associated specific tool for financial stabilisation may improve the achievement of overall stability with respect to the other regimes. Macroprudential policy tools should be tightened more when the monetary stance becomes accommodative, and vice versa, so as to prevent the building up of excesses. Whereas the regime where central bank and MPR act cooperatively is generally preferred to the one where they act independently, the actual performance also depends on specific circumstances, such as the type of shock and concomitant conditions. Bassi and Boitani (2023) show that **the anchorage of inflation expectations matters**. The central bank+MPR cooperative regime performs better when inflation expectations lose

³² The capital adequacy ratio establishes the amount of capital in relation to assets weighed by their riskiness in order to ensure the bank's capacity to withstand adverse shocks.

anchorage, the reason being that this phenomenon amplifies the macro-financial spillovers and hence the reciprocal interferences of the two policies in the non-cooperative regime.

Two final considerations are in order. The first is that all analyses of the nexus between monetary and macroprudential policies agree on the point that the search for the best institutional setup is **highly sensitive to a wide range of contingent factors**, from the financial structure of the economies to the most relevant "frictions" therein, from the origin of instability to the evolution of inflation expectations. The second consideration, more specific to the euro area, is that its **incomplete set of supranational financial institutions further constraints the implementation of the possibly better solution**. As said before, an inconsistency exists between the quest for narrow inflation targeting on the part of the ECB and the resistance towards supranational devolution of micro- and macroprudential regulation.

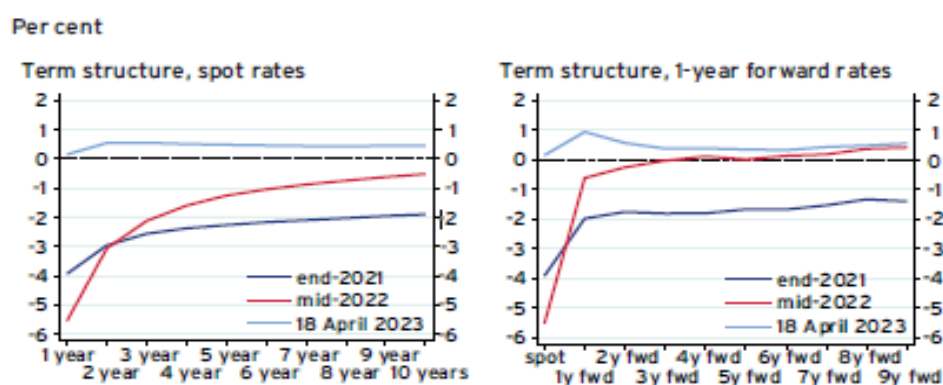
5. IS THE ECB POISED TO FACE THE TRADE-OFF BETWEEN PRICE STABILITY AND FINANCIAL STABILITY?

In Section 3, we made reference to the awareness that the European authorities have about the destabilising effects that the normalisation of monetary policy could have on European sovereign bond markets and the banking sector. However, the ECB appears so confident in its ability to handle potential phases of instability that it has decided to reduce its balance sheet by 15 billion per month on average until June 2023, to then increase the contraction to 25 billion per month from July and to 30 per month from 2024 (at the end of 2024, even the ECB's commitment to reinvest the principal payments from maturing securities purchased under the Pandemic Emergency Purchase Programme will cease).

Most market participants and analysts share the belief that the progressive withdrawal of the ECB from the sovereign bond market could represent a serious problem for the countries of the euro area with the highest public debt, should this occur in a context of stagnant growth. Based on what emerges from the ECB communication, analysts also predict that the contraction of the ECB's balance sheet going on in the next months will be accompanied by two further increases in policy rates of 25 points each, so as to reach 4.25% by the end of July 2023, and at this level (temporarily) halt the cycle of rate hikes. As Ignazio Visco, Governor of the Bank of Italy, notes, this sequence of policy rate hikes has been transmitted fully and smoothly to market interest rates:

From the start of the reduction of monetary accommodation at the beginning of 2022 until mid-April 2023, one-year risk-free rates (measured by overnight index swaps) have picked up from negative levels to 3.7%, while ten-year rates have increased from barely positive values to 3.0%. In real terms, using the rate of inflation implicit in the ILS contracts as a deflator, they currently stand at about 0.2% and 0.5%, respectively, from around -4% and -2% at the end of 2021 (Visco, 2023, p. 12; see Figure 2).

Figure 19: Real interest rates in the euro area



Source: Visco (2023)

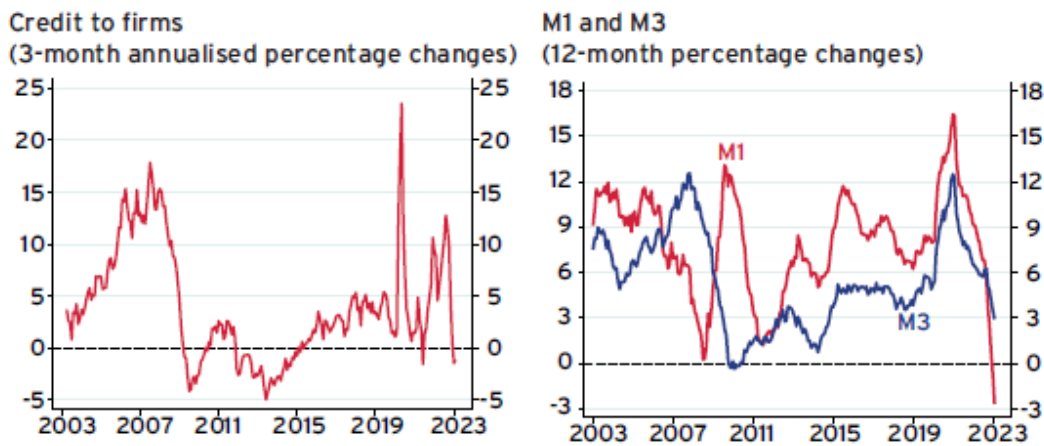
Note: nominal OIS interest rates deflated by the corresponding ILS rates.

Rising interest rates are reducing the value of banks' obligations portfolios, thereby deteriorating their capital ratios. This forces banks to allocate profits to reserves to strengthen them, also in anticipation of the entry into force of the Basel III reform of the output floor. Furthermore, most Targeted Longer Term Refinancing Operations (TLTRO) will expire next June, thus putting an end to a very long period in which liquidity was very abundant and at very low cost. **By contracting liquidity, the ECB will make competition among banks for access to it fiercer and create the conditions for a credit crunch.** Actually, the monetary tightening of last October already caused the cost of liquidity for the banks to rise starting from 23 November, and the latest ECB Bulletin showed that 27% of European banks have already contracted lending. As emphasised by Visco (2023),

“on the one hand, the three-month (annualised) growth of loans to firms in the euro area became negative in January 2023 (-1.1% in February), from a peak of almost 13% in August 2022, while loans to households also continued to decelerate. On the other hand, M3 is slowing down markedly (2.9% in February 2023 on an annual basis, from 6.3% in September 2022) and the rate of change of M1 turned negative in January 2023 (-2.7% in February, a historical minimum). When assessed in real terms, the dynamics of both aggregates are in deeply negative territory and at unprecedented lows” (p. 13; see Figure 3).

Figure 20: Credit and money growth in the euro area

Monthly data



Source: Visco (2023)

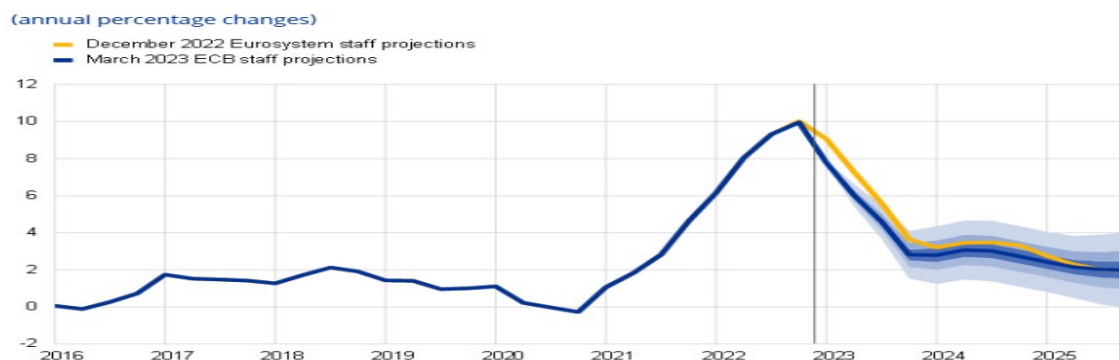
Although there are still no signs in the euro area of a significant increase in the number of firms that default on their debt or struggle to service it, in an environment characterised by shrinking liquidity and rising interest rates, this number is expected to soon increase, forcing banks to allocate more resources to reserves. Moreover, if inflation does not fall in the euro area according to the speed and the timing envisaged by the ECB, and the latter insists on reducing its balance sheet, raising interest rates and contracting liquidity in order to accelerate the disinflationary process, then **the current slowdown could be transformed into a recession, with an increasing risk that the financial instability inherent in the situation described above could materialise.**

The substantial optimism about the possibility of completing the disinflationary process in the euro area in a reasonable time without causing a recession, but rather in a scenario of growth, albeit low, is also publicly shared by the ECB's top officials (see, e.g., Lane, 2023, and Figure 4), although the latter repeat on every occasion that the great uncertainty of the economic and geopolitical framework imposes a data-dependent approach in which the ECB's policy instruments are recalibrated from time to time in light of incoming economic and financial data.

This optimism is motivated by the observation that the supply chain disruptions due to the pandemic are in the process of being completely resolved, and above all that the recent counter-shock to energy prices has eliminated the main driver of European inflation and will soon push core inflation down in the euro area. It is also argued that these supply-side developments are reinforced by what is occurring to aggregate demand, which is contained by the impact that the increase in interest rates is having on the

expenditures of households and firms,³³ to which one should add the loss of purchasing power that consumers are incurring because of inflation.

Figure 21: Euro area Harmonised index of consumer price (HICP) inflation



Source: ECB

Notes: The vertical line indicates the start of the current projection horizon. The ranges shown around the central projections are based on past projection errors, after adjustment for outliers. The bands, from darkest to lightest, depict the 30%, 60% and 90% probabilities that the outcome of HICP inflation will fall within the respective intervals.

In order for these depressive effects not to cause a fall in aggregate demand and lead to a recession, they must be offset by positive income effects. One may be due to the decrease in the prices of imported energy. Others may be due to the moderately expansive fiscal policies conducted by the governments of the euro area, to a growing global economy supportive of euro area's exports, and —possibly— to the desire of European consumers to spend what is left of the savings accumulated during the pandemic. **As one can see, the trajectory that the euro area economy should follow in the near future to bring inflation down quickly without causing a recession is a very narrow path, almost a razor's edge.**

Apart from the great uncertainty associated to geopolitical developments, which could easily overturn all predictions concerning the European economy, another important element of uncertainty is linked to **the evolution of wages in response to the rapid increase in prices that has taken place in the last two years in the euro area.** Indeed, this increase has led not only to a substantial erosion of the purchasing power of wages, but also to a redistribution of added value in almost all sectors towards profits and away from labour (see Figure 5):

Unit profits increased by 9.4% in the fourth quarter of 2022, year-on-year, and contributed more than half the domestic price pressures in that quarter, while unit labour costs increased by 4.7% and contributed less than half (Arce et al. 2023).

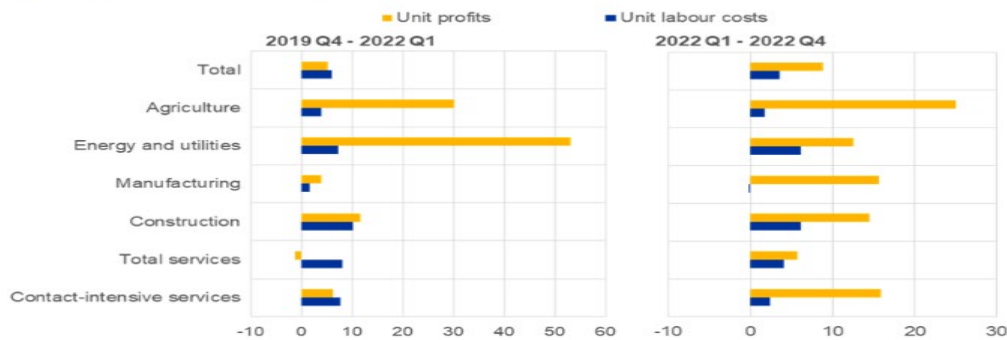
Considering that the unemployment rate is at its lowest in the euro area and that labour shortages are reported with increasing frequency (particularly in those services in high demand after the pandemic), it is not surprising that workers use their bargaining power to rebuild their real wages, with inevitable consequences on the trend of core inflation. Indeed, it should be borne in mind that services inflation accounts for almost two-thirds of core inflation and that wages represent around 40% of direct input costs for services providers. It is therefore no coincidence that in this phase the ECB's top officials are paying particular attention to the developments of wages, for fear that what the ECB's President has recently defined a "tit-for-tat" dynamics will be triggered (Lagarde 2023b), namely a mutually reinforcing

³³ As far as firms are concerned, it is often overlooked that the increase in interest rates also represents an increase in costs for many of them, which can therefore have an upward impact on the prices of their products.

process in which higher profit margins lead to higher nominal wages and vice versa, causing an upward price spiral and pushing long-term inflation expectations away from the 2% anchor.

Figure 22: Sectoral wage and profit developments

(percentage changes over the indicated period)



Source: Arce et al. (2023)

Notes: Unit profits correspond to gross operating surplus over real value added. Contact-intensive services include trade, transport, accommodation and food services as well as arts, entertainment, recreation and other services. Latest observations: 2022 Q4

The ECB is exerting its moral suasion in the hope that the recovery of the purchasing power lost by wages in the last two years will take place only gradually over time allowing for a smooth return of inflation to the target value of 2% in 2025. This raises the question of how the ECB will react if its auspice will be substantially disregarded, a possibility which cannot be excluded as time goes by. If in the second part of this year inflation will remain far from the 3% envisaged by the ECB for the end of 2023, the dilemma will arise of whether to accommodate higher inflation or pushing forward with rate hikes, balance sheet reductions and liquidity cuts for banks. This could make it likely to cause a recession that could easily assume the characteristics of stagflation. **The latter scenario would bring with it serious risks of financial instability**, with the involvement first of those countries with higher public debt and/or whose banking system is more exposed to sovereign risk or to the crisis of interest rate sensitive sectors such as the real estate one.

These considerations are connected with the observation expounded in the previous sections that the impact of monetary policy decisions on financial stability depends also on the macroprudential measures in place. The new stress-test results on the adequacy of banks' capital will be published by the European Banking Authority at the end of July 2023. The latest assessment in 2021 was run against a negative scenario that differed remarkably from those discussed in this section as it assumed a prolonged COVID-19 impact and a low interest rate environment. The macroprudential stress tests conducted by the ECB in October 2021 for 2021-23 were based on a baseline scenario reflecting a strong rebound in economic activity in 2021 and an adverse scenario assuming a prolonged COVID-19 scenario in a "lower for longer" interest rate environment. Neither of the exercises run in 2021 covered a stagflation scenario which, as we noted in a previous report to the European Parliament, was not considered likely at the time (Bonatti et al., 2021).

In a [blog post](#) in December 2022, Luis de Guindos, Vice-President of the ECB, and Andrea Enria, Chair of the ECB Supervisory Board, maintained that *"the banking sector is sound enough to handle the effects of rising rates on their balance sheets. However, banks must prepare for potential longer-term effects related to monetary policy normalisation"*. Their scenarios included a flattening of the yield curve (thereby reflecting higher short-term interest rates that successfully reduce inflation over a short horizon) and a steepening of the yield curve (consistent with a rapid fall of inflation due to medium-term concerns about the world economy). The resilience of the European banking sector appears to be confirmed also under a baseline

scenario of an economic slowdown in 2023 with the risk of a shallow recession, although bank-specific situations may require interventions.

Under the flattening scenario, few banks are assessed as subject to suffer from a significant increase in funding cost, whereas the cost of risk (i.e., higher ratios of provisions over the year to the average volume of loans in the year) matters in case of a steepening scenario. More importantly, they concluded that

“the models banks use to manage assets and liabilities were often calibrated in environments of low rates, and don’t capture the shifts in consumer preferences and behaviours that typically take place as rates rise, such as deposit withdrawals. Also, the frequency of validation, back-testing and recalibration of those models is not satisfactory.”

They also noted *“deficiencies with respect to the monitoring of risks arising from derivative hedging transactions, (...) the measurement and management of risks related to government bonds and other instruments, (...) the identification of, and preparation for, potential second-round effects and structural changes related to the normalisation of interest rates”*.

In our view, it is fair to conclude that their account of the situation in the banking sector and our account of the possible scenario ahead **make it very likely that the ECB will have to take into account financial risks in calibrating the raise of interest rates and the speed of the quantitative tightening.**

6. CONCLUSION

President Lagarde recently stated (2023b):

"I have made clear that there is no trade-off between price stability and financial stability."

We have argued that under certain circumstances this trade-off would in fact arise. The ECB has so far depicted a baseline scenario that could be considered as relatively benign, though with some tensions. The ECB considers it likely to complete the disinflationary process in the euro area in a reasonable time without causing a recession, but rather in a scenario of growth, albeit low. We have warned that the most adverse scenario that could emerge, however, would be quite unique, given the unusual characteristics of stagflation.

This does not mean that the ECB will be taken by surprise or unwilling to intervene. In fact, it is true that, immediately after the sentence quoted above, the ECB's President specified that

"we have plenty of tools to provide liquidity support to the financial system if needed and to preserve the smooth transmission of monetary policy."

The ECB certainly has the tools and capacity to provide liquidity to the financial system in emergency situations, although the incompleteness of the Banking Union would make it more challenging in the event of a major crisis. A well-established principle of modern central banking, though not easily understood, is the so called "decoupling", whereby the central bank can manage changes (hikes) in the policy rate and changes (extensions) in liquidity supply one independently of the other. Similarly, the TPI may be activated if the risks of fragmentation linked to a sovereign debt crisis create obstacles to the "smooth transmission of monetary policy", though the political knots linked to its implementation would make its use problematic. It is therefore arguable that the availability of such tools might save the ECB from surrendering to the trade-off between price stability and financial stability.

We have also highlighted that this auspice crucially depends also on the quality of (the design and implementation of) the relationship between monetary policy and macroprudential policy. The adequacy of the macroprudential policy provisions, in turn, rest on the ability to identify the correct set of adverse conditions that affect both financial intermediaries and the economy, as well as their reinforcing interactions. Because of the fragmentation of the macroprudential arm and the limitations in the current management of banks in the euro area, **the materialisation of a hard stagflation scenario would have the potential to create conflictual objectives for the monetary authorities**, severely testing the resilience of the banking sector, and, we add, the integrity of the euro area once again.

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Two sides of the same sparkly coin? Disinflation and financial market jitters amid monetary tightening

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Abstract

Restrictive monetary policy dampens inflation effectively, but it also raises stress in financial markets. This happens through revaluations of financial assets on banks' balance sheets and through dampened economic activity. Moreover, apart from the positive effect of exiting negative interest rates, banks' net interest margin is generally negatively affected by interest rate hikes. With most of the disinflationary impact of higher interest rates yet to materialise, monetary policy should allow the financial sector to digest the rapid rate hikes of last year by reducing the pace of tightening.

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CONTENTS

LIST OF ABBREVIATIONS	92
LIST OF FIGURES	93
EXECUTIVE SUMMARY	94
1. INTRODUCTION	95
2. THE IMPACT OF INTEREST RATE HIKES ON FINANCIAL MARKET CONDITIONS	97
2.1. Literature overview	97
2.2. Empirical results	97
2.3. CISS: A more comprehensive measure of financial conditions	98
3. RECENT DEVELOPMENTS IN FINANCIAL MARKET CONDITIONS	100
3.1. The March 2023 banking turmoil	101
3.2. The shift in market expectations	101
4. THE IMPACT OF INTEREST RATE HIKES ON COMMERCIAL BANKS' INTEREST RATES	103
4.1. Empirical results for the euro area	103
4.2. Cross-country evidence	104
5. CONCLUSION	106
REFERENCES	107

LIST OF ABBREVIATIONS

CCyB	Countercyclical capital buffer
CISS	Composite Indicator of Systemic Stress
ECB	European Central Bank
EONIA	Euro Overnight Index Average
€STR	Euro Short-Term Rate
EU	European Union
EUR	Euro
Euribor	Euro Interbank Offered Rate
Fed	Federal Reserve
HICP	Harmonised index of consumer prices
ICE	Intercontinental exchange
LTV	Loan-to-value
M1	<i>Narrow money</i> ; currency in circulation and overnight deposits
SVB	Silicon Valley Bank
TFEU	Treaty on the Functioning of the European Union
US	United States
USD	US dollar
VAR	Vector autoregression

LIST OF FIGURES

Figure 1: Responses to a restrictive ECB interest rate shock, baseline model	98
Figure 2: Responses of Composite Indicator of Systemic Stress (CISS) and its subindices to a restrictive ECB interest rate shock	99
Figure 3: Indicators of financial stress	100
Figure 4: CISS subindices for the euro area	101
Figure 5: Current and expected policy interest rates, daily	101
Figure 6: Impulse responses to a restrictive ECB interest rate shock, various rates	104
Figure 7: Distribution of impulse responses to a restrictive ECB interest rate shock after 12 months, various rates	105

EXECUTIVE SUMMARY

- **The nature of macroeconomic shocks determines the central bank's trade-off between price stability and financial stability.** Macroprudential policy mitigates this conflict, but its implementation requires smooth and careful coordination with interest rate policy.
- In turn, interest rate policy has a direct impact on financial markets. This happens via price adjustments of assets held by financial firms and via aggregate demand affecting the demand for financial products. **Restrictive monetary policy shocks raise financial market stress.**
- The easing of financial market stress in recent months was sharply but temporarily interrupted in March 2023. The banking turmoil has thus been a serious but short-lived event, but **significant systemic risk is looming in the sector.**
- **Banks' net interest margin is negatively affected by monetary tightening**, as interest rates on new short-term deposits are the most sensitive to changes in policy rates. Banks have benefited from moving out of negative interest rates, but bank profitability may fall as new deposits rise before stabilising thanks to higher lending rates.
- Monetary policy has been tightened rapidly and significantly over the past year, and most of the effects have yet to materialise. **It therefore seems appropriate to reduce the pace of monetary tightening** so that the effects can unfold, and the financial sector can digest these changes.

1. INTRODUCTION

The legal basis for the mandate of the European Central Bank (ECB) to ensure financial stability is enshrined in Article 127 TFEU (Treaty on the Functioning of the European Union). Firstly, financial stability can be considered a necessary means to achieve the primary objective of maintaining price stability. Secondly, Article 127 TFEU confers on the ECB the responsibility to "contribute to the smooth conduct of policies pursued by the competent authorities relating to [...] the stability of the financial system." (European Union, 2016)

The traditional objective of monetary policy to ensure price stability is generally implemented in the form of keeping the (headline) inflation rate close to a pre-determined medium-term target level. In contrast, "financial stability" lacks a precise definition and, moreover, there is no specific measure to gauge "financial instability". It is typically understood by central banks as a state in which the financial system can withstand shocks and mitigate financial imbalances, allowing it to perform its key economic functions. From a practical point of view, "abnormal" credit expansion is often viewed as a critical indicator of systemic risk (Bank of England, 2009) as it precedes financial crises (Borio & Drehmann, 2009) and is linked to sharp declines in the values of financial assets and real estate.

The policy conflict that arises between the objectives of price versus financial stability can best be observed by the example of a productivity shock (Glocker & Towbin, 2012): Contemporary macroeconomic models predict a decline in inflation and an increase in loans in response to an expansionary productivity shock. Under these circumstances, a monetary policy aiming to stabilise inflation would favour a decline in the (policy) interest rate in order to keep real rates low and hence bring inflation back to the target. However, a monetary policy which also has a financial stability mandate would favour an increase in the (policy) interest rate, as this would attenuate credit demand. Hence, two goals should be implemented with one policy instrument: the (policy) interest rate should increase and decrease at the same time. Against this background, macroprudential policy has been established alongside traditional interest rate policy and equipped with various instruments, including some under the direct control of the ECB, such as reserve requirements.

The COVID-19 crisis prompted many countries to relax macroprudential policy tools quickly (Nier & Olafsson, 2020), highlighting the role of macroprudential policy as a full-fledged tool of economic policy. This development is supported by theoretical foundations (Gersbach & Rochet, 2017; Bianchi & Mendoza, 2018; Glocker, 2021) that extend to situations where monetary policy is stuck at the zero lower bound (Rubio & Yao, 2020; Farhi & Werning, 2016; Korinek & Simsek, 2016), and by empirical evidence of effectiveness (Claessens et al., 2013; Glocker & Towbin, 2015; Cerutti et al., 2017; Altunbas et al., 2018; Galati & Moessner, 2018). However, these new policy arrangements raise questions as to the potential conflicts between macroprudential and monetary policies. The former may have adverse side effects on the main objectives of monetary policy, such as inflation and output stabilisation. Likewise, monetary policy can hinder macroprudential policy's objectives of ensuring financial stability and resilience, which often involves dampening the credit cycle.

Garcia Revelo and Levieuge (2022) reveal that conflicts between these two policies are more likely in the event of shocks which have a broader impact on the economy (i.e., macroeconomic shocks) rather than sector-specific shocks such as housing shocks. As regards the former type of shocks, one of the key factors to consider is the degree to which macroprudential and monetary policies complement or substitute each other. Glocker and Towbin (2012), Garcia Revelo and Levieuge (2022), Aikman et al. (2023), and other scholars emphasise that the degree of complementarity or substitutability between macroprudential and monetary policies depends on the nature of macroeconomic shocks. In cases of positive demand shocks and credit booms, for instance, it may be appropriate for both policies to

tighten in the same direction. Conversely, if there is an adverse shock to bank credit supply resulting in tighter credit conditions, then both the countercyclical capital buffer (CCyB) and interest rates should be lowered.

As far as sector specific shocks are concerned, they can be addressed appropriately with sector-specific instruments, such as loan-to-value (LTV) caps, for instance, and are less contentious because they can be targeted precisely. This implies that macroprudential policy interventions can be easily implemented without fear of potential adverse spillovers to other sectors and the objectives of monetary policy. On the other hand, when considering a broad-based macroprudential policy instrument, as for instance the CCyB to target sector-specific shocks, then a conflict with monetary policy often arises. This occurs since their primary targets frequently move in opposite directions. In this context Aikman et al. (2023) argue that while deploying the CCyB produces significantly better outcomes compared to using only interest rates as an instrument, the instruments are generally substitutes, with monetary policy easing when the CCyB tightens. As a result, the implementation of the CCyB and monetary policy necessitates smooth and careful coordination.

Importantly, in many cases the instruments of a particular policy can sometimes even work against the objectives of the policy itself, and hence create unintended policy outcomes. As stressed in Glocker (2021) while it is common in many countries to tighten macroprudential policy by, for instance, raising reserve requirements to attenuate credit growth for preserving financial stability, higher reserve requirements may, however, incentivise banks to then choose riskier assets, thereby worsening financial conditions.³⁴ Despite the potential drawbacks of macroprudential policy tools and the conflicts with the objectives with other policies, they are undoubtedly an important supplement to traditional fiscal and monetary policies. This reflects the Tinbergen (1952) principle that a policymaker cannot intend to hit targets for more objective variables than the number of instruments available. However, as Tinbergen emphasises, having "n" instruments does not guarantee that "n" objective targets can be hit. There must be "n" independent instruments where the effects of any one instrument on the objectives are not proportional to those of any other or any combination of others.

³⁴ While in principle a riskier asset portfolio must be amended with a higher capital base, this does not necessarily apply. What matters in this context is the extent to which banks have discretion as to the weights attached to the riskiness of the asset portfolio (see Mariathasan & Merrouche, 2014).

2. THE IMPACT OF INTEREST RATE HIKES ON FINANCIAL MARKET CONDITIONS

There are several channels through which interest rate hikes affect financial market conditions:

- **Credit risk:** Rising interest rates increase the credit risk of borrowers with variable rate loans or who need to refinance their debt, prompting more defaults and losses for lenders.
- **Liquidity risk:** Higher interest rates can also increase liquidity risk, as investors may become unwilling to hold certain assets or to lend to certain borrowers.
- **Balance sheet risk:** Higher interest rates can impact the balance sheets of financial institutions, as they may experience a decline in the value of assets or a rise in the cost of funding. In March 2023, this led to bank runs at several US financial institutions, including Silicon Valley Bank (SVB).

2.1. Literature overview

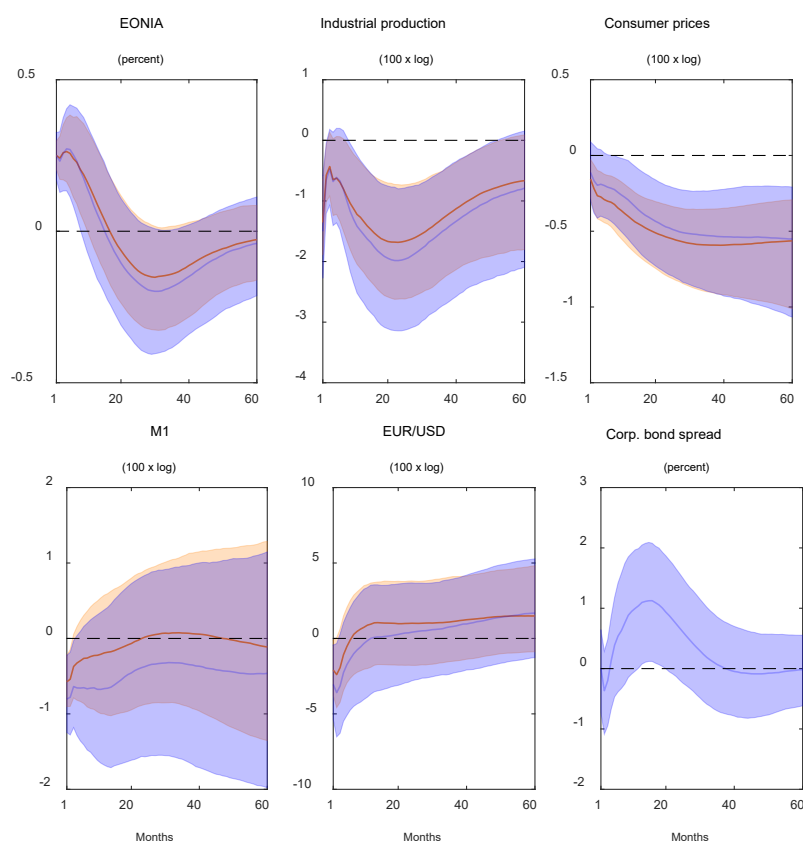
In the aftermath of the global financial crisis, the role of financial market conditions for monetary policy has received increased attention in the academic literature. Caldara and Herbst (2019) show that financial conditions, as measured by the yield spread between low-rated corporate bonds and safe US Treasuries, played an important role in shaping monetary policy in the United States during the Great Moderation. They find that the Federal Reserve (Fed) eases monetary policy in response to a tightening of financial conditions and that, in turn, financial conditions deteriorate when monetary policy is tightened (which can happen in response to rising inflation or a sustained upswing in the business cycle). They find that not accounting for this channel conflates exogenous and endogenous monetary policy actions and leads to an underestimation of the effects of monetary policy.

This work has made it increasingly common to consider financial market conditions in econometric models, not only in models of the US economy but also in those of the euro area. Jarociński and Karadi (2020) include a measure of financial market conditions in euro-denominated asset markets (hereinafter "ICE spread") and find that financial conditions in these markets deteriorate in response to monetary policy tightening. These results are confirmed by the analyses of Hafeman and Tillmann (2020) and Andrade and Ferroni (2021), who each use different approaches to identify monetary policy shocks and different measures of financial market conditions.

2.2. Empirical results

Badinger and Schiman (2023) use the same variable as Jarociński and Karadi (2020) to measure financial market conditions and confirm that the latter deteriorate when the ECB raises interest rates. However, in contrast to Caldara and Herbst (2019), they find that excluding the corporate bond spread from the model does not affect the other results (Figure 1). This implies that, in contrast to the Fed, financial market conditions do not affect the ECB's monetary policy decisions. This difference in the conduct of monetary policy may be due to the fact that financial markets play a more subordinate role in continental Europe than in the United States and are therefore less relevant for output and price developments.

Figure 23: Responses to a restrictive ECB interest rate shock, baseline model



Source: Authors' own elaboration.

Notes: Lines are median impulse responses to a 25 basis point EONIA increase; shaded areas are 68% credible sets. The results for the six-variable baseline model are in blue, those for a five-variable model excluding the corporate bond spread are in orange. The effects are in percentage points for variables measured in percent and in percent for log variables.

Figure 1 shows the impact of an exogenous 25 basis point interest rate increase on various macroeconomic variables over five years³⁵. The money market rate, as measured by EONIA (Euro Overnight Index Average), reacts immediately to an interest rate increase. The effect on output, as measured by industrial production in the euro area, is negative and increases gradually, peaking one and a half to two years after the shock and then levelling off. Similarly, the effect on the euro area's harmonised index of consumer prices (HICP) is negative and increases with a time lag. The fact that the price level is dampened permanently, as shown in the upper right panel of Figure 1, means that inflation, i.e. the rate of change in the consumer price level, is dampened transiently. The stock of narrow money (M1, euro area³⁶) reacts negatively at the time of the shock, but the effect is less clear in the medium term. The euro appreciates against the US dollar initially, but this is quickly reversed. Finally, as discussed above, the yield spread between low-rated euro-denominated corporate bonds and safe US Treasuries (the ICE spread) rises in response to a restrictive monetary policy shock.

2.3. CISS: A more comprehensive measure of financial conditions

Our baseline model includes a variable of financial market conditions that measures the difference

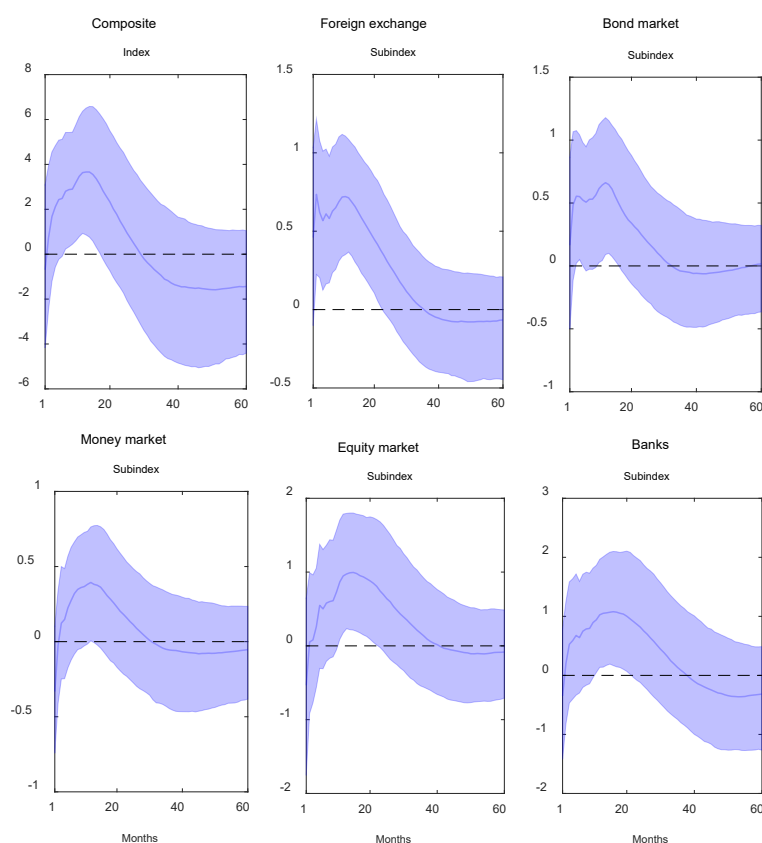
³⁵ These are average effects for the first twenty years of the ECB, i.e., from 1999 to 2019. See the original paper for more details (Badinger & Schiman, 2023).

³⁶ M1 includes cash and overnight deposits.

between the option-adjusted yield on euro-denominated below-investment-grade corporate debt and safe US Treasuries. While it captures well the stress in euro area financial markets, it is a fairly specific measure of it.

Holló et al. (2012) propose a more comprehensive measure. Their Composite Indicator of Systemic Stress (CISS) consists of five sub-indices from different financial markets (foreign exchange, bond market, money market, financial equity market, and banks), which in turn are based on different indicators of financial stress. The composite indicator rises disproportionately when stress builds up simultaneously in the sub-markets, i.e., when systemic risk emerges. Using this alternative indicator of financial stress in our model confirms the baseline results (see Figure 2): Financial market stress increases in response to a restrictive monetary policy shock and peaks after one to one and a half years, a few months before real output bottoms out.

Figure 24: Responses of Composite Indicator of Systemic Stress (CISS) and its subindices to a restrictive ECB interest rate shock



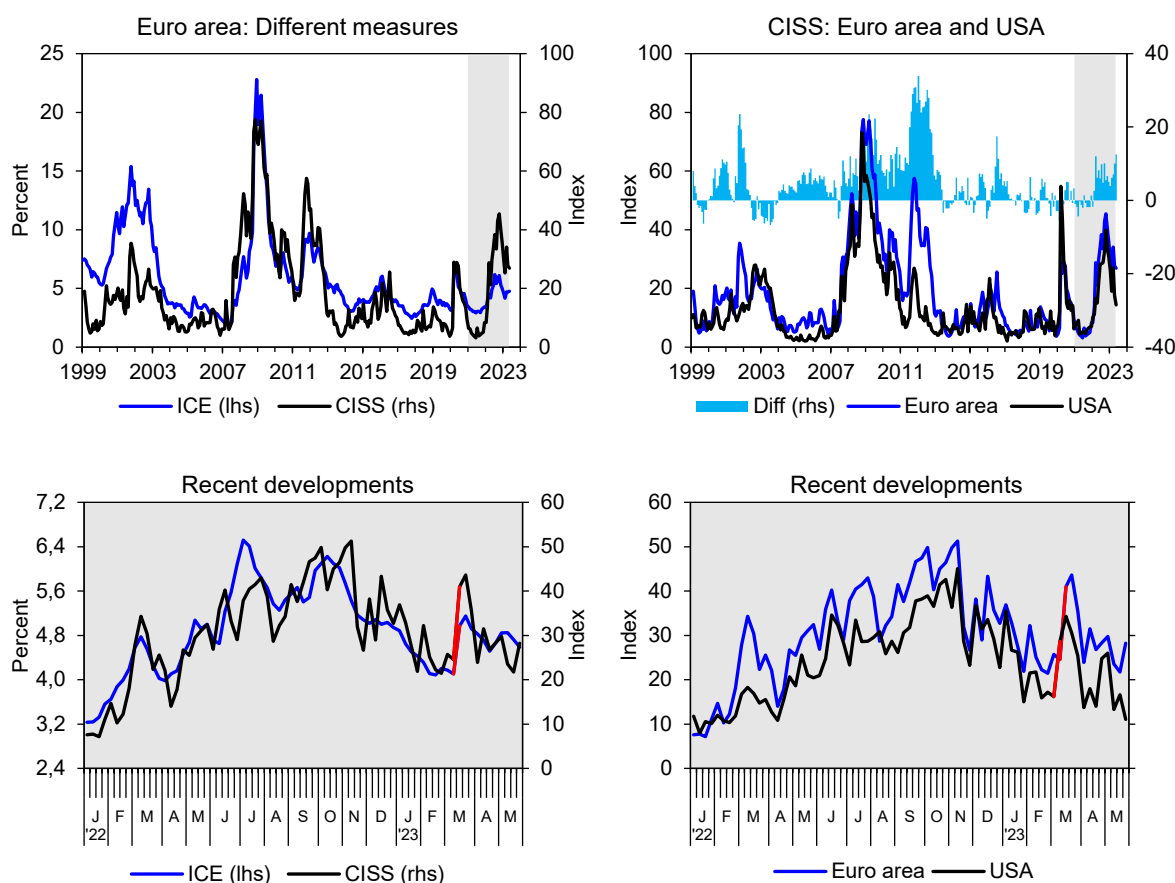
Source: Authors' own elaboration.

Note: Lines are median impulse responses to a 25 basis point EONIA increase; shaded areas are 68% credible sets. The effects are in index points.

3. RECENT DEVELOPMENTS IN FINANCIAL MARKET CONDITIONS

The CISS is a weekly indicator and ranges from 0 to 100, while the ICE spread is available on a daily basis and is conceptually unbounded from above. Both indicators reached their historical highs in December 2008 (at 84 index points and 23 percent respectively, Figure 3, top left-hand panel). In addition to the CISS for the euro area, there is also a CISS for the US economy (Figure 3, top right-hand panel).

Figure 25: Indicators of financial stress



Source: ECB, Macrobond; Federal Reserve Bank of St. Louis.

Note: Monthly averages and weekly values (ending Friday). Red lines are increases after the problems of SVB (US index, 2nd week of March 2023) and Credit Suisse (euro area indices, 3rd week of March 2023) intensified. Diff is the difference between euro area and US CISS.

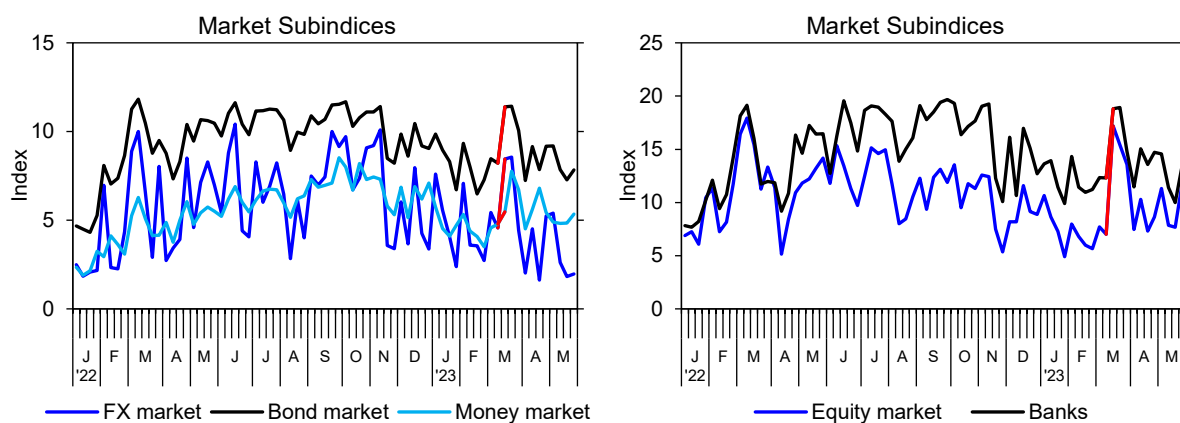
After the euro crisis in 2011-12, when the euro area CISS exceeded the US CISS by more than 25 index points on average, the two indicators settled at similar average levels until February 2022, Figure 3, top right-hand panel). With the Russian invasion of Ukraine in February 2022, the gap reappeared and remained until recently. In April 2023, the euro area indicator exceeded its US counterpart by 11 index points (Figure 3, bottom right-hand panel). Thus, systemic risk is currently higher in the euro area than in the United States.

Despite the reappearance of this gap, the trend overtime has been broadly similar in the two currency areas. Financial market stress has risen steadily in the first ten months of 2022. Since November 2022, it recedes. The banking turmoil in March 2023 (marked in red) only temporarily interrupted this downward trend.

3.1. The March 2023 banking turmoil

The collapse of the SVB lifted the US CISS by a good 12 index points, the problems at Credit Suisse a few days later raised the euro area CISS by more than 16 index points. While these spikes were soon reversed, they are among the top 1.9% (US) and 0.7% (euro area) week-to-week increases since January 1999. From 14 to 25 March, when the problems at Credit Suisse intensified, the ICE jumped by 0.5 percentage points, which is among the top 1.5% one-day increases in its history. These developments suggest that the March 2023 banking turmoil was a short-lived but serious event.

Figure 26: CISS subindices for the euro area



Source: ECB, Macrobond.

Note: Weekly values (ending Friday). Red lines are increases after the problems of Credit Suisse (3rd week of March 2023) intensified.

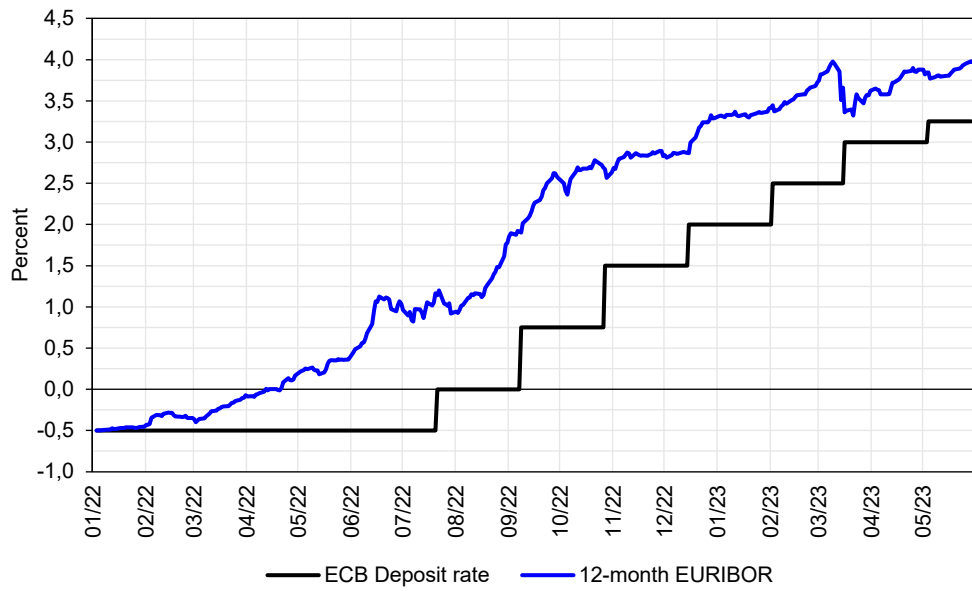
The euro area CISS subindices all rose as a result of the March 2023 banking turmoil (Figure 4), but to different degrees. While the increases in the Foreign Exchange Market Subindex and the Money Market Subindex a week later were only among the top 9.9% and 7.4% week-to-week increases in their respective history, the increase in the Financial Intermediaries (Banks) Subindex and the Bond Market Subindex were among the top 1.5% and 1.4% increases, while the spike in the Equity Market Index of more than 10 index points was the single largest one in its entire history. While all these increases were reversed in the following weeks, they illustrate the above average systemic risks currently looming in the financial system, especially in the euro area.

3.2. The shift in market expectations

Have market expectations of the ECB's future monetary policy stance changed following the March 2023 financial market tensions? One way of inferring these market expectations is to assess the evolution of medium-term money market interest rates. Figure 5 shows the 12-month EURIBOR (Euro Interbank Offered Rate) together with the ECB deposit rate, i.e., the current policy rate. The 12-month EURIBOR incorporates expected future key interest rates as it equates the return on a deposit at a commercial bank with the return on a deposit at the central bank.

In the wake of the banking turmoil in March 2023, the 12-month EURIBOR experienced the largest decline in the current tightening cycle, falling from almost 4% to 3.3%. However, most of this decline was quickly reversed. All in all, this paints a similar picture to the financial market stress indicators, namely that the March 2023 banking turmoil was a severe but short-lived event.

Figure 27: Current and expected policy interest rates, daily



Source: ECB, European Money Markets Institute, Macrobond.

4. THE IMPACT OF INTEREST RATE HIKES ON COMMERCIAL BANKS' INTEREST RATES

Financial intermediation between savers and investors is the core business of commercial banks and their most important source of revenues. In 2021, the net operating income of all banks of the European Union (EU 27) amounted to EUR 728 billion, of which EUR 327 billion (45%) resulted from net interest income. In this section, we analyse the response of the deposit and lending rates for commercial banks in several euro area countries and the euro area as a whole. We include all countries in our analysis for which monthly data about interest rates for newly offered business are available for at least the years 2003 to 2023³⁷.

The interest rates for new business should be responsive to changes in the policy rates of the ECB, while the average interest rate on the stock of deposits and credits will depend on the maturity composition at each individual bank. We will distinguish in the following between deposit rates with a maturity of up to 1 year (short-term) and maturities of more than 2 years (long-term). Equivalently, lending rates on consumer credits are usually of a short-term nature, while the lending rates for house purchasing credits (mortgage) are fixed for longer terms.

In February 2023, euro area banks offered on average a rate of 1.85% for new deposits with a maturity of less than 1 year. The average rate for long-term deposits was 2.21%, corresponding very closely to the Euro Short-Term Rate (€STR³⁸, 2.20%). The lending rate for consumer credit was 7.11%, while the rate for house purchasing credit was 3.26%. We analyse the interaction among the 1-day interbank interest rate³⁹ and the commercial banks' deposit and lending rates⁴⁰.

4.1. Empirical results for the euro area

Figure 6 is based on a model for the whole euro area and shows responses to a 25 basis point shock of the 1-day interbank interest rate over a horizon of 60 months. The long-term deposit rate and the lending rate for house purchasing credits (mortgages) respond very similarly to a monetary policy shock (right-hand panel). In economic terms this means that the interest margin between long-term borrowing and lending is hardly affected by a tightening of the main refinancing rate. We can also observe that both rates increase by less than the 1-day interbank interest rate and peak some months later.

The left-hand panel of Figure 6 compares the response of the short-term deposit rate and the lending rate on consumer credit. While the latter is similarly muted like the long-term rates, the short-term deposit rate is more responsive to the interest rate shock. This indicates a higher substitutability between money market refinancing and refinancing through deposits with short maturity. In order to prevent depositors from reallocating their savings to money market funds, banks offer higher deposit

³⁷ The estimation sample is January 2000 to February 2023 for Austria, Belgium, Germany, Portugal, Spain, and the euro area. For Finland, France, Italy, and Luxembourg the sample runs from January 2003 to February 2023. The interest rates for new borrowing and lending activities of commercial banks are collected by the European System of Central Banks via a survey among banks.

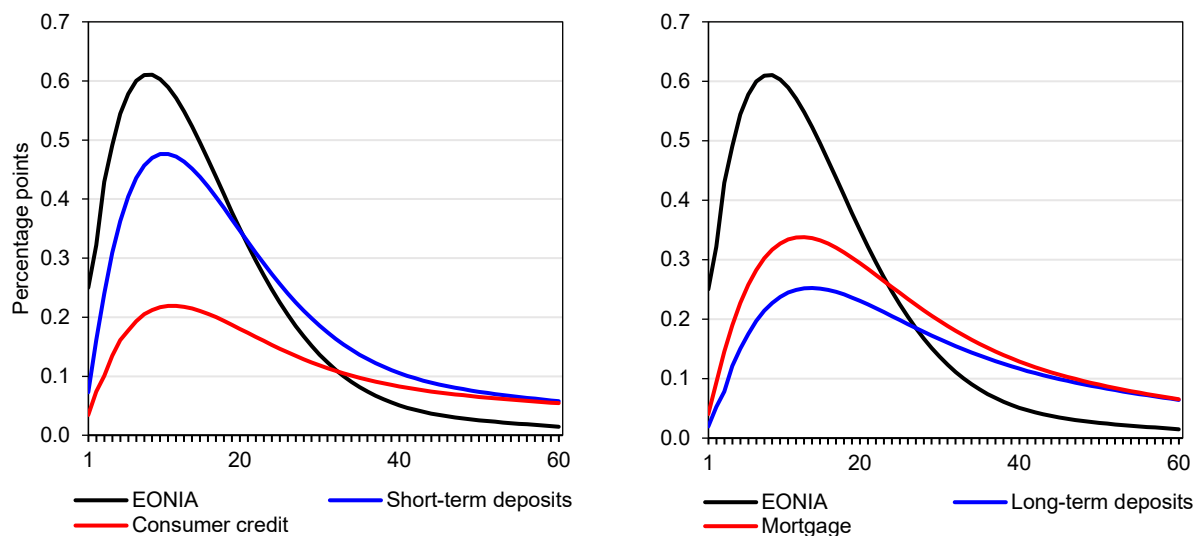
³⁸ The €STR is considered a risk-free rate and calculated by the ECB using overnight unsecured fixed rate deposit transactions over EUR 1 million.

³⁹ EONIA until end of 2021, then replaced by €STR (Euro Short-Term Rate).

⁴⁰ We do so by estimating country specific vector autoregressions (VARs), which capture both the effects of monetary policy (via the 1-day interbank interest rate) on banks' interest rates and the feedback from the state of the economy (as reflected in the banks' interest rate setting behaviour) to monetary policy. By considering a triangular identification, we assume that monetary policy may affect commercial banks' rates within the same month, but that monetary policy does not (cannot) respond simultaneously to interest rate developments, but with a one-month lag.

rates to their customers. Because deposit rates lag behind the 1-day interbank interest rate, banks are able to capture a small convenience rent offered by savings accounts. The weaker response of longer maturities may result from uncertainty about the effect of monetary policy on the yield curve (Tillmann, 2020).

Figure 28: Impulse responses to a restrictive ECB interest rate shock, various rates



Source: Authors' own elaboration.

Note: Median impulse responses to a 25 basis points increase in the 1-day interbank interest rate over 60 months.

The muted response of lending rates for house purchase credits implies that the interest rate margin between new longer-term lending and borrowing business remains almost constant after a restrictive monetary policy shock. A profit squeeze may result from the strong response of short-term deposit rates because more than 80% of total deposits are short-term (see European Banking Federation, 2022). A reinforcing effect results from the stock of house purchase credits, which is large in comparison to newly concluded business, therefore the inertia in interest earnings and payments associated with existing contracts should dominate the development of the interest margin in the short-term.

Our estimates show the average impact of monetary policy shocks on bank lending and deposit rates since 2001. More recently, however, bank profits have risen in the face of monetary tightening. We believe that this recent development is mainly due to the exit from negative interest rates, which had depressed banks' profitability in the first place. Going forward, we expect banks' net interest margins to increasingly suffer from the effects we have presented above. In the medium term, the pressure on bank profitability should ease as the share of new higher-yielding loans in banks' loan portfolios increases.

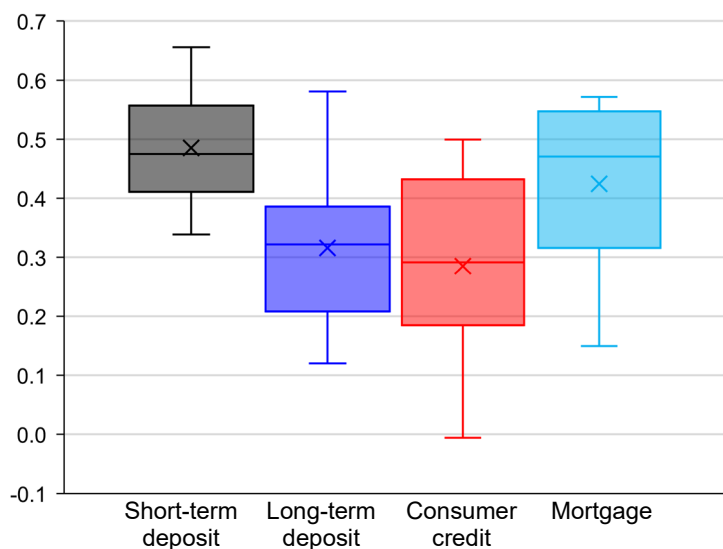
4.2. Cross-country evidence

Figure 7 documents country-specific results. Each boxplot shows the distribution of impulse responses in deposit and lending rates to a 25 basis points shock to the 1-day interbank interest rate after 12 months. We record the smallest spread in responses across countries for the short-term deposit rate, where the minimum response (+0.34 basis points) is measured in Italy, while the maximum response occurs in Luxembourg (+0.66 basis points). The widest spread across countries can be seen for the responses of lending rates for new consumer credits. Here the minimum happens to be in Germany (-0.01 basis points) and the maximum is again in Luxembourg (+0.50 basis points).

The general results of the euro area response of deposit and lending rates in Figure 6 also hold at the

level of individual Member States. Short-term deposit rates for new business respond more strongly than the corresponding short-term lending rates, and long-term deposit rates increase less than the lending rates for new mortgages. Germany is an exception, showing almost no (in the case of consumer credit) or weak (in the case of mortgages) response of lending rates for new business. Moreover, German deposit rates with longer commitment periods move in tandem with long-term lending rates.

Figure 29: Distribution of impulse responses to a restrictive ECB interest rate shock after 12 months, various rates



Source: Authors' own elaboration.

Note: Distribution of impulse responses of various deposit and lending rates to a 25 basis point increase in the 1-day interbank interest rate after 12 months (new business). Each boxplot presents the minimum and the maximum observed across countries as the lower and upper whisker. The interquartile range between the first and the third quartile is given by the box, and the horizontal line within the box represents the median response across countries. The cross shows the mean value of our cross-country sample. Countries included in the sample are Austria, Belgium, Germany, Spain, Finland, France, Italy, Luxembourg, Portugal, and the euro area total.

5. CONCLUSION

The spike in financial market stress in March 2023 due to the banking turmoil, which ultimately had its roots in the tightening of (US) monetary policy, was short-lived and only temporarily interrupted the downward trend in financial stress. However, it was a very large spike, as measured by different indicators, and was felt in various financial sub-markets. This suggests that significant systemic risk is still looming in the sector.

Interest rate hikes affect financial market conditions by revaluing assets and related balance sheet items as well as by dampening aggregate demand and hence the demand for financial products. Moreover, interest rate hikes also weigh on banks' profitability – apart from the beneficial effects of exiting negative rates – as banks increase their short-term deposit rates more than their lending rates. Furthermore, investors may reallocate their portfolios, by withdrawing funds from bank deposits and reinvesting those funds in the money market. This may not change the funding position of the whole banking sector, but it may drive vulnerable banks with a short-term deposit base into a funding crisis.

The nature of macroeconomic shocks determines the trade-off between price stability and financial stability faced by a central bank. Macroprudential policy can mitigate this conflict, but its implementation requires smooth and careful coordination with conventional interest rate policy. Shocks driving inflation and the demand for loans into opposite directions (e.g., energy price shocks) require a higher degree of coordination between macroprudential instruments and the adjustment of target rates. Shocks that push inflation and the demand for loans into the same direction may benefit from a careful combination of macroprudential instruments with conventional interest rate policy. The complementarity between some instruments allows to use each toolbox less intensively, thus dampening negative side effects and allowing for regional variation in the policy stance.

Monetary policy has been tightened considerably over the past year, and it can take up to four years for the full disinflationary effects to unfold (see Schiman-Vukan, 2023). Against this background, it seems reasonable to slow down the pace of tightening to allow the financial sector to digest these recent changes in the monetary environment.

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Following recent episodes of stress in the banking sector in the US and Switzerland, the ECB's role in safeguarding financial stability is under scrutiny. The ECB has claimed that no trade-off exists between its primary mandate on maintaining price stability and safeguarding financial stability. Furthermore, the 2021 monetary policy strategy review confirmed that financial stability is a pre-condition for financial stability, and vice-versa. Yet, further interest rate hikes may still give lead to headwinds for the financial sector.

Four papers were prepared by the ECON Committee's Monetary Expert Panel, analysing the implications of financial stability on the ECB's conduct of its monetary policy.

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