

# MONETARY POLICY & THE ECONOMY

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25 years of EMU in Austria

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# Editorial

*Fabio Rumler, María T. Valderrama*

This year marks the 25<sup>th</sup> anniversary of Economic and Monetary Union (EMU), of which Austria has been an integral member since its inception. Since then, we have witnessed the global financial crisis (GFC), the European sovereign debt crisis, a period of inflation too low for too long, a once in a century global pandemic and the first war in European territory since the Balkan wars in the 1990s. All these events together with the many, necessary steps taken to push forward EMU, including the introduction of a common European currency, the euro, have naturally had an impact on the Austrian economy and the Oesterreichische Nationalbank (OeNB).

The OeNB went from being the central bank of a small open economy with an exchange rate pegged to the Deutsche mark to being a founding member of the Eurosystem, which jointly manages the second most important currency in the highly globalized economy of today. The euro's importance is highlighted by the fact that it is used not only in the euro area but also in some of the neighboring countries. EMU has also influenced the implementation and the transmission of monetary policy in Austria.

In this last issue of the OeNB's *Monetary Policy & the Economy*, we commemorate 25 years of EMU by analyzing various aspects of EMU and its implications for the Austrian economy, the OeNB and some countries in Central, Eastern and Southeastern Europe (CESEE). OeNB experts investigate (1) how the Austrian macroeconomy has developed since the beginning of EMU, (2) how the transmission mechanism of monetary policy in Austria has changed, (3) the use of the euro in selected CESEE countries, and (4) the OeNB's role in the decision-making process of the Eurosystem.

Christian Ragacs and Klaus Vondra investigate to what extent the Austrian economy has benefited from the introduction of the euro and more generally from EMU. For that purpose, key macroeconomic variables are compared between Austria and selected peer countries inside and outside of the euro area (Germany, Belgium and the Netherlands, and Sweden and Switzerland). From 1999 to the GFC in 2008–09, the Austrian economy performed quite similarly to most of its peer economies. After the GFC, Austria entered a recession with real GDP growth being temporarily lower than in most of its peer countries. Overall, cumulative growth of Austrian real GDP between 1999 and 2023 amounts to 44%, which is more than the euro area average of 38% but lower than in its small peer countries Belgium, Switzerland and Sweden. The HICP inflation rate of Austria was broadly in line with its peers, except for Switzerland, but became considerably higher after the COVID-19 pandemic. The openness indicator, which is the sum of exports and imports as a share of GDP, increased substantially from 75% in 1999 to 125% in 2023. The current account changed from a small deficit to a positive balance in 2002 and has remained so, apart from 2022 due to the pandemic and increased energy prices. The authors also provide a comprehensive overview of empirical studies trying to assess GDP and inflation effects of the single European market and the introduction of the euro on Austria. Most of these studies find significant growth effects in the short run. The authors conclude that Austria, a strongly export-oriented economy with a significant tourism industry, has benefited considerably from the introduction of the euro and EMU.

In their paper, Robert Ferstl, Bernhard Graf and Claudia Kwapil analyze the transmission of monetary policy over the last 25 years both in Austria and in the euro area. They find some evidence that the pass-through of policy rates is not complete, especially in the age of unconventional monetary policy after the GFC. For example, lending rates of corporate and mortgage loans are adjusted almost fully and immediately, while the pass-through to overnight deposit rates is rather sluggish. Moreover, the authors find an asymmetric pass-through concerning overnight deposit rates: A rise in interest rates is transmitted faster than a decline in interest rates. Furthermore, the transmission of monetary policy on retail rates is found to be somewhat faster in Austria than in the euro area as a whole.

Thomas Scheiber and Julia Wörz take a closer look at the role of the euro as a hedge against exchange rate fluctuations and inflation in selected CESEE non-euro area countries. They show that deposit euroization had declined during economically stable years but has increased recently in response to rising inflation and the war in Ukraine. In some Central European countries, such as Czechia, Hungary and Poland, only a small share of total deposits is denominated in euro and is predominately held by nonfinancial corporations. In the Western Balkan countries, on the other hand, euro denominated deposits constitute a large share of total deposits and are mostly held by wealthier households. An analysis of OeNB Euro Survey data indicates that wealthier individuals hold foreign currency deposits primarily in euro. Motives for holding euro deposits shift with economic conditions and interest rate differentials, impacting deposit trends over the last 25 years.

Finally, Ingrid Ettl and Anita Roitner examine the role of national central banks in the Eurosystem's decision-making process. For this purpose, they interviewed former OeNB Governors, the current Governor and a former ECB Executive Board member. The Governing Council of the Eurosystem, which consists of the governors of all national central banks and six members of the ECB Executive Board, functions as a collegial body and relies on group discussions to reach a solid majority or a unanimous decision. Joining EMU meant for the OeNB that it would hand over monetary decision-making to an international institution and formulating monetary policy on an equal footing with other EU member states. Before that, the Austrian schilling was pegged to the Deutsche mark, implying that the OeNB followed the monetary policy of the Deutsche Bundesbank. Furthermore, due to Austria's historical and economic ties with CESEE, the OeNB has specialized in analyzing this region which contributes greatly to the Eurosystem's economic analysis.

25 years of EMU are an important milestone in the ongoing process of European integration. The Eurosystem has evolved into a strong institutional framework that has successfully met all challenges to monetary union so far. The Austrian economy has benefited greatly from EMU membership and the introduction of the euro. To promote the international role of the euro and to complete European monetary integration, it is important to push forward the European banking union and capital markets union. In addition to the single monetary policy, a common European banking and capital market would allow Austrian households and firms to reap the full benefits of European economic integration.

Nontechnical summaries

## Nontechnical summaries in English

### **25 years of EU Economic and Monetary Union in Austria: a macroeconomic assessment**

*Christian Ragacs, Klaus Vondra*

In this article, we look at how the Austrian economy has developed since the introduction of the euro and whether the Austrian economy has benefited from it.

Austria has been a member of the European Union since January 1, 1995. With the irrevocable fixing of exchange rates, the euro was introduced as book money in eleven countries on January 1, 1999, heralding the last of the three stages of Economic and Monetary Union (EMU). Since then, nine more countries have adopted the euro. Hence, the euro is the official currency in 20 out of 27 EU countries. On January 1, 2002, the euro was introduced as cash.

Since the introduction of the euro, the Austrian economy has managed to maintain its above-average gross domestic product (GDP) per capita position within the EU. Over the past 25 years, the average growth in labor productivity per hour worked was higher than in most key peer countries (which are Germany, Belgium, the Netherlands, Sweden and Switzerland). The Austrian economy owes this robust development to a strong industrial sector, an above-average share of the tourism sector and a growing services sector. In the 25 years since joining the EU, Austria's export industry has successfully maintained its international competitiveness. This is reflected in an increased degree of economic openness, a sustained positive current account balance, nearly constant market shares and comparatively stable price competitiveness. Introducing the euro as common currency was a vital step to push forward the Single European Market and the "four freedoms" that come with it: free movement of goods, services, labor and capital in the common European market. The four freedoms as well as the introduction of a common currency should have positive implications on economic growth in the EU. The advantages are (1) economies of scale (implying a larger economic area, no tariffs or other trade barriers, lower transport, information and transaction costs), (2) efficiency effects, (3) productivity gains (through more competition and comparative cost advantages) and (4) allocation effects (such as direct investment and labor mobility). In this article, we summarize the results of several studies that estimate the growth effects for the Austrian economy following the necessary integration steps to join the EU. Most of the studies under review suggest a substantial additional short-term growth stimulus (cumulative GDP up to +28.6%) but not a change in the long-term growth rate. The effects of euro introduction are considered to be weaker compared to other integration steps, but many studies find significant positive growth effects for Austria ranging from cumulative 0.7% to 9.3% GDP growth.

### **The pass-through of policy interest rates to bank retail rates in Austria**

*Robert Ferstl, Claudia Kwapil, Bernhard Graf*

This study investigates how changes in monetary policy interest rates are passed through to interest rates that banks set for consumers and businesses in Austria (and the euro area). Why does this matter? When central banks set monetary policy interest rates, their objective is to steer inflation rates by influencing the consumption and investment behavior of households and firms. However, monetary policy interest rates do not directly affect the interest rates that banks set for consumers and businesses. Rather, monetary policy interest rates have an influence on money market rates, which in turn influence retail deposit and lending rates for consumers and businesses, i.e. they are passed through what is called the interest rate channel of monetary policy transmission. This pass-through can take time and can be incomplete. A hypothetical example of an incomplete pass-through is when a 1 percentage point increase in money market rates leads to an increase in consumer deposit rates of only 0.5 percentage points. The extent to which changes in monetary policy interest rates and money market rates are transmitted to consumers and businesses is crucial to the effectiveness of monetary policy and therefore of great interest to central bankers.

For the 25 years since the start of the European Monetary Union, the study finds fast and almost complete pass-through of changes in money market rates to banks' time deposit and lending rates in Austria. Moreover, we provide evidence that the pass-through to overnight and time deposit rates in Austria is faster when money market rates are falling than when they are increasing. The pass-through to overnight deposit rates is significantly slower than to time deposit and lending rates, and it is also incomplete in the long run. In addition, our findings suggest that the pass-through is faster in Austria than in the euro area as a whole. Finally, we find that there is a long-term stable relationship between money market and retail interest rates, indicating that the pass-through process in Austria has not significantly changed over time.

## Exporting stability to the European neighborhood – the role of deposit euroization in CESEE revisited after 25 years of EMU

*Thomas Scheiber, Julia Wörz*

As a major global currency, the euro is in demand also beyond the euro area. In this article we describe the levels and trends in euro deposits as held by individuals and firms in ten Central, Eastern and Southeastern European (CESEE) economies. The share of euro deposits in total deposits is called deposit euroization. For households, it may be attractive to keep their savings in euro rather than in their national currencies if they expect, for example, high inflation in their domestic currency or high fluctuations in the exchange rate. Holding euro deposits can help to cushion such fluctuations, especially when inflation fluctuates more strongly than the exchange rate. Further, the difference in interest rates between the domestic currency and the euro will also influence how attractive it is for households and firms to hold euro deposits. But even when the domestic currency shows a high degree of stability, households and firms may stick to using euro deposits because of past crisis experience or for matters of convenience given the widespread use of the euro in these countries.

While the euro may serve to import stability to the region, high euroization can also turn into a stability risk for the banking sector. Therefore, the countries with the highest levels of euroization in the region have put in place macroeconomic stabilization programs in order to reduce euroization, especially with regard to foreign currency loans.

We look at the following ten CESEE countries: six EU member states (Bulgaria, Croatia, Czechia, Hungary, Poland and Romania) and four EU candidates (Albania, Bosnia and Herzegovina, North Macedonia and Serbia). Most of these countries have a long history of currency and asset substitution, having used the Deutsche mark, the Austrian schilling and the US dollar as secondary currencies and safe haven assets before the euro.

Along with economic catching-up and stabilization programs that the governments of the most highly euroized economies have put in place, we expect to see deposit euroization to have declined over the past 25 years. This is indeed what we observe at large. However, we see some different developments when we look at shorter periods within the past 25 years. Specifically, we look at 4 shorter periods: the boom period in the run-up to EU accession, which ended with the outbreak of the global financial crisis (up until September 2008); the financial crisis period including the euro area government debt crisis (until end-2014); the period of ultra-low interest rates in the euro area given the expanding use of nonstandard monetary policy measures (until February 2020); and finally the period of heightened uncertainty starting with the outbreak of the pandemic and ensuing high inflation (since March 2020). In each of these shorter periods, the macroeconomic environment was rather different, and this is also reflected in deposit euroization trends. The latest rebound has been driven by the highly uncertain and volatile external environment since Russia invaded Ukraine.

Deposit euroization levels are lowest in Czechia, Hungary and Poland, while high and stable levels of deposit euroization are observed in the Western Balkan economies of Albania, Bosnia and Herzegovina, North Macedonia and Serbia. In the Western Balkan economies, households show higher levels of deposit euroization, while in Central Eastern Europe deposit euroization is more important for firms.

We further look at results from the OeNB Euro Survey and find that the number of individuals holding foreign currency deposits – mainly euro deposits – is in fact comparatively small and dominated by relatively richer individuals.

Finally, we also look at different motives for holding euro deposits and find that the importance of different motives also varies over time, depending on the macroeconomic environment. In particular, the impact of the interest rate differences seems to vary across episodes, highlighting that households adjust their portfolios rather quickly to a new economic environment.



## **25 years of the OeNB in the Eurosystem – tracing the evolution of Governing Council governance**

***Ingrid Ettl, Anita Roitner***

This paper looks at how the role of national central banks (NCBs), especially the Oesterreichische Nationalbank (OeNB), has evolved since the European System of Central Banks (ESCB) and the Eurosystem were established 25 years ago. The findings are partly based on interviews of former OeNB governors, the current OeNB governor and a former European Central Bank (ECB) Executive Board member. The paper outlines the setup of the Eurosystem and its basic principle for monetary policy decisions that the ECB Governing Council takes the decisions which the NCBs then implement. Furthermore, it investigates the question of whether and how decision-making has changed over the last 25 years. One key factor is organizational change: To limit the size of the Governing Council as new member states join the euro area, the ECB put in place rotating voting rights in its main decision-making body. As a result, although the euro area now has 20 countries, the number of NCB governors with voting rights is permanently limited to 15. The overall economic situation and the leadership styles of the various ECB presidents also have an impact. For example, decisions by majority were relatively common under the presidency of Mario Draghi as it became more difficult to arrive at a consensus during the sovereign debt crisis. Attention is also given to the level of decentralization and to collaboration within the ESCB/Eurosystem. As part of these systems, the OeNB has specialized in analyzing the Central, Eastern and Southeastern Europe (CESEE) region and can share this expertise with other central banks. The paper concludes by describing what the OeNB, a relatively small NCB, has learned since joining the Eurosystem. The key takeaways are that the size of an NCB matters, personal contacts and networking are essential, collaboration within the ESCB needs to be strengthened and NCB specialization can be an asset.

## Nontechnical summaries in German

### **25 Jahre Wirtschafts- und Währungsunion: Hat Österreichs Wirtschaft davon profitiert?**

*Christian Ragacs, Klaus Vondra*

In diesem Beitrag beschäftigen sich die Autoren mit der Frage, wie sich die österreichische Wirtschaft seit der Einführung des Euro entwickelt hat und ob sie davon profitiert hat.

Österreich ist seit 1. Jänner 1995 Mitglied der Europäischen Union. Die Vertiefung der Zusammenarbeit innerhalb der Wirtschafts- und Währungsunion (WWU) erreichte mit der Einführung des Euro in Form von Buchgeld am 1. Jänner 1999 und zwei Jahre später als Bargeld in zunächst elf EU-Staaten die dritte Stufe. Inzwischen haben 20 der insgesamt 27 EU-Länder auf den Euro umgestellt.

Österreich ist es gelungen, sein überdurchschnittlich hohes Bruttoinlandsprodukt (BIP) pro Kopf verglichen mit dem EU-Durchschnitt seit der Euro-Einführung zu halten. In den letzten 25 Jahren entwickelte sich die Arbeitsproduktivität pro geleisteter Arbeitsstunde im Schnitt besser als in den meisten Vergleichsländern (diese sind Deutschland, Belgien, die Niederlande, Schweden und die Schweiz). Die stabile Entwicklung der österreichischen Wirtschaft kann dem starken Industriesektor, dem überdurchschnittlich ausgeprägtem Tourismussektor und dem wachsenden Dienstleistungssektor zugeschrieben werden. Österreichs Außenwirtschaft ist seit dem EU-Beitritt vor 25 Jahren international wettbewerbsfähig geblieben. Dies spiegelt sich in einem höheren Grad an wirtschaftlicher Offenheit, dem anhaltend positiven Leistungsbilanzsaldo, annähernd konstanten Marktanteilen und der vergleichsweise stabilen preislichen Wettbewerbsfähigkeit wider.

Die Einführung einer gemeinsamen Währung war ein Meilenstein im Zuge der Verwirklichung des EU-Binnenmarkts und der Gewährleistung des freien Verkehrs von Waren, Dienstleistungen, Personen und Kapital. Diese „vier Freiheiten“ und die Einführung des Euro als gemeinsame Währung sollten sich positiv auf das Wirtschaftswachstum in der EU auswirken. Die Vorteile bestehen in (1) Skaleneffekten (im Zusammenhang mit dem größeren Wirtschaftsraum, dem Wegfall von Zöllen oder anderer Handelshemmnisse sowie geringeren Transport-, Informations- und Transaktionskosten), (2) Effizienzeffekten, (3) Produktivitätszuwächsen (durch mehr Wettbewerb und komparative Kostenvorteile) und (4) Allokationseffekten (durch Direktinvestitionen und Mobilität von Arbeitskräften).

Die Autoren fassen die Ergebnisse zahlreicher Studien zusammen, die analysierten, wie sich die Maßnahmen zur Qualifikation für den EU-Beitritt auf das Wachstum der österreichischen Wirtschaft ausgewirkt haben. Diesbezüglich deuten die meisten der untersuchten Studien auf einen beträchtlichen, aber kurzfristigen Wachstumsimpuls hin (kumuliertes BIP bis zu +28,6 %), der zu einem bleibend höheren Niveau des BIP führt. Eine langfristige positive Auswirkung auf das Wirtschaftswachstum wurde hingegen nicht nachgewiesen. Wachstumseffekte durch die Einführung des Euro selbst werden im Vergleich zu anderen EU-Integrationsschritten als schwächer aber in einigen Studien dennoch signifikant eingeschätzt: Hier liegen die für die österreichische Wirtschaft berechneten Wachstumseffekte (kumuliertes BIP-Wachstum) zwischen 0,7 % und 9,3 %.

### **Die Weitergabe von Leitzinsänderungen an Kundenzinsen österreichischer Banken**

*Robert Ferstl, Claudia Kwapil, Bernhard Graf*

In dieser Studie wird untersucht, wie Banken Leitzinsänderungen an Konsument:innen und Unternehmen in Österreich (und im Euroraum) weitergeben. Warum ist das von Bedeutung? Mit der Festlegung der Leitzinssätze verfolgen Zentralbanken das Ziel, das Konsum- und Investitionsverhalten der privaten Haushalte und Unternehmen zu beeinflussen und dadurch die Inflationsrate zu steuern. Die Leitzinssätze wirken sich jedoch nicht direkt auf jene Zinssätze aus, die Banken für Konsument:innen und Unternehmen festsetzen. Vielmehr lenken Leitzinsen die Zinssätze am Geldmarkt, die wiederum die Einlagen- und Kreditzinssätze der Banken beeinflussen. Man spricht hier von der Übertragung der Geldpolitik über den Zinskanal. Diese Übertragung bzw. Weitergabe kann eine gewisse Zeit dauern und unvollständig sein. Eine unvollständige Weitergabe liegt vor, wenn beispielsweise nach einem Anstieg der Geldmarktsätze um 1 Prozentpunkt die Bankzinsen für Einlagen um lediglich 0,5 Prozentpunkte angehoben werden. Die Frage, in welchem Ausmaß Änderungen bei Leitzinsen und Geldmarktsätzen bei den Konsument:innen und Unternehmen ankommen, ist für die Wirksamkeit der Geldpolitik von essenzieller Bedeutung und deshalb auch für Zentralbanken von großem Interesse.

In der vorliegenden Studie zeigen wir, dass die Banken seit Beginn der Wirtschafts- und Währungsunion vor 25 Jahren Änderungen der Geldmarktsätze schnell und beinahe vollständig an die Kreditnehmer:innen und bei Termineinlagen an die Einleger:innen in Österreich weitergegeben haben. Außerdem werden Belege dafür geliefert, dass die Anpassung

der Zinsen für täglich fällige Einlagen und Termineinlagen in Österreich bei einem Rückgang der Geldmarktsätze schneller erfolgt als bei einem Anstieg. Bei täglich fälligen Einlagen ist die Weitergabe deutlich langsamer als bei Termineinlagen und Krediten und auch langfristig unvollständig. Zudem erfolgt die Weitergabe in Österreich schneller als im Euroraum. Insgesamt zeigt die Studie einen langfristig stabilen Zusammenhang zwischen den Geldmarktsätzen und den Zinssätzen im Kundengeschäft. Die Zinsweitergabe in Österreich hat sich also im Lauf der Zeit nicht statistisch signifikant verändert.

## Fremdwährungsanlagen in Euro – 25 Jahre Stabilitätsexport nach Zentral-, Ost- und Südosteuropa

*Thomas Scheiber, Julia Wörz*

Als wichtige internationale Währung ist der Euro auch außerhalb des Euroraums gefragt. Vor diesem Hintergrund liefert der vorliegende Artikel eine Bestandsaufnahme über die Nutzung des Euro und Trends bei der Führung von Euro-Fremdwährungskonten („Euroisierung“) in zehn Ländern in Zentral-, Ost- und Südosteuropa. Der Fokus liegt dabei auf Privat- und Firmenkonten. Privathaushalte dürften eine Präferenz für das Ansparen in Euro statt in der Landeswährung entwickeln, wenn sie etwa mit hohen Inflationsraten im Inland oder mit hohen Wechselkurschwankungen gegenüber dem Ausland rechnen. Mit Euro-Fremdwährungskonten lassen sich solche Schwankungen abfedern, insbesondere dann, wenn die Inflationsrate stärker schwankt als der Wechselkurs. Wie attraktiv Fremdwährungskonten in Euro für Firmen und Privathaushalte sind, hängt auch von der Zinsdifferenz zwischen dem Inland und dem Ausland ab. Doch selbst wenn die Landeswährung durchaus stabil ist, könnten andere Gründe für die Weiterführung von Fremdwährungskonten sprechen. Dies könnte mit Krisenerfahrungen zu tun haben oder angesichts der weitverbreiteten Nutzung des Euro in der Region einfach praktisch sein.

Mit dem Euro kann Stabilität importiert werden. Jedoch kann eine überdurchschnittlich starke Nutzung des Euro für den jeweiligen Bankensektor auch zu einem Stabilitätsrisiko werden. Deswegen haben die Länder mit dem höchsten Euroisierungsgrad auch Stabilitätsprogramme zur Verringerung des Systemrisikos umgesetzt, etwa über Beschränkungen bei der Vergabe von Fremdwährungskrediten.

In diesem Artikel gehen wir auf zehn Länder in der Region ein: sechs EU-Mitgliedstaaten (Bulgarien, Kroatien, Polen, Rumänien, Tschechien und Ungarn) und vier EU-Beitrittskandidaten (Albanien, Bosnien und Herzegowina, Nordmazedonien und Serbien). In den meisten dieser Länder haben inoffizielle Zweitwährungen oder das sichere Parken von Anlagen in einer Fremdwährung eine lange Geschichte – wo heute der Euro gefragt ist, wurden früher die D-Mark, der Schilling oder der US-Dollar verwendet.

Zu berücksichtigen sind jedoch auch die Aufholprozesse der Länder in Zentral-, Ost- und Südosteuropa sowie die staatlichen Stabilitätsprogramme in Ländern mit einem hohen Euroisierungsgrad: So gehen wir in diesem Zusammenhang davon aus, dass Euro-Fremdwährungskonten in der Region in den letzten 25 Jahren an Bedeutung verloren haben. Tatsächlich wird dies von der Datenlage im Großen und Ganzen bestätigt. Innerhalb der letzten 25 Jahre gab es mitunter aber auch gegenläufige Entwicklungen. Unser Analysefokus liegt auf vier Abschnitten: (1) der Aufschwungphase bis zum EU-Beitritt, die mit dem Ausbruch der weltweiten Finanzkrise endete (bis September 2008); (2) der Zeit der Finanzkrise, inklusive der Staatsschuldenkrise im Euroraum (bis Ende 2014); (3) der Niedrigzinsphase im Euroraum nach der immer intensiveren Nutzung unkonventioneller geldpolitischer Maßnahmen (bis Februar 2020); und (4) der Phase pandemiebedingter Verunsicherung, gefolgt von einer Teuerungswelle (seit März 2020). Jeder dieser Abschnitte war von einem anderen Wirtschaftsumfeld geprägt, was sich auch in den Trends bei den Fremdwährungskonten in Euro niederschlug. Seit die Rahmenbedingungen mit dem Einmarsch Russlands in der Ukraine wieder sehr unsicher und instabil geworden sind, geht der Trend wieder verstärkt in Richtung Fremdwährungsanlagen.

Unter den zehn untersuchten Ländern spielen Fremdwährungsanlagen in Euro in Polen, Tschechien und Ungarn die geringste Rolle. Anhaltend hoch ist der Anteil der Fremdwährungsanlagen hingegen am Westbalkan, in Albanien, Bosnien und Herzegowina, Nordmazedonien und Serbien. Hierbei ist in den Ländern am Westbalkan der Anteil der Einlagen in Euro bei Privatkunden höher als der Anteil bei den Firmenkunden, während es in Zentral- und Osteuropa umgekehrt ist.

Durch die mit dem OeNB Euro Survey gewonnenen Daten werden diese Ergebnisse jedoch etwas relativiert: Es zeigt sich, dass der Kreis der Privatpersonen mit Fremdwährungsanlagen (in erster Linie in Euro) verhältnismäßig klein ist und sich im Wesentlichen auf einen relativ wohlhabenden Personenkreis beschränkt.

Was schließlich die Motivation für die Führung von Fremdwährungskonten in Euro angeht, so zeigt sich weiter, dass je nach wirtschaftlichem Umfeld jeweils andere Motive im Vordergrund stehen. Insbesondere dürfte der Einfluss der Zinsdifferenzen in den einzelnen Abschnitten variieren. Dies lässt den Schluss zu, dass Haushalte in ihren Veranlagungsentscheidungen relativ schnell auf geänderte Rahmenbedingungen reagieren.

## **25 Jahre OeNB im Eurosystem – die Entwicklung der Entscheidungsfindung im EZB-Rat**

*Ingrid Ettl, Anita Roitner*

Die Studie beschäftigt sich damit, wie sich die Rolle der nationalen Zentralbanken (NZBen), insbesondere der Oesterreichischen Nationalbank (OeNB), seit der Gründung des Europäischen Systems der Zentralbanken (ESZB) und des Eurosystems vor 25 Jahren verändert hat. Im Rahmen der Studie wurden ehemalige OeNB-Gouverneure, der aktuelle OeNB-Gouverneur sowie ein ehemaliges Mitglied des Direktoriums der Europäischen Zentralbank (EZB) interviewt. Zunächst wird der Aufbau des Eurosystems sowie dessen grundlegendes Prinzip bei geldpolitischen Entscheidungen beschrieben. Demnach trifft der EZB-Rat zentral die Entscheidungen, die dann von den NZBen umgesetzt werden. Danach wird darauf eingegangen, wie sich die Entscheidungsfindung in den letzten 25 Jahren verändert hat. Dabei spielen organisatorische Veränderungen eine wesentliche Rolle: Um den EZB-Rat im Zuge der Erweiterung des Euroraums nicht zu groß werden zu lassen, hat die EZB ein Rotationsprinzip eingeführt. Daher besitzen nur 15 NZB-Gouverneur:innen ein Stimmrecht, obwohl der Euroraum mittlerweile 20 Länder umfasst. Auch die gesamtwirtschaftliche Lage und die unterschiedlichen Führungsstile der verschiedenen EZB-Präsident:innen wirken sich auf die Entscheidungsfindung aus. Beispielsweise wurden während der Präsidentschaft von Mario Draghi Entscheidungen relativ häufig nicht einstimmig gefällt, da die Euro-Schuldenkrise die Konsensfindung erschwerte. Außerdem wird auch das Ausmaß der Dezentralisierung und die Kooperation im ESZB/Eurosystem beleuchtet. Im Rahmen der europäischen Zusammenarbeit hat sich die OeNB auf die Analyse der Region Zentral-, Ost- und Südost-europa (CESEE) spezialisiert und kann diese Expertise den anderen NZBen zugutekommen lassen. Abschließend beschreibt die Studie, welche Erkenntnisse die OeNB – eine relativ kleine Zentralbank – als Mitglied des Eurosystems erlangt hat. Die wichtigsten Punkte sind: Größere Zentralbanken haben potenziell mehr Einfluss, persönliche Kontakte und Networking sind von essenzieller Bedeutung, die Zusammenarbeit innerhalb des ESZB muss weiter gestärkt werden und die thematische Spezialisierung einer NZB kann eine Stärke darstellen.

Studies

# 25 years of EU Economic and Monetary Union in Austria: a macroeconomic assessment

Christian Ragacs, Klaus Vondra<sup>1</sup>

*This article reviews the macroeconomic developments of 25 years living with the euro. At the time Austria adopted the euro, it had one of the highest GDP per head ratios in the euro area. Since then, it was able to maintain its above average position. This comes as a result of both GDP and population growth development being above the euro area average. During the last 25 years, except for the last two years, the inflation rate in Austria stood at 1.8% on average. This is in line with the price stability target of the European Central Bank (ECB) for the euro area. In this paper, we look at key macro variables of the Austrian economy and provide a comprehensive overview on empirical studies trying to assess the GDP and inflation effects of the Single European Market and the introduction of the euro on Austria. Most of these studies find significant, positive growth effects in the short term.*

JEL classification: E6, F4, N13

Keywords: Economic and monetary union, euro, European integration, growth effects

In this article, we look at how the Austrian economy has developed since the introduction of the euro and whether the Austrian economy has benefited from the introduction of the euro. Austria has been a member of the European Union (EU) since January 1, 1995.<sup>2</sup> At the time of Austria's accession, the EU had already gone far beyond mere economic cooperation. Originally conceived as a peace and reconstruction project after the Second World War, it developed into an institution standing for stability and democracy.<sup>3</sup> With the irrevocable fixing of exchange rates, the euro was introduced as book money in 11 countries on January 1, 1999, marking the third stage of Economic and Monetary Union (EMU)<sup>4</sup>. Since then, nine more countries have adopted the euro (table 1). Hence, the euro is the official currency in 20 out of 27 EU countries. On January 1, 2002, the euro was introduced as cash.

The Treaty on the Functioning of the European Union and the Treaty on European Union established, among other things, the “four freedoms”: (1) The free movement of goods enables free exchange of goods within the European Union, (2) the free movement of services enables EU citizens to provide services freely across borders within the EU, (3) the free movement of persons enables EU citizens

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<sup>2</sup> In the literature survey of this article, we present several studies that discuss the economic advantages of joining the EU.

<sup>3</sup> We recommend the EU's website for a comprehensive overview of its principles, aims and values, and for further information on the topic. Membership brings with it several advantages but also disadvantages. Points of criticism include losing national sovereignty, EU citizens having too little influence on the democratic processes in the EU, EU-wide regulations that are perceived as too tight and a disbalance between net contributors and net recipients.

<sup>4</sup> For a list of all three stages and the corresponding integration steps, see *Economic and Monetary Union (EMU)* (europa.eu).

to live and work in any EU country and (4) the free movement of capital liberalized capital movements within the union.

The four freedoms should have positive implications on economic growth in the EU (see, e.g., Beer et al., 2017). Essentially, the advantages lie in the following:

- economies of scale: larger economic area, no tariffs or other trade barriers, lower transport, information and transaction costs
- efficiency effects
- productivity gains: more competition, comparative cost advantages
- allocation effects: such as direct investment and labor mobility

Many of these arguments also apply to a single currency area. According to the theory of the optimal currency area<sup>5</sup>, the advantages of a currency union lie in reduced transaction costs, increased efficiency and competition (as, e.g., prices are easier to compare) and reduced exchange rate risks and exchange rate volatility.<sup>6</sup> These primarily microeconomic effects can also lead to a macroeconomic increase in foreign trade intensity, a more efficient allocation of resources (capital and labor) and an increase in technological progress.<sup>7</sup> Based on these arguments, when a member-state-to-be is integrated into the EU and adopts the euro as national currency, its GDP growth rate could initially rise in the short term. This rise would weaken again over time but would still lead to a permanently higher GDP level. Also, EU integration and euro introduction could permanently change the long-run economic growth rate of the to-be member if the enlargement of its economic area during the integration process increases returns to scale in production.<sup>8</sup>

In this article, we focus on answering the following questions:

1. How has the Austrian economy developed in absolute and in relative terms (compared with other peer countries) over the last 25 years based on key macro variables?
2. Does Austria stand out in specific areas?
3. Has Austria benefited from its integration into EMU, especially from the introduction of the euro?

This article is divided into two main sections: The first two questions are addressed in the next section, where we present an overview of the macroeconomic development of the Austrian economy over the last 25 years, also compared to peer countries and the euro area. To answer the last question, we analyze how EU integration and especially euro introduction have affected growth and inflation in Austria by surveying different estimates found in the literature. The article closes with a short summary.

<sup>5</sup> *The theory of optimal currency areas has long been discussed in economic literature and is based on the work of Mundell (1961), McKinnon (1963) and Kenen (1969). We recommend De Grauwe (2022) for a comprehensive overview.*

<sup>6</sup> *The main disadvantage of the single currency is that member states are no longer autonomous in their monetary and exchange rate policies and have thus less leeway in their economic policy responses to asymmetric shocks. Nevertheless, the member states still have fiscal, wage and structural policy at their disposal for intervention. This has been discussed extensively in the literature. For a discussion of the interdependencies between monetary, fiscal and structural policy at the time the euro was introduced as book money, see Duisenberg (2002).*

<sup>7</sup> *See also Beer (2011) and Brans et al. (2021) for a more detailed discussion of the topic.*

<sup>8</sup> *See, e.g., Lucas (1988) on the positive external effects of human capital accumulation or Romer (1990) on endogenous technology.*

Table 1

### Selected important developments since 1994

	Integration steps excluding euro introduction	EMU stages and euro introduction	Negative shocks	Recovery <sup>1</sup> /recession in AT
1994		Stage 2 of EMU <sup>2</sup>		Recovery 1994–2000
1995	Austria, Finland and Sweden become members of the EU; Austria signs Schengen Agreement	European Council agreed on naming the EU currency “euro” and that it will be introduced at the start of stage 3 of EMU		
1997/98	Abolition of border controls; Stability and Growth Pact (1997/1998)			
1999		Stage 3 of EMU		
2001		Greece introduces the euro		
2002		Euro as legal tender in the euro area (11 founding members and Greece)	Dot-com bubble	
2004	Estonia, Latvia, Lithuania, Poland, Czechia, Slovakia, Hungary, Slovenia, Malta and Cyprus become members of the EU			Recovery 2004–2007
2007	Bulgaria and Romania become members of the EU	Slovenia introduces the euro		
2008		Malta and Cyprus introduce the euro	Global Financial Crisis (GFC)	
2009		Slovakia introduces the euro	GFC	Strong recession
2010			Start of European sovereign debt crisis	Recovery 2010–2011
2011		Estonia introduces the euro		
2013	Croatia becomes member of the EU			
2014		Latvia introduces the euro		
2015		Lithuania introduces the euro		
2016				Recovery 2016–2018
2020			COVID-19 pandemic, the UK leaves the EU	Strong recession
2021			COVID-19 pandemic, supply restrictions, energy price shock	Recovery 2021–2022
2022			War in Ukraine, inflation shock	
2023		Croatia introduces the euro		Mild recession

Source: Authors' compilation.

<sup>1</sup> Recovery: GDP growth rates in Austria above average (1995–2023: 1.7%).

<sup>2</sup> 1994: establishment of the European Monetary Institute (EMI); 1998: establishment of the European Central Bank (ECB) and the European System of Central Banks (ESCB).

## 1 25 years of Austrian EMU membership – an empirical overview

In the last 25 years of history, Austria had 4 federal presidents, 12 federal governments, 9 federal chancellors, 6 Nobel Prize winners, 5 Oscar winners, 1 song contest winner, hosted the 2008 European Football Championship but never qualified for the Football World Cup. Coming to economically relevant numbers, in 1999, just under 8 million people lived in Austria. 25 years later in 2023, the 9 million mark was exceeded. Taking the average of 1999 to 2022, the population aged by over 4 years from an average of 38.6 years to 42.7 years. While the number



of children fell by almost 7%, over 40% more people over the age of 66 lived in the country in 2022 compared to 1999. The number of people in the working age of 15 to 65 years rose by 11% to over 6 million. Within this group, more people are working – the participation rate increased by over 5 percentage points. This is also reflected in a significant increase in employment (+27%), but we also observe a strong trend toward part-time work (Fritzer et al., 2023) associated with a sharp decline in the number of hours worked per head (–15%). In table A1 in the annex, we listed population growth in age cohorts, employment per head and in hours worked as well as the participation and unemployment rates for Austria and some peer countries.

The 25 years since the introduction of the euro have been characterized by various economic, political and pandemic shocks but also by positive events. Table 1 offers an overview of the most important developments. In the remainder of this section, we will focus on those events/crises that are related to the past 25 years since the introduction of the euro.

We will compare key macroeconomic indicators for Austria with those of five peer countries and the euro area aggregate. As one of the peer countries, we have chosen Germany because it is Austria's most important trading partner. Although the German economy is almost 10 times larger than the Austrian one, it is characterized by similar economic structures. Belgium and the Netherlands serve as peer countries as well, as those two euro area countries show a comparable population size and degree of economic openness. In this regard, we also look at two non-euro area countries, Sweden and Switzerland, due to similar population size and openness. All index charts shown are set to 100 in 1998 to show the development of the countries from the start of EMU in 1999 onwards.

In this chapter, we will focus on three key macroeconomic areas: (1) GDP (growth), labor productivity and sectoral structure, (2) inflation and (3) trade and competitiveness. In the next section, we look at what other authors have found on the effects of the EU and EMU on GDP and inflation.

### **1.1 GDP growth, labor productivity and sectoral change**

After the introduction of the euro in 1999, the first years were characterized by constant and robust real GDP growth rates in the euro area, leading up to a boom phase in 2006–07 (chart 1). During this time, the Austrian economy benefited from the adoption of the euro, the increasing globalization and the integration of China in global value chains, the EU's Eastern enlargement in 2004 and 2007 and a phase of low interest rates after the dot-com bubble in early 2000. Except for Germany, all peer countries exhibited a similar growth story in the early 2000s. In 2007–08, the global financial crisis (GFC) hit banks in the USA and in Europe, spreading quickly to the entire financial markets all over the world. Although not involved in the US subprime market, the Austrian banks faced a confidence problem, which was intensified by their large engagement in countries in Central, Eastern and Southeastern Europe. In 2009, the GFC led to a recession in Austria and all peer countries. However, considerable fiscal and monetary policy interventions pushed the economies back on a growth path between 2010 and 2011 but led to the European sovereign debt crisis. Although not at the center of the crisis, Austria experienced a pronounced period of weakening growth between 2012 and 2015. While the Netherlands even faced a second recession, Belgium, Sweden, Switzerland

and, toward the end of this phase, also Germany recorded higher growth rates than Austria.

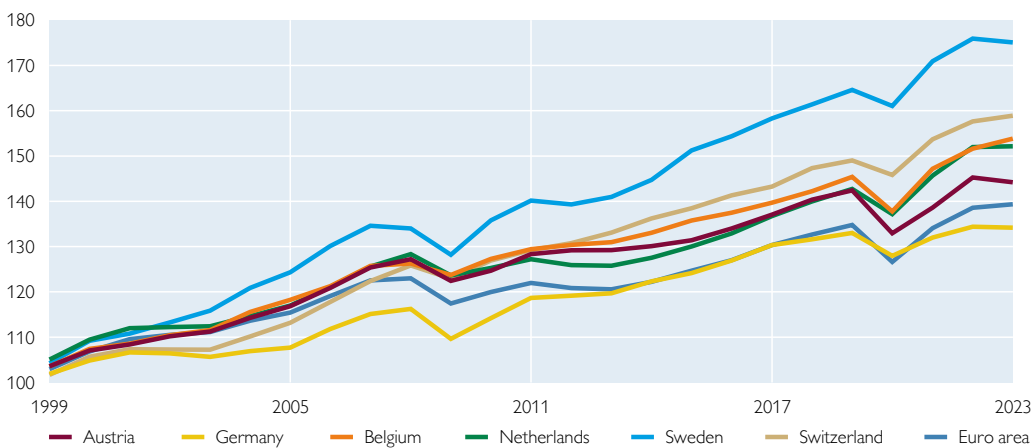
After 2015, the Austrian economy recorded a soft boom phase. However, already before the COVID-19 pandemic, growth slowed down in 2019 following the EU-US trade dispute, the Brexit and the German car industry crisis. In 2020, the COVID-19 pandemic induced a second deep recession, caused by several lockdowns and supply disruptions. Catch-up effects after the end of the pandemic led to extraordinary strong growth rates in 2021 and 2022. However, because of the energy price shock in the wake of the war in Ukraine, Austria recorded another recession in 2023.

In the period from 1999 to 2023, Austria recorded a cumulative real GDP increase of 44%, which is stronger than that of Germany (34%) and of the euro area average (38%). However, it was weaker compared to the increases in the

Chart 1

### Real GDP

Index 1998 = 100

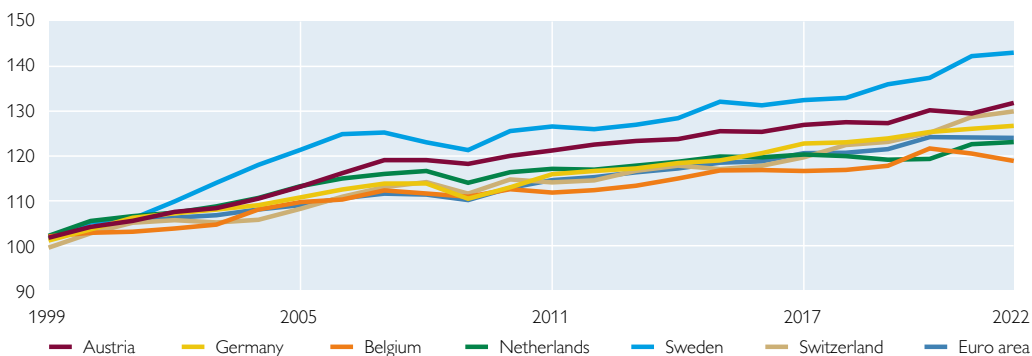


Source: Eurostat.

Chart 2

### Productivity per hour

Index 1998 = 100



Source: OECD.

Netherlands (52%), in Belgium (53%), in Switzerland (59%) and in Sweden (75%) (chart 1). In terms of real GDP per head, the Austrian economy was the fifth richest country in the EU in 1999 (after Luxembourg, Ireland, Denmark and the Netherlands). For almost 25 years, Austria managed to maintain this position (chart A1 in the annex). By 2023, Sweden surpassed Austria making it now the sixth richest country in the EU.

As a second main economic indicator, we analyze the development of labor productivity, which is the relationship between production output and labor input. We present GDP as an index and measure labor input in hours, as the trend toward part-time work is particularly pronounced in Austria and distorts a per capita calculation.<sup>9</sup> In chart 2, the two major recessions are barely visible because not only economic output declines in recession years but also the number of hours worked. Similar to the development of real GDP, productivity initially increased strongly but weakened considerably after the GFC in 2008–09. The decline in labor productivity growth is a widespread phenomenon and has already begun in the 1960s and 1970s (see, e.g., ECB, 2021 or Deutsche Bundesbank, 2021). A comparison with the peer countries shows that Austria, Sweden and Switzerland have developed more favorably than the EU average over the past 25 years. These fundamental developments are also emphasized by the Austrian Productivity Board (Productivity Report, 2023). The Productivity Board concluded that, since the GFC in 2008–09, labor and multifactor productivity have been growing more slowly than in the 1990s and 2000s. The decline has been caused by a slowdown in productivity growth within sectors and companies and not by shifting shares of value added between sectors/industries/companies, capital and technological progress.

In a next step, we focus in more detail on the supply side structure. Table 2 shows the sectoral decomposition of the Austrian economy and of the peer countries and its changes over the last 25 years. The Austrian economy has a broad-based production structure. The industrial sector is a key pillar and accounts for almost  $\frac{1}{4}$  of Austrian value added. Only Germany (25.5%) and Switzerland (24.2%) have a similarly high share of industrial production. A special feature of the Austrian economy is its large share of the catering and accommodation sector. Although this sector has only a share of 4% of value added, its contribution is twice as large as it is in the peer countries. Both the industry and the tourism sector are strongly export-oriented, thereby leading to a high external exposure of the Austrian economy. Since slightly more than half of Austrian goods and around 60% of Austrian services are exported to euro area countries, the Austrian economy has benefited above average from the introduction of the euro and lower currency fluctuations compared to other euro area countries.

On the other hand, Austria has a smaller private services sector compared to the peer countries. Its share of value added amounted to 19% in 2022 (sum of “information and communication”, “financial and insurance activities” and “scientific and technical activities” in table 2), while the average of the peer countries was 26%. The public services sector in Austria also contributes less to value added (17.2%; peers: 19.5%).

<sup>9</sup> The per capita figure is also distorted in the years of recession, as policy-measures such as short-time working schemes were implemented to maintain employment in companies to prevent a large-scale increase in unemployment.

Table 2

**Supply side structure of Austria and peer countries: sectoral shares in 2022 and sectoral real growth 1999–2022**

	Austria		Germany		Belgium		Netherlands		Sweden		Switzerland	
	Share <sup>1</sup>	Growth <sup>2</sup>	Share	Growth	Share	Growth	Share	Growth	Share	Growth	Share	Growth
	%											
<b>Total</b>		<b>46.7</b>		<b>35.8</b>		<b>52.5</b>		<b>55.1</b>		<b>76.9</b>		<b>57.6</b>
Agriculture, forestry and fishing	1.3	26.9	0.7	11.5	0.5	3.2	1.7	33.4	1.4	47.8	0.6	2.3
Industry (except construction)	24.2	71.7	25.5	45.0	15.4	22.6	15.7	37.3	18.7	58.7	24.2	83.2
Construction	5.6	-15.3	4.0	-22.4	4.9	67.2	4.9	35.8	6.0	66.3	4.6	14.2
Trade and transport	17.0	28.7	14.3	48.5	16.7	31.8	19.0	76.8	16.1	92.1	15.6	43.7
Accommodation and food service activities	3.8	5.9	1.3	-11.3	1.6	10.0	1.9	8.7	1.5	4.2	1.5	-21.5
Arts and recreation	2.6	17.2	3.5	-2.1	2.1	32.4	2.2	20.2	2.6	33.7	2.9	73.5
Real estate activities	9.4	43.8	10.6	38.0	9.7	86.6	6.5	61.2	8.4	45.0	6.6	9.3
Information and communication	4.2	120.3	5.9	198.4	5.1	226.4	5.6	218.7	10.0	426.3	4.7	99.0
Financial and insurance activities	4.7	104.7	4.3	-22.8	5.8	9.6	6.9	24.6	5.1	116.7	10.7	86.4
Scientific and technical activities	10.1	128.7	11.8	46.8	16.8	132.3	15.2	67.7	12.1	165.1	10.0	47.4
Public sector	17.2	30.0	18.3	30.2	21.5	40.3	20.1	48.4	18.6	14.4	19.0	63.0

Source: Eurostat.

<sup>1</sup> Sectoral share in total value added in 2022.

<sup>2</sup> Cumulative sectoral growth in value added 1999–2022.

Note: Trade and transport (NACE G–H): wholesale and retail trade; transport. Arts and recreation (NACE R–U): arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies. Scientific and technical activities (NACE M–N): professional, scientific and technical activities; administrative and support service activities. Public sector (NACE O–Q): public administration; defense; education, human health and social work activities.

In terms of cumulated growth, Austria has recorded broad-based and high growth in the private services sector (of over 100%) over the last 25 years, which exceeds growth in industry (72%). The highest growth rates of almost 150% were recorded for the catering and accommodation sector. Only the construction sector shrunk over the last 25 years. A similar trend can be seen in Germany but not in the other countries.

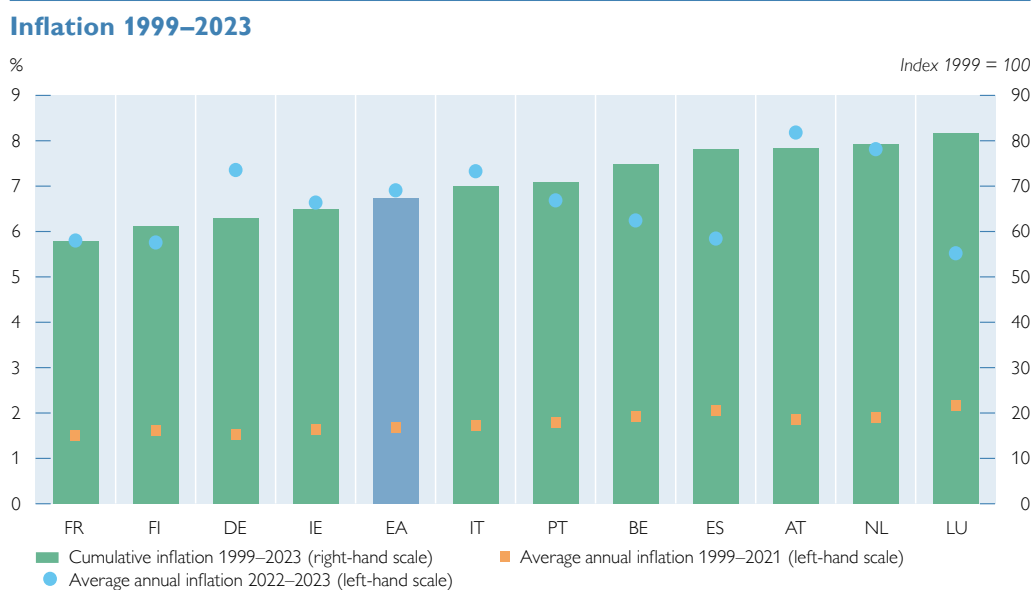
## 1.2 Inflation

The primary objective of the Eurosystem is to maintain price stability, whose definition changed over time:

- 1999–2003: Price stability is defined as a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area in the medium run of below 2%.
- 2003–2021: ... below but close to 2%.
- 2021–now: ... 2%.

Did the Eurosystem accomplish its target? Looking at inflation in the euro area over the last 25 years, we can say yes – leaving aside its development around the GFC, the sovereign debt crisis and recent price increases. The European Central Bank (ECB) accomplished this target by using traditional monetary policy instruments as well as unconventional monetary policy when the key interest rates had faced the effective lower bound. Price stability in the euro area is mirrored by price stability in its member states. In the following, we present the inflation developments of the euro area in changing composition and of each of the 11 founding

Chart 3



member states of the euro area<sup>10</sup>. The euro area aggregate shows an average HICP inflation rate of 1.7% between 1999 and 2021. In the founding countries, HICP inflation lay between 1.5% and 2.0% (Austria: 1.8%). At this time, the only Western euro area country with an above average inflation (2.2%) was Luxembourg.

In the last two years, inflation rose worldwide as a result of two unexpected crises. First, the COVID-19 pandemic led to distortions in global supply chains and shifts in the demand structure causing increases in inflation already in 2021–22. Second, the energy price shock following the Russian war in Ukraine led to a massive rise in energy prices 2022–23 when inflation rates had already been high. All in all, these two events led to the biggest inflation shock since the oil crises of the 1970s.

At the beginning of the inflation shock in 2022, Austria recorded lower inflation rates than the euro area, but mid-2022, the Austrian HICP inflation rate surpassed the aggregated euro area rate and has stayed well above since. This differential can be traced back to three key factors in Austria: (1) the fiscal policy mix, meaning less direct price intervention and higher transfer payments, (2) the delayed transmission of global energy prices to end users and (3) higher inflation in the services sector due to stronger wage growth and the sharply increased prices in the tourism sector (Url and Vondra, 2023). This kept inflation rates in Austria high in 2023, placing it as the Western euro area country with the highest recorded inflation rate.

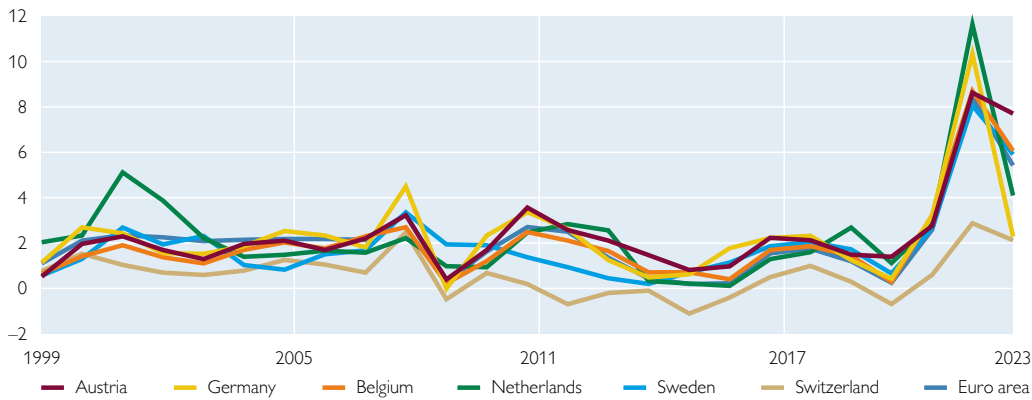
Chart 4 shows the annual inflation rates of Austria and its peer countries for the period 1999 to 2023. Their HICP rates developed rather similar with the remarkable exception of Switzerland. Chart 5 depicts the cumulative inflation rates calculated vis-à-vis the cumulative euro area inflation. If a country's line runs below

<sup>10</sup> Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain.

Chart 4

### Inflation

Change to previous year in %

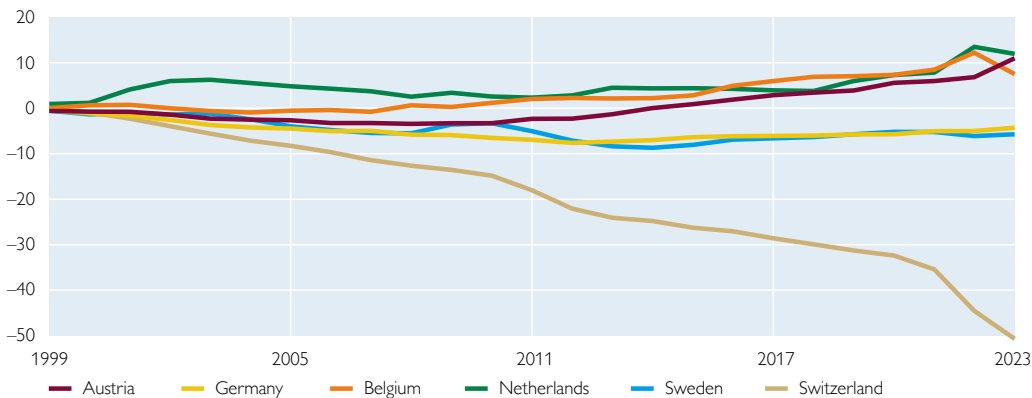


Source: Eurostat; Switzerland: Swiss Federal Statistical Office.

Chart 5

### Inflation

Cumulative difference to cumulative euro area inflation in percentage points



Source: Eurostat; Switzerland: Swiss Federal Statistical Office.

the zero-line (vertical axis), its cumulative inflation since 1999 was below the euro area in the corresponding year (horizontal axis). For Austria, we observe that until the global financial crisis, inflation was below the euro area average. After that, inflation rose. This trend – as explained above – intensified in the last two years. Chart 5 also shows the substantially lower inflation rate in Switzerland over the whole horizon, going hand in hand with a steep appreciation of the Swiss Franc. While in 1999 CHF 1 was worth EUR 0.62, in 2023, it was worth EUR 1.03 – a nominal appreciation of 66%.<sup>11</sup>

### 1.3 Trade and competitiveness

To finish this descriptive section, we will look at four key measures regarding foreign trade and competitiveness. Chart 6 shows the sum of exports and imports

<sup>11</sup> As shown in chart 7, the real effective exchange rate for Switzerland also appreciated but “only” by 10%.

as a share of GDP, indicating how interconnected an economy is with the rest of the world. Over the past 25 years, this “openness indicator” increased from 75% to 125% for Austria. This increase was driven by the general trend in globalization, the EU’s Eastern enlargement in 2004 and 2007 and Austria’s integration process into the EU, as shown in the next section. After the GFC, this globalization trend came to an end. The spike in 2022 seen in chart 6 is a consequence of the energy import shock.

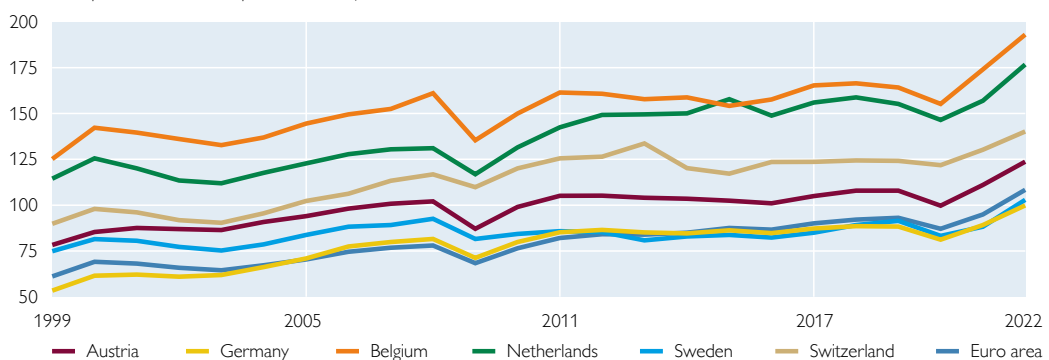
In a monetary policy union, nominal exchange rates are fixed. This implies that inflation differentials among member states trigger changes in the real exchange rate and in price competitiveness. Therefore, it is important to avoid such differentials within a monetary union. Measures of price competitiveness for Austria show a remarkably stable development. The real effective exchange rate, depreciated by the consumer price index (CPI), has remained almost constant over 25 years of EMU membership (chart 7).

Consequently, the current account – an indicator reflecting changes in price and nonprice competitiveness – shows a favorable development for the Austrian economy (chart 8). Starting with a small deficit, the balance turned positive in

Chart 6

### Openness indicator

Nominal exports and nominal imports as share of nominal GDP in %

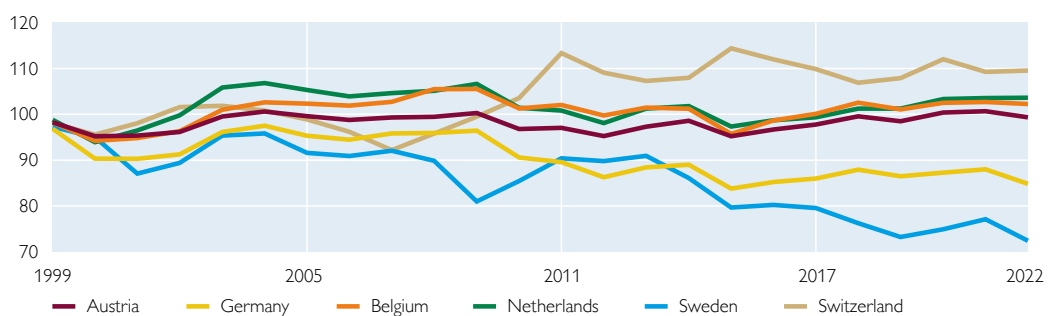


Source: Eurostat.

Chart 7

### Real effective exchange rate

Index 1998 = 100



Source: World Bank.

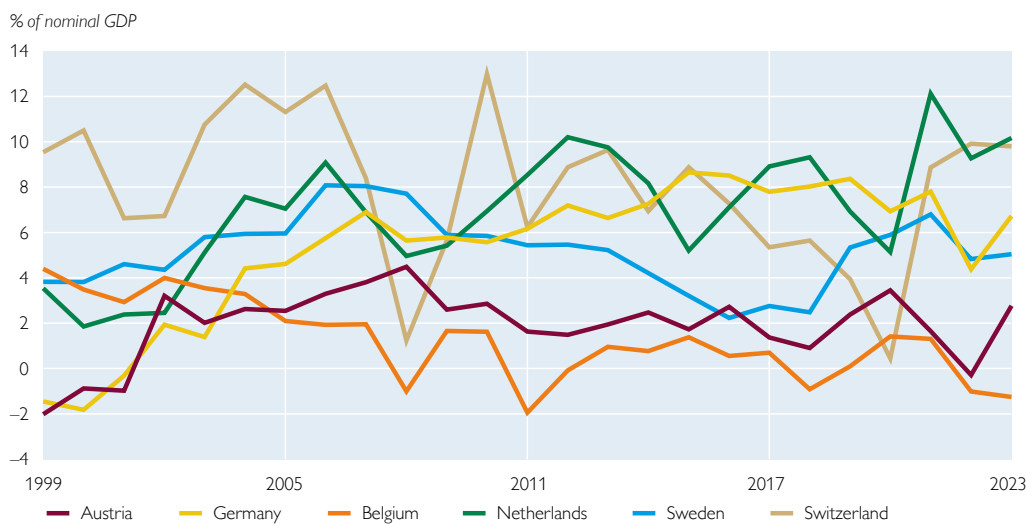
2002 and improved further until 2008. Since then, the balance slightly declined but stayed positive, fluctuating around 2% of GDP. Only in 2022, Austria recorded a small current account deficit, as the COVID-19 pandemic had severely dampened winter tourism and energy import prices had surged. Over the whole period under review, the constant surplus was mainly driven by strong contributions from services exports (mainly tourism), while the goods balance was broadly balanced.

Persistent current account surpluses contributed to a positive turn of the net international investment position in 2013; by the end of 2022, it stood at almost EUR 80 billion. Compared to most of the peer countries, the current account surplus of the Austrian economy is less pronounced but sustainable, as recorded by the European Commission (2022).

The development of the current account went hand in hand with only very modest losses in export market shares over the past 25 years (chart 9). These losses

Chart 8

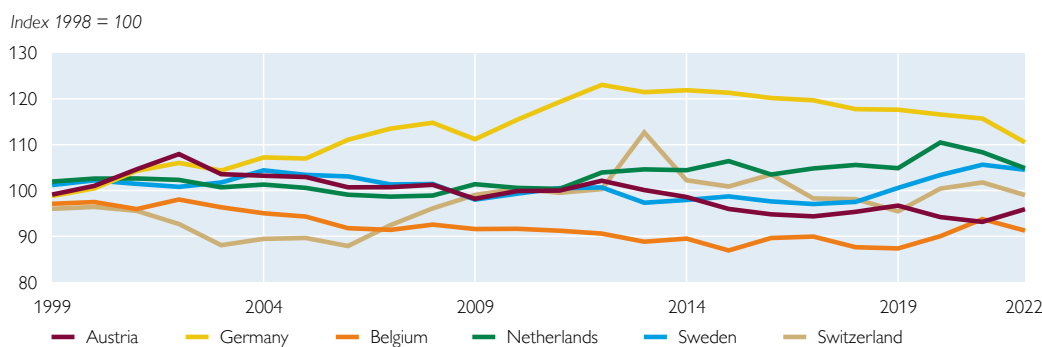
### Current account balance



Source: OECD.

Chart 9

### Market shares



Source: AMECO.



in market shares do not come as a surprise, since the Eastern European countries as well as Asian economies were catching up and became increasingly integrated into European and global value chains. Such catching-up processes naturally led to losses in market shares in the industrialized countries. All in all, the Austrian economy, and the external sector in particular, have developed successfully since being part of the EU, despite some very challenging years.

## 2 How did Austria's EU accession impact its economy – a literature overview<sup>12</sup>

### 2.1 Capturing macroeconomic effects of EU integration econometrically

Economic theory suggests that the individual steps toward European integration have had a positive impact on economic growth in Austria (see the introduction of this article and Breuss, 2023 for the latest discussion of the topic). As mentioned in section 1, when a country goes through the various integration steps, and thus introduces the euro, a) its GDP growth rates could initially rise in the short term, then weaken again over time but still lead to a permanently higher GDP level, or b) its economic growth rate could even change permanently in the long term. Also, some integration steps could make a country more robust against exogenous shocks, in particular against currency speculation. If Austria was not part of the euro area, an independent Austrian monetary policy would have to take into account the effects of Austrian monetary policy decisions on the Austrian exchange rate. In this case, keeping the exchange rate constant could, under certain circumstances, lead to high increases in interest rates, resulting in a slump in economic growth in Austria.

When analyzing the impact of Austria's integration into the EU on economic growth, one is confronted with two problems: First, the economic development in Austria was not only influenced by the integration steps but also by many other factors – above all by the strong exogenous shocks, such as the pandemic and the War in Ukraine, that hit Austria and the euro area as a whole in the last 25 years (table 1). Moreover, some of the shocks overlapped in time, making it especially difficult to clearly separate the effects of the European integration steps from those of exogenous shocks. An additional, complicating factor is the fall of the Iron Curtain in 1989. Though it had occurred before the period under review, its macroeconomic effects were felt years later. The second, even more fundamental problem is that analyzing the economic impact of the European integration steps on Austria can only be carried out in comparison with a hypothetical, alternative scenario, in which Austria did not go through the integration steps. For example, empirically observing GDP development after the implementation of an integration step does not lead to sound results of its effect, as GDP growth is also determined by a variety of other factors and shocks.

Possible alternative scenarios are, for example, that Austria did not become a member of the EU or EMU or that other EU member states did not undergo certain integration steps. However, the development that might have occurred in an alternative scenario cannot be observed in real terms and can thus only be

<sup>12</sup> Part of this section is a revised and thoroughly updated version of Beer et al. (2017), section 1.3. We recommend Beer (2011) and Badinger and Breuss (2011) for an overview of the results of older studies on this topic.

assumed. Studies that use different alternative scenarios therefore yield different results when estimating the integration effects. In addition, anticipation effects caused by the economic agents must be taken into account, as some integration steps can have effects on the economy already before their implementation (e.g., preparations for joining EMU). The studies presented below take many of these problems into account, albeit in different ways. The various approaches can be roughly divided into three groups sorted by the method adopted:

1. The synthetic control method, where a “control development”, i.e., an alternative scenario, is compared with the actual development.
2. Estimating equations with differently defined dummy variables to capture the effects of the various integration steps.
3. Synthetic time series depicting the integration intensity<sup>13</sup> as explanatory variables that are intended to represent the integration steps.

How complex the econometric instruments used are also differs considerably, from very simple econometric models and standard macro models to new quantitative trade models and dynamic stochastic general equilibrium (DSGE) models. This article focuses on empirical studies from the last ten years; thus, their number is comparatively small. In addition, these studies are often limited to the period before the GFC.

## 2.2 The effects of all EU integration steps excluding euro introduction

In this section, we focus on the effects of the integration steps on economic growth and, in some cases, inflation in Austria. Table 3 provides an overview of the most important results of the studies that have been conducted on this topic over the last ten years. With the exception of one study (Oberhofer and Winner, 2015), which only analyzes the effects on foreign trade, the results of a total of 15 studies on GDP growth have been available since 2014, some of which analyze detailed results on the effects of various integration steps. Only five of these studies also show the effects on the inflation rate in addition to the effects on the GDP growth rate. The specific effects of the introduction of the euro are discussed in the next section.

In general, and this is the most important qualitative result of this literature review, all studies find positive effects of European integration on GDP growth. However, quantitative results vary greatly. For example, the overall effects of all integration steps range from cumulative +28.6% (Breuss, 2016) to +7.9% (Felbermayer et al., 2018). Different results arise, in part, from the fact that some studies also take into account the effects of integration steps from before 1995, while others do not. In addition, the strength of the effects also differ because many of the studies only examine partial aspects of the integration steps (e.g., only trade effects). However, there are also significant differences in the results for trade on GDP, for example, which vary between cumulative +15.6% (Oberhofer, 2019) and +3.9% (Mion and Ponattu, 2019). Here, the results vary because different methods and time periods have been used. Table 3 therefore shows not only the main results but also briefly the methods used, the integration steps and the periods analyzed. In the following, brief summaries of the studies are presented in chronological order.

<sup>13</sup> Integration intensity is measured by an index which captures, e.g., different aspects of the Single Market freedoms, the adoption of EU legislation and to which extent the economic performance of a member state is different from the EU average.

Campos et al. (2014) use the synthetic control method to calculate how GDP per capita and labor productivity would have developed if a country had not joined the EU. EU accession had a positive impact on all countries under consideration with the exception of Greece. Austria's GDP was 7.2% higher in 2008 (end of the period under review) than it would have been without EU accession; this corresponds to an average increase in annual economic growth of 0.8 percentage points.

Table 3

**Selected studies of the last 10 years about the economic impact of European integration on Austria excluding euro introduction**

Study	Method applied	Integration measures	Time horizon	Real GDP <sup>1</sup>		Inflation	
				Growth differential (p.a.)	cumulative	p.a.	cumulative
				percentage points	%	percentage points	
Campos et al. (2014)	Synthetic control	EU accession of Austria	1995–2008	0.8	7.2	x	x
Berger et al. (2014)	Macro model	EU accession of Austria	1995–2013	0.6	13.0	x	x
Bertelsmann Stiftung (2014)	Abolition of border controls	Integration measured by change in index	1992–2012	x	24.9	x	x
Boockmann et al. (2015)	Synthetic control	EU accession of Austria	1995–2008	x	4.6	x	x
Oberhofer and Winner (2015)	Macro model	Different integration steps	1999–2014	Positive effect on net exports	x	x	x
Breuss (2016)	Macro model; comparison with hypothetical development	Fall of Iron Curtain	1989–2015	0.2	4.7	0.02	0.4
		EU accession of Austria	1995–2015	0.6	12.7	-0.25	-5.1
		EU enlargement 2004 and 2007	2004–2015	0.2	2.4	0	0.1
		Total	1989–2015	0.9	28.6	-0.17	-4.5
London Economics (2017)	Econometric model	Effect of EU integration measured by Single Market indicator	1990–2015	0.1	1.7	x	x
Felbermayr et al. (2018) <sup>2</sup>	IFO trade/sectoral gravity model, "breakdown of agreements"	Single Market	"long run"	x	6.2	x	x
		Customs Union	"long run"	x	0.1	x	x
		Schengen Agreement	"long run"	x	1.2	x	x
		All	"long run"	x	7.9	x	x
Mayer et al. (2018)	Structural gravity model	Trade effects	"long run"	x	7.7–8.2	x	x
Mion and Ponattu (2019)	Gravity model, regions	European Single Market	2010–2016	x	3.9	x	x
in 't Veld (2019) <sup>2</sup>	Quest DSGE model, counterfactual scenarios	European Single Market	"long run"	x	11.8	x	x

Source: Authors' compilation.

<sup>1</sup> Real GDP or real per capita GDP.

<sup>2</sup> The authors calculate the effects of undoing the various integration steps. To make the results in the table more comparable, the signs of the results are reversed.

Note: Concerning studies presenting total effects, the total effect does, in many cases, not equal the sum of the individual effects, since the individual integration effects overlap.

Table 3 continued

**Selected studies of the last 10 years about the economic impact of European integration on Austria excluding euro introduction**

Study	Method applied	Integration measures	Time horizon	Real GDP <sup>1</sup>		Inflation	
				Growth differential (p.a.)	cumulative	p.a.	cumulative
				percentage points	%	percentage points	
Oberhofer (2019)	Gravity model	Trade effects	1995–2014	0.7	15.6	–0.1	–2.4
Breuss (2019)	Synthetic control	EU and euro	1995–2020	1.0			
Breuss (2020a)	Macro integration model	Fall of Iron Curtain	1989–2020	0.1	2.4	0.01	0.2
		Euro area membership	1995–2020	0.4	10.9	0.01	0.2
		EU Enlargement	2004–2020	0.3	5.3	0.02	0.3
		Total integration effects	1995–2020	0.8	20.4	–0.07	–1.8
Breuss (2020b)	DSGE model	Trade barriers and markups	“long run”	0.4	10.3	–0.04	–1.0
		Trade barriers, markups and R&D	“long run”	0.7	17.8	–0.06	–1.6
Breuss (2022)	Small macro model	EU accession 1995	1995–2022	0.1	2.9	x	x
		EU enlargement 2004	2004–2022	0.3	4.8	x	x
		Trade effect	1995–2022	0.4	12.3	x	x
		Total	1995–2022	0.5	13.3	x	x

Source: Authors' compilation.

<sup>1</sup> Real GDP or real per capita GDP.

<sup>2</sup> The authors calculate the effects of undoing the various integration steps. To make the results in the table more comparable, the signs of the results are reversed.

Note: Concerning studies presenting total effects, the total effect does, in many cases, not equal the sum of the individual effects, since the individual integration effects overlap.

In a macroeconomic model, Berger et al. (2014) interpret the stronger increase in total factor productivity in Austria compared to Switzerland as an accession dividend. The estimate also includes the increased labor supply, which helped to overcome problems with the supply of skilled workers in the time horizon under consideration. Higher productivity and a larger labor supply led to additional investment incentives for companies, which in turn increased productivity. As a result of EU accession, annual real GDP growth rose by additionally 0.6 percentage points between 1995 and 2013.

The Bertelsmann Stiftung (2014) examines whether the EU member states have benefited from greater integration since the introduction of the Single Market in 1993. For this purpose, an index was formed that reflects the degree of integration of the member states. In the alternative scenario, European integration came to a standstill in 1992. The growth effects of European integration are estimated based on the correlation between the integration index and economic growth as well as the country-specific development of the integration index. The authors find that GDP per inhabitant has been higher in almost all countries considered than it would have been if European integration had not continued after 1992. Like in Campos et al. (2014), Greece was an exception. Austria benefited greatly from European integration in 2012, as its GDP level was 25% higher than it was in 1992, making Austria the fourth-highest growth country in the EU at that time.

Boockmann et al. (2015) use the ifo trade model and compare the actual economic development in Austria with hypothetical developments that would have resulted in the following three scenarios: a) Austria would have been like Switzerland (own currency, partial participation in the Single Market, no customs barriers); b) Austria would have been like the USA (EU trade agreements with third countries); and c) Austria would not have had any trade agreements. The results show that Austria's foreign trade would be worse off in any of these scenarios compared to the actual situation: Swiss scenario: exports  $-9\%$ ; US scenario: exports  $-43\%$ ; scenario without any trade agreements:  $-45\%$ . The same applies to per capita income: Swiss scenario:  $-1.7\%$ ; US scenario:  $-4.4\%$ ; scenario without any trade agreements:  $-7.6\%$ . Boockmann et al. (2015) point out that the losses in the scenarios represent a lower limit, as they only analyze the static effects of a better sectoral allocation. Dynamic effects (e.g., increase in factor productivity through innovations) are not taken into account. To shed light not only on static but also on dynamic effects, the authors also carry out an analysis using the synthetic control method. The results show that between 1995 and 2007, GDP per capita in Austria rose by an average of cumulatively  $4.6\%$  as a result of EU integration.

Oberhofer and Winner (2015) examine the effects of EU accession on Austrian trade in goods but not on economic growth. They consider both new trade relations, as a result of removing market entry barriers, and intensified existing trade relations (that, e.g., led to lower production costs and prices). The integration steps (EU accession, introduction of the euro, EU's Eastern enlargement) are taken into account by using dummy variables. The authors carry out a difference-in-differences estimation for 1988 to 2014. They show that EU accession increased exports to existing markets by around  $10\%$ , while exports to new markets did not increase significantly. The greatest export growth followed the Eastern enlargement beginning in 2004. The authors also show considerable positive effects on imports. Overall, the integration steps led to welfare gains for both consumers and producers in Austria.

Breuss (2016) uses a macro model to compare the actual economic development in Austria with a hypothetical development in which Austria has not taken any of the integration steps since 1989. According to the model, GDP growth in Austria increased annually due to the opening of Eastern Europe (1989) by  $0.2$  percentage points on average and due to EU accession (1995) by  $0.6$  percentage points. The EU enlargements of 2004 and 2007 added another  $0.2$  percentage points of annual economic growth. The integration steps overlap in time, which is why the individual effects cannot simply be added together. If all integration steps (including the implementation of monetary union) are considered, Austria's average annual increase in real economic growth amounted to  $0.9$  percentage points; the inflation rate was reduced by an average of  $0.2$  percentage points over the years. Breuss (2016) points out that the positive effects of integration for Austria have diminished over time. The positive effects of EU enlargement, on the other hand, were more stable. Even if increased integration did not lead to permanently higher GDP growth rates, the positive effects on the level of GDP remained. Overall, Austria's economic output has been around  $29\%$  higher since 1989 as a result of European integration than it would have been without integration.

London Economics (2017) bases its analysis on a self-generated integration index that takes into account a) various aspects of the Single Market freedoms, b) how the adoption of EU legislation impacted new member states and c) how much the

economic performance (e.g., relative productivity, relative level of per capita GDP) of individual member states differed from that of the EU. This index serves as an additional explanatory variable in a macro-economic model, and the author analyzes all European countries; the aggregate impact of the integration process on Austrian GDP amounted to 1.7% for the period from 1999 to 2015 or an average of 0.1 percentage points per year.

In contrast to other studies, Felbermayr et al. (2018) do not analyze the positive effects of each integration step but the negative effects in the event that the integration steps (customs union, Single European Market, euro, Schengen Area etc.) would have been reversed in the sense of “undoing Europe”. For this purpose, the authors use a sectoral gravity model with a disaggregated data set of 50 goods and services sectors.<sup>14</sup> The results show that the impact on GDP growth has been greater for smaller countries and also for countries that have joined later. For Austria, GDP growth would have been 7.9% lower (base year 2014). The biggest part of this decline can be attributed to leaving the Single Market (6.2%).

Mayer et al. (2018) estimate trade stimulating effects stemming from different stages of European integration using a gravity model. The different integration steps analyzed are the free trade agreements, the Single Market, the Schengen Area and the introduction of the euro. Then they discuss the effects of counterfactual exercises (EU reaches regional trade agreements or reverts to WTO rules). The effects on Austria would also have been strong – real GDP growth would have been reduced by 7.7% to 8.2%.

Mion and Ponattu (2019) use a modern quantitative trade model of the global economy using trade data from the UN Comtrade database. They calculate counterfactual economic scenarios stemming from changes in trade costs related to the Single Market. Results show that the Single Market provided higher welfare to all its members, but countries and regions in the geographic center of the European continent gained more than some peripheral regions. This is also the case for Austria, where the Single Market led to a cumulative increase of GDP per head by 3.9%.

In’t Veld (2019) examines the impact of the Single Market in goods and services by simulating a counterfactual scenario in which tariffs and non-tariff barriers are reintroduced using a DSGE model. Similar to Felbermayr et al. (2018), he also analyzes an “undoing Europe” scenario.<sup>15</sup> In this scenario, the intra-EU trade flows are significantly reduced, as are the market size and competition in the EU. The effects on Austria would have been strong – real GDP growth would have been reduced by 11.8%.

Oberhofer (2019) analyzes the impact of trade effects on Austria due to EU accession using a gravity model and data from the World Input-Output Database. The effects on Austrian GDP growth in the period 1995 to 2014 was strong. Cumulated GDP additionally grew by 15.6% in the period under review (0.7 percentage points per year). The effects on inflation (–2.4 percentage points) were also substantial.

In four different studies, Breuss (2019, 2020a, 2020b and 2022) comes up with qualitatively and quantitatively very similar results. This is remarkable because the

<sup>14</sup> For a better comparison in table 3, we reversed the signs of the results there.

<sup>15</sup> For a better comparison in table 3, we reversed the signs of the results there.



methods used differ greatly (“large” macro model, DSGE model, “small” macro model). Breuss (2019) uses the synthetic control method. According to him, EU membership led to an overall increase in GDP growth per capita of around 1 percentage point on average per year between 1995 and 2020. Of this, around 0.7 percentage points were attributable to EU membership and around 0.3 percentage points to the introduction of the euro. Breuss (2020a) uses a medium-sized macro-integration model to analyze the effects of many different integration steps on Austria for the period 1995 to 2020. He analyzes the effects of EU membership, of EMU, of the EU enlargement of 2004 and of 2007 and of the fall of the Iron Curtain in 1989. In total, the sum of all integration effects amounted to a cumulated increase of GDP growth of 20.4% between 1995 and 2020 or of 0.8 percentage points per year. EU membership led to an increase in GDP of 10.9% (0.4 percentage points per year). Even the EU enlargement of 2004 and of 2007 yielded a cumulated GDP effect of 5.3% (0.3 percentage points per year).

Breuss (2020b) uses a two-country DSGE model where – following Romer (1990) – total factor productivity is endogenized to capture developments of trend factor productivity (TFP) via research and development (R&D) investments and the productivity effects of globalization (exports and foreign direct investments). Additionally, the real exchange rate is derived from a risk sharing equation. Three different time periods are analyzed: (1) the Single Market, EMU and the EU enlargement since 2004. The author examines the effects of lifting trade barriers, of increased competition (“mark-up shock”) and of the investment-promoting effect caused by increased TFP. The lifting of trade barriers together with the increase in competition led to a cumulative increase in GDP of 10.3% or 0.4 percentage points per year between 1995 and 2020. If the effects of TFP (calculated via R&D investments) are also taken into account, the cumulative positive effects increased to 17.8% of GDP or 0.7 percentage points per year. Despite the endogenization of the TFP, the positive effects of the integration steps also slowly lessened over the course of time in this model.

Breuss (2022) uses a 10-equation EU model with dummy variables proxying for the different integration steps for the time period 1995 to 2022. Overall, the integration steps led to a cumulative increase in GDP of 13.3% or 0.5 percentage points per year. Here too, the trade effects were by far the strongest (cumulative: 12.3%, per year: 0.4 percentage points).

### **2.3 The effects of euro introduction**

In contrast to the effects of Austria’s accession to the EU, most studies on the effects of the introduction of the euro in Austria find either only small positive or almost negligible growth effects on its economy. Additionally, with only seven studies, the number of studies analyzing the effects of EMU is quite small (table 4). For the analysis of the effects of the integration steps, the respective alternative scenarios are crucial to the results, as we have seen in the last subsection. This is also the case when analyzing the effects of euro introduction. Thus, the results of the individual studies cannot be compared directly with each other. For example, in the alternative scenario in Fernández and García Perea (2015), EMU would not have come about at all, while in Breuss (2016), EMU would have existed, but Austria would not have participated. Unless otherwise stated, the general methodical

Table 4

**Selected studies of the last 10 years about the economic impact of euro introduction on Austria**

Study	Method applied	Time horizon	Real GDP <sup>1</sup>		Inflation	
			Growth differential (p.a.)	cumulative	p.a.	cumulative
			percentage points	%	percentage points	
Fernández and García Perea (2015)	Synthetic control	Different time periods	No significant impact	No significant impact	x	x
Oberhofer and Winner (2015)	Macro model	1999–2014	Very small positive effect on net exports	x	x	x
Breuss (2016)	Macro model; comparison with hypothetical development	1999–2015	0.5	9.3	0.05	0.8
Felbermayr et al. (2018) <sup>2</sup>	IFO trade/sectoral gravity model, “breakdown of agreements”	“long run”	x	0.7	x	x
Akhmadieva and Smith (2019)	Single equations, VAR, structural break	1999–2016	x	Difficult to draw strong conclusions	x	x
Breuss (2020a)	Macro integration model	1999–2020	0.1	2.3	0.0	0.2
Breuss (2022)	Small macro model	1999–2022	0.2	4.6	x	x

Source: Authors’ compilation.

<sup>1</sup> Real GDP or real per capita GDP.

<sup>2</sup> The authors calculate the effects of undoing the various integration steps. To make the results in the table more comparable, the signs of the results are reversed.

approaches of the studies did not differ from the respective methods used for the analysis of all other integration steps (see subsection 2.2 for details).

The results of Fernández and García Perea (2015), Oberhofer and Winner (2015) and Akhmadieva and Smith (2019) show that the introduction of the euro had impacted GDP growth, exports and/or inflation only weakly. Fernández and García Perea (2015) come to the conclusion that EMU’s impact on Austrian economic growth has been insignificant. In this context, they point out that EMU came about the time when China’s importance in trade began to increase sharply. This development further fragmented international trade and caused trade between the euro area countries to not grow significantly despite the introduction of the euro. In addition, the increasing importance of international production chains resulted in a complete reorganization of international trade. Oberhofer and Winner (2015) come to the conclusion that the introduction of the euro had hardly any additional trade effects on Austria. According to them, one possible reason might be that Austria benefited less from the single currency, as the Austrian schilling had already been pegged to the Deutsche mark for many years.

Akhmadieva and Smith (2019) use single equations and structural vector auto regressions with exogenous variables to test whether a structural break occurred due to the introduction of the euro. They compare countries that have adopted the euro with countries that have not and come to the conclusion that it is difficult to draw statistically significant conclusions.



Breuss (2016, 2020a and 2022) and Felbermayer et al. (2018) conclude that the introduction of the euro in Austria has influenced GDP growth positively. According to Felbermayer et al. (2018), the introduction of the euro affected Austrian GDP growth relatively weakly (cumulatively by +0.7%) compared to other integration steps (see the previous subsection). All three studies of Breuss show that EMU had positive effects on economic growth. Although these effects were smaller than the trade effects (see also the previous subsection), they still were significantly high compared to the results of the other studies under review: GDP growth amounted cumulatively to +9.3%, +2.3% and +4.6%, depending on the study and the period under review (table 4). Breuss (2016 and 2020a) also find slightly positive effects on inflation (cumulatively by +0.8 and +0.2 percentage points, respectively). According to Breuss (2020 and 2022), each individual integration step temporarily led to growth effects of varying strength, but these effects decreased and phased out over time.<sup>16</sup>

### 3 Summary and conclusion

Austria joined the EU in 1995 and adopted the euro as official currency in 1999. In the following years up to the global financial crisis in 2008, global trade integration had been deepening; Austria particularly benefited from the EU's Eastern enlargement in 2004 and 2007. However, the GFC, the COVID-19 pandemic and the Russian war against Ukraine led to (deep) recessions; the sovereign debt crisis and the Brexit were felt in the economic world as well. For a small open economy like the Austrian one, the euro as a common European currency served as a protective shield against these exogenous shocks and the uncertainty. For example, the euro contributed to reducing volatility in economic developments that can be triggered by strong currency fluctuations.

Since the introduction of the euro in 1999, the Austrian economy has managed to maintain its above-average GDP per capita position within the EU. Average labor productivity growth in the past 25 years was higher than in most peer countries but has fallen back slightly in recent years. The Austrian economy owes this robust development to a strong industrial sector, an above-average share of the tourism sector and a growing services sector. However, the energy price shock led to a strong rise in inflation in 2022 and 2023, which was well above the euro area average at the end of the period under review. In the 25 years since joining the EU, Austria's external sector has successfully maintained its international competitiveness. This is reflected in an increased degree of openness, a sustained positive current account balance, nearly constant market shares and remarkable stable price competitiveness. Economic output in Austria increased by 44% from 1999 to 2023.

We have summarized the results of a large number of studies that have estimated the additional growth effects due to the European integration steps for the Austrian economy. The vast majority of the studies under review paints a clearly positive picture. Many studies find that later integration steps had smaller positive effects on GDP growth, which is not surprising since these have been smaller in magnitude than earlier integration steps. Specific, quantitative assessments of the positive effects vary, however. The results of GDP growth in Austria range between 28.6%

<sup>16</sup> We highly recommend Breuss (2020, p. 36 and 2022, pp. 115 and 116) for graphic representations of his results.

and 0% (high result: Breuss (2016), who includes the fall of the Iron Curtain; low result: Fernández and García Perea (2015), who examine the effects of the introduction of the euro). The effects of the introduction of the euro are considered to be weaker compared to other integration steps, but many studies still find significant positive growth effects for Austria ranging from 0.7% to 9.3%. The reason that results vary so greatly lies in the fact that different observation periods, integration definitions and methods to estimate growth effects have been used. According to the studies considered, the various integration steps initially had led to rising GDP growth rates, which weakened over time but still caused permanently higher GDP levels. Positive effects on the long-term growth rate of an economy were not found. Other potentially positive effects of the introduction of the euro, such as protection against currency speculation, are not analyzed in the cited studies.

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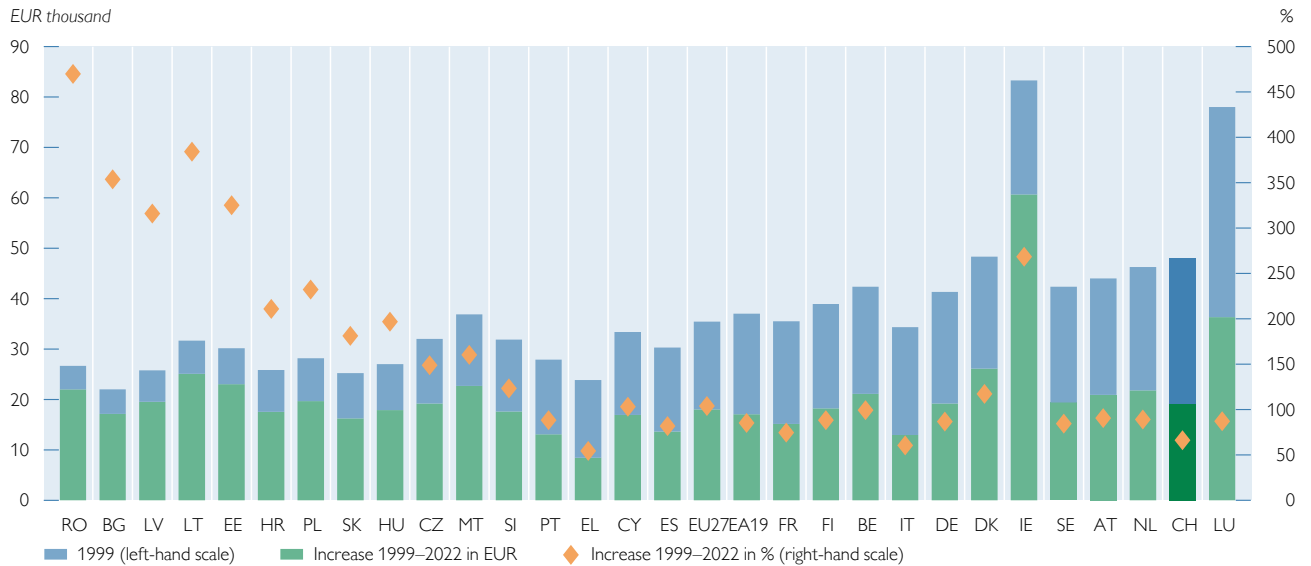
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## Annex

Chart A1

### GDP per head



Source: Eurostat.

Note: Switzerland: increase until 2020; GDP in purchasing power parities.

Table A1

### Population and labor markets

	Austria	Germany	Belgium	Netherlands	Sweden	Switzerland	Euro area
2022 compared to 1999 in %							
Population							
0–14 years	–6.6	–10.6	7.0	–7.0	11.6	5.8	–4.8
15–65 years	11.2	–4.4	10.8	6.7	15.0	20.4	2.0
Older than 66 years	41.0	41.3	33.8	65.6	37.3	54.1	44.9
Total	12.5	1.5	13.7	11.6	18.0	22.7	7.3
Employment in heads	26.9	17.5	27.5	28.0	26.8	33.2	–
Hours per head	–15.3	–8.3	–0.2	–4.5	–4.3	–9.5	–
Employment in hours	2.9	9.4	27.4	20.9	22.0	13.3	–
2022 compared to 1999 in percentage points							
Participation rate	5.3	7.8	5.4	7.3	4.6	1.5	–
Unemployment rate (1999–2022) %							
Min	3.8	3.0	5.5	2.8	5.0	2.5	6.7
Max	6.5	10.5	8.7	8.4	8.8	5.1	12.1
Mean	5.3	6.2	7.5	5.5	7.3	4.2	9.2

Source: Eurostat, OECD.

# The pass-through of policy interest rates to bank retail rates in Austria

Robert Ferstl, Bernhard Graf, Claudia Kwapil<sup>1</sup>

*The 25<sup>th</sup> anniversary of the European monetary union provides an excellent opportunity to examine whether the pass-through of monetary policy has changed over time. The interest rate channel of monetary policy – i.e. the transmission of policy rates to money market rates and ultimately to bank retail deposit and lending rates – is crucial to the functioning of monetary policy. Only if this channel works properly can monetary policy rates influence investment and saving decisions of households and businesses, thereby steering inflation. We provide an empirical analysis of the pass-through in Austria and the euro area, examining the speed of the transmission process, alongside short-term (a)symmetries and long-term pass-through coefficients. In line with the previous literature, our findings suggest that the long-term pass-through is nearly complete for bank lending and time deposit rates in Austria. Moreover, we provide evidence of an asymmetric pass-through to (overnight and time) deposit rates in Austria, with decreases in money market rates being propagated more quickly than increases. Overnight deposit rates not only show a significantly more sluggish pass-through process than other retail rates, but also an incomplete long-term pass-through coefficient. Moreover, all Austrian retail rates adjust more quickly to changes in money market rates than their respective counterparts in the euro area aggregate. Finally, we find a long-term stable relationship between money market and retail interest rates, indicating that the pass-through process in Austria has not significantly changed over time.*

*JEL classification: E52, E58*

*Keywords: Monetary policy, Interest rate pass-through*

The starting point for this article is a recent strand of literature – like Deutsche Bundesbank (2023) for Germany, Ferrer Pérez et al. (2023) for Spain, Byrne and Foster (2023) for Ireland and the euro area and Messer and Niepmann (2023) for the euro area as well – arguing that the current pass-through to retail rates in the euro area seems more sluggish than in the past, at least in some countries. Explanations for this inertia include the high level of excess reserves as well as imperfect competition in the banking industry.

Since the establishment of the Economic and Monetary Union (EMU) in 1999, monetary policy in the euro area has navigated through various monetary policy episodes. In the early years of EMU, policy rates fluctuated between 2.5 and 4.75% and excess reserves were negligible. The calm start came to an end in 2008, as the euro area faced two subsequent recessions that called for a monetary policy response. Thereupon, the European Central Bank (ECB) lowered monetary policy interest rates into negative territory and created a massive volume of excess reserves through unconventional monetary policy measures. It was only in 2021, when inflation started to increase significantly, that the ECB raised policy rates again. They climbed up to 4.0% and excess reserves, while still abundant, started to decline. It is easy to imagine that these very different monetary policy episodes and

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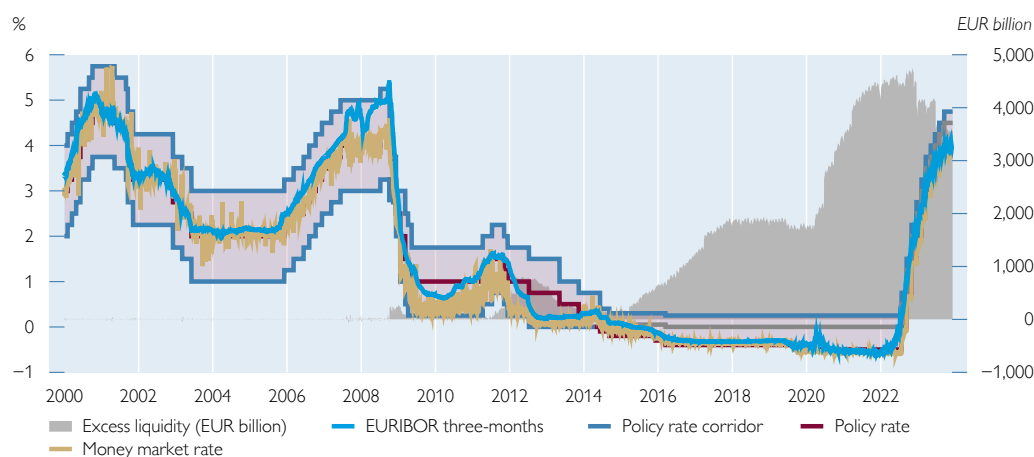
macro-economic circumstances led to changes in the transmission process and thus in the pass-through process of monetary policy. Hence, we set out to look at the effect monetary policy rates had on refinancing conditions of households and firms in Austria and the euro area during the first 25 years of the EMU and aim to determine whether the interest rate pass-through changed over time. To this end, we reproduce a broad strand of empirical results investigating the interest rate channel of monetary policy established in the period up to the Great Financial Crisis for the time frame covering unconventional monetary policy measures.

Chart 1 illustrates that using its three key interest rates, the ECB closely manages very short-term money market rates, i.e. the euro overnight index average (EONIA)/euro short-term rate (€STR) and – if changes in policy rates are expected to persist – money market rates like the three-month EURIBOR. To ensure that monetary policy effectively impacts inflation, it is essential that changes in policy rates are transmitted to money market rates, and subsequently, to lending and deposit rates for both nonfinancial corporations and households. In the transmission process within the euro area, retail rates offered by banks assume a particularly important role because both businesses and households heavily depend on bank financing. Changes in nominal interest rates are transmitted to real rates, which ultimately affect household consumption and business investment decisions. More specifically, if bank retail deposit rates increase in line with money market rates, saving becomes more attractive and higher real interest rates discourage consumption and investment. Furthermore, if bank lending rates and, consequently, real borrowing costs for businesses and households increase together with money market rates, credit demand will decline, thereby curbing consumption and investment. Slowing down the growth of the real economy – by reducing the growth rates of consumption and investment – is a crucial step to control inflationary trends (see e.g. Beyer et al., 2017). Hence, the effective functioning of the interest rate channel of monetary policy transmission is an important precondition for successfully steering inflation.

If the interest rate channel – which is the most important channel in monetary policy transmission in the euro area (see ECB, 2010) – is impaired and changes in

Chart 1

### Key ECB interest rates, money market rates and excess liquidity



Source: ECB Statistical Data Warehouse.

policy rates are not fully transmitted to retail interest rates, monetary policy has to take this into account, either by taking measures enhancing the transmission or by increasing rates more aggressively (see e.g. Kwapil and Scharler, 2010). Hence, it is essential for monetary policymakers to understand how retail rates offered by banks in all euro area countries respond to changes in money market rates and how these react to changes in policy rates (i.e. key ECB interest rates).

Hence, we address the following questions: Is there a stable relationship between money market rates and retail rates in Austria and the euro area? What insights can we gain from this relationship regarding the completeness of pass-through? Is there a difference between short-run and long-run pass-through? We analyze these questions along three dimensions: First, we make a comparison over time. Second, we compare our results for Austria with those for the euro area. Third, we consider the possibility of an asymmetric pass-through of positive and negative changes in money market rates to bank interest rates.

The article is structured as follows: Section 1 gives an overview of the related literature, section 2 presents the data used in the subsequent analysis and motivates our modeling choices, section 3 introduces the econometric model, section 4 presents our results, and section 5 concludes.

## 1 Related literature

Central bankers and academics alike have a keen interest in understanding how monetary policy decisions affect bank retail rates. There is a substantial body of literature analyzing the extent to which changes in reference rates impact retail deposit and lending rates. Several papers, such as Gregor et al. (2021) as well as Andries and Billon (2016), offer excellent surveys of this literature.

In general, we conclude from the literature that the pass-through of policy rates to retail rates varies from country to country, differs between deposit and lending rates, and is heterogeneous across different maturities and customer types. Furthermore, the transmission of policy rate changes to retail rates is not immediate. Therefore, the short-term pass-through is typically incomplete. In a survey of 39 studies focused on the euro area pre-2008, Andries and Billon (2016) find that there is a nearly complete long-term pass-through to lending rates for firms, while monetary policy changes are only partially transmitted to deposit rates. In a sample of 54 studies primarily covering advanced economies, Gregor et al. (2021) show that the pass-through to corporate lending rates is stronger than to consumer lending rates. Kok Sørensen and Werner (2006) introduce a “relative adjustment”<sup>2</sup> measure, which combines the swiftness of adjustment and the extent of the long-run pass-through in euro area countries. According to their findings, interest rates on corporate loans exhibit the highest level of responsiveness to changes in reference rates. Following closely are rates on mortgage loans and rates on time deposits, which also show a swift adjustment. By contrast, rates on consumer loans and current account deposits appear to be the least responsive among the observed retail rate categories.

Trying to answer the question whether the interest rate pass-through in the euro area changed during the Global Financial Crisis, Blot and Labondance (2013),

<sup>2</sup> “Relative adjustment” herein refers to the combined analyses of the estimated long-run pass-through and the adjustment speed parameters.



Hristov et al. (2014), Avouyi-Dovi et al. (2017) as well as Holton et al. (2018) present empirical evidence that the transmission of monetary policy became significantly impaired in the years after 2008. Their results indicate a slower pass-through to retail interest rates, pointing to a reduced effectiveness of monetary policy during the crisis.

The literature on monetary transmission in Austria focuses primarily on lending rates. Most of these studies find that the impact multiplier is significantly below one (see e.g. Bernhofer and van Treeck, 2013; Blot and Labondance, 2013; Jobst and Kwapil, 2008; Marotta, 2009), indicating that the pass-through from reference rates to retail rates takes time. The long-run pass-through, however, is found to be close to complete for loans to firms and for mortgage loans (see e.g. Bernhofer and van Treeck, 2013; Blot and Labondance, 2013; Jobst and Kwapil, 2008; Marotta, 2010). According to Kok Sørensen and Werner (2006) the pass-through to mortgage lending rates in Austria seems to be weaker than for firm lending rates.

## 2 Data and modeling approach

This section describes the data used in this study and motivates the chosen modeling approach from an econometric and a theoretical point of view.

### 2.1 Retail interest rates on deposits and loans

Charts 2 to 4 present commercial banks' retail interest rates for Austria.<sup>3</sup> Our analysis specifically focuses on interest rates for new business, including renegotiations. This emphasis is based on the understanding that shifts in marginal retail rates, rather than interest rates on the stock of monetary aggregates, are the primary drivers influencing the behavior of economic agents.

In line with the existing literature discussed in section 1, we distinguish between contracts of monetary financial institutions (i.e. banks) with households (including non-profit institutions serving households) on the one side and contracts of banks with nonfinancial corporations on the other side. Additionally, we differentiate between overnight deposits and time deposits, with the latter representing a weighted average across all maturities beyond one day. Accordingly, we discuss four categories of deposits: *time deposits by nonfinancial corporations*, *time deposits by households*, *overnight deposits by nonfinancial corporations* and *overnight deposits by households*. On the lending side, we distinguish between two categories. *Loans to households* uses a weighted interest rate aggregate consisting of all maturities<sup>4</sup> for house purchases, while *loans to nonfinancial corporations* uses a weighted aggregate across all categories of loans. Due to data availability, some of the time series start in January 2000, while others are available only as of 2003. All time series come at a monthly frequency.

Charts 2 to 4 show that retail rates follow the trend of policy rates.<sup>5</sup> However, they do not move in perfect synchronization, revealing distinct behaviors between

<sup>3</sup> Source: ECB Statistical Data Warehouse (SDW).

<sup>4</sup> These aggregates are referred to as “cost-of-borrowing” indicators. For details on the methodology, see [Composite cost of borrowing indicators](#)

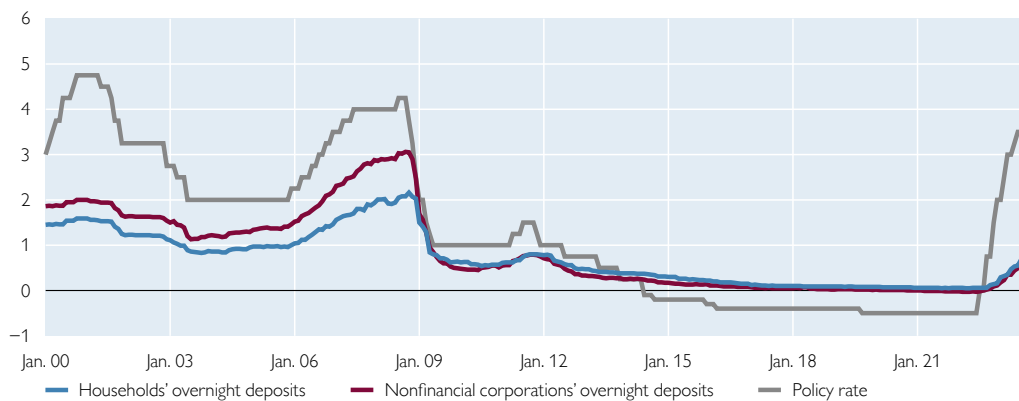
<sup>5</sup> The policy rate we use represents end-of-month values for the rate on the main refinancing operations up to May 2014, and for the rate on the deposit facility thereafter.



Chart 2

### Overnight deposit rates in Austria

Bank interest rates on new business in % (including renegotiations)



Source: ECB Statistical Data Warehouse.

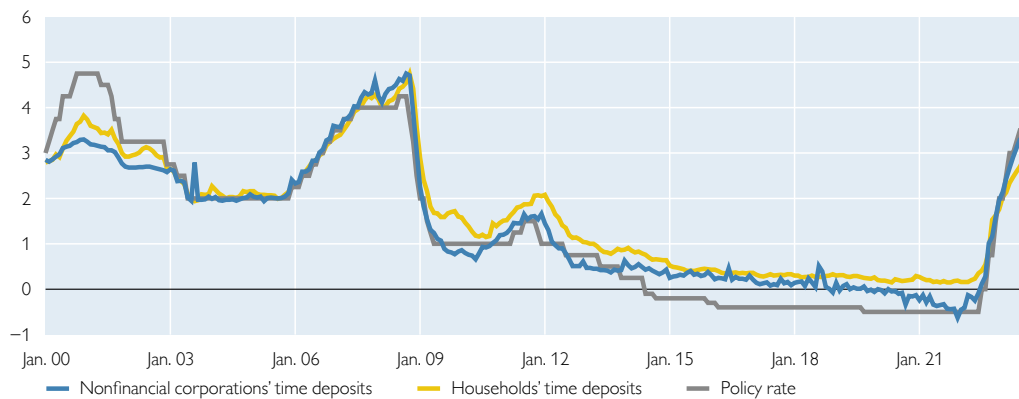
loan and deposit categories, as well as customer segments, as discussed in the literature (see section 1).

In chart 2, it is evident that the pass-through to overnight deposit rates is more sluggish for households than for nonfinancial corporations. Notably, average overnight deposit rates for Austrian households remained positive even in 2020/21, while corporate deposit rates dipped below zero. As early as 2009, the Austrian Supreme Court, in the case 5Ob138/09v, banned zero and negative interest rates on households' savings deposits. The court's rationale rests on the premise that households' saving deposits are characterized by a specific duration, serve an investment purpose and typically function with capital accumulation and profit-generation objectives. As a result, an interest rate of zero or below is fundamentally at odds with the statutory purposes of savings deposits. It is important to note, however, that this ruling does not apply to current accounts, which are part of our overnight deposit category, that primarily serve payment functions.

Chart 3

### Time deposit rates in Austria

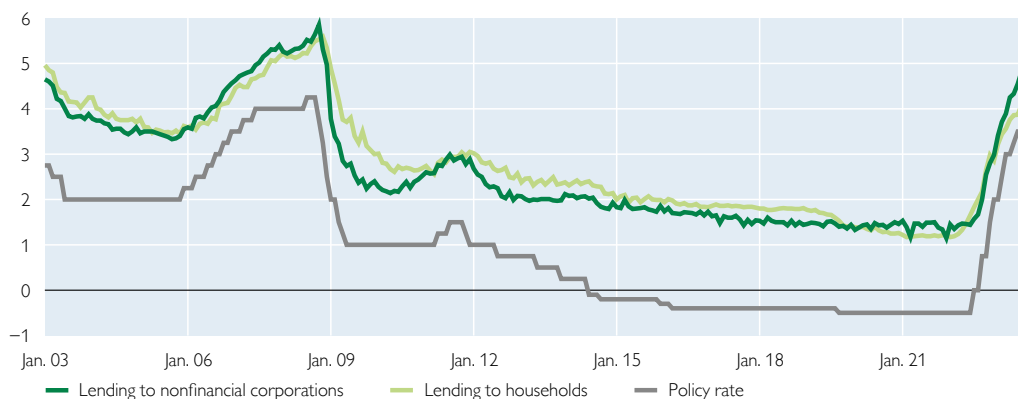
Bank interest rates on new business in % (including renegotiations)



Source: ECB Statistical Data Warehouse.

### Lending rates in Austria

Bank interest rates on new business in % (including renegotiations)



Source: ECB Statistical Data Warehouse.

The overnight interest rate aggregate employed in this analysis comprises both categories – overnight savings deposits and current accounts. Although the legal framework specifically pertains to households' time deposits (see also chart 3), its influence appears to have extended to the pricing of overnight deposits, as evidenced by both time series consistently remaining in positive territory throughout the entire investigation period.

Charts 2 and 3 suggest that time deposits mirror the movement of policy rates more closely than overnight deposits and are thus less sticky. In addition, the charts show that time deposits held by nonfinancial corporations dipped further below zero than the corresponding overnight deposits. Comparing time deposit rates across customer groups (see chart 3) reveals that interest rates for nonfinancial corporations are more volatile and, during most of the sample, closer to policy rates than those for households.<sup>6</sup>

While lending rates are generally higher than deposit rates, a visual inspection of chart 4 shows that lending rates are typically lower for nonfinancial corporations than for households' house purchases. It is only in hiking cycles that we find lending rates for nonfinancial corporations exceeding those for households.<sup>7</sup> Generally, it seems that lending rates for nonfinancial corporations are more sensitive to policy rates than household lending rates.

## 2.2 Modeling approach

From a merely statistical point of view, the well-known problem of spurious correlation can arise in empirical analysis of (macro-)economic time series. It refers to a situation when two (or more) non-stationary variables are regressed on each other that do not share a meaningful causal relationship but exhibit a common trend. Naïve econometric inference in such a situation would produce spurious,

<sup>6</sup> Nevertheless, these observations are only indicative, as the maturity composition of households' time deposits might differ from those of non-financial corporations.

<sup>7</sup> This result may be driven by the repricing of real estate assets, which typically lose value in hiking cycles. This reduces collateral values and hence dampens household demand for loans, exerting downward pressure on lending rates for house purchases.

non-meaningful results. However, under the Granger representation theorem (see Engle and Granger, 1987), if a stationary linear combination of the variables (in our case: interest rates) exists, a stable long-run relationship between the two variables is implied. Hence, the variables can be modeled in the form of an error correction model (ECM), which recovers the short-run and implied long-run relationship between the variables in a non-spurious, consistent way. We start with a general approach modeling the pass-through relationship, i.e. an autoregressive distributed lag (ARDL) model, which nests the univariate ECM, and subsequently add specific details like asymmetries.

The literature on the pass-through of monetary policy to bank retail rates for the euro area in general (for an overview see e.g. Gregor et al., 2021 as well as Andries and Billon, 2016) and Austria in particular finds contemporaneous pass-through coefficients significantly below unity. This means that the pass-through of policy rates to bank retail rates does not happen within a month but takes some time. Accordingly, using an ARDL model seems appropriate as it models the response of bank interest rates to money market rates in a lagged fashion, leaving room for the initial shock to propagate to bank rates within a few months.

In addition, we expect money market rates and bank retail rates to share a stable long-run co-integrating relationship. First, money market rates represent the banks' relevant marginal funding costs. Therefore, lending rates cannot remain below money market rates for an extended period due to profitability concerns. Additionally, they cannot significantly exceed them as competition would force banks with higher rates out of the loan market. Second, assuming there is competition in the deposit market, retail deposit rates cannot undershoot money market rates too strongly because such deviations would lead to deposit flight, and they cannot overshoot them too strongly either because of profitability reasons.<sup>8</sup> Any such deviation will not only be asymptotically corrected by lagged dependent variable terms but is also expected to be corrected within the next period in a linear and stable fashion, motivating the estimation of a time-constant adjustment speed parameter in the ECM.

Finally, our theoretical argument in favor of a stable long-run relationship can be justified by joint co-integration tests of all variables considered in the models.

### 2.3 Money market rates proxying monetary policy rates

In line with the empirical literature on the transmission of monetary policy (see, for instance, Sander and Kleimeier, 2004, as well as De Bondt et al., 2005), we utilize money market rates with different maturities as proxies for the policy rate. First, money market rates exhibit greater volatility than policy rates, rendering them more suitable from an econometric perspective. Second, money market rates with short- to medium-term maturities are more closely tied to banks' refinancing costs, which – following an “industrial organization inspired cost-of-funds approach” (see Sander and Kleimeier, 2004, p. 463) – drive banks' retail pricing. Third, expectations of the path of future policy rates are priced in money market

<sup>8</sup> See, for example Kho (2023), for a discussion of the role of local deposit market concentration on bank deposit pricing. We, however, do not consider specific concentration measures as additional variables. In the case of Austria, bank concentration as measured by the Herfindahl-Hirschman-Index of total assets is relatively low and very stable in comparison to other euro area countries across much of the sample (*EU structural financial indicators (June 2020)* (europa.eu)).

rates.<sup>9</sup> In that, money market rates capture the broader stance of monetary policy at any given point in time, which we deem part of the monetary policy transmission mechanism.

To pinpoint the optimal maturity for the employed money market rates, we adopt a pragmatic stance letting the data guide our choice. More precisely, we choose the maturity of the relevant money market rate that exhibits the most stable co-integrating relationship with the corresponding retail rate. This procedure leads us to the following choices:

In explaining the development of overnight deposit rates, we employ unsecured overnight money market rates as a proxy for the policy rate. This explanatory variable is a monthly average of the EONIA up to September 2019 and, from October 2019 onward, of the €STR. In explaining the evolution of time deposits, we use the monthly average of the three-month EURIBOR. For lending rates, we consider a reference rate with a longer maturity, i.e. the monthly average of the 12-month EURIBOR as the explanatory variable. Part of the loan aggregates reflect longer-term contracts (with household retail lending rates pertaining to mortgage loans for house purchases solely) which are priced in accordance with medium-term money market rates.<sup>10</sup>

An ARDL model assessing the monthly pass-through of policy rates to unsecured overnight money market rates indicates an almost immediate and complete pass-through. Moreover, we use a Granger causality test to examine whether the selected money market rates drive (in a Granger-causal sense) the dependent variables in question. We find convincing evidence that most money market rates unidirectionally (Granger)-cause the retail interest rates in each specific relationship.

### 3 Estimating the interest rate pass-through

In this section, we discuss the econometric models used in this study.

#### 3.1 The basic model

We apply an ECM as argued in subsection 2.2 and commonly used in the empirical pass-through literature (see e.g. Moder, 2023; Egert et al., 2007; Holton and d’Acri, 2018 as well as Deutsche Bundesbank, 2019 and 2023). To empirically investigate the transmission from money market rates to bank retail rates, we estimate a general  $ARDL(p,q)$ -model following Pesaran and Shin (1999):<sup>11</sup>

$$y_t = \alpha + \sum_{i=1}^p \beta_i y_{t-i} + \sum_{j=0}^q \gamma_j m_{t-j} + \epsilon_t, \text{ where } \epsilon_t \sim N(0, \sigma_\epsilon^2) \quad (1)$$

<sup>9</sup> To see this, consider the three-month EURIBOR as shown in chart 1, which exhibits a strong uptick in anticipation of changes in monetary policy rates at the start of 2022.

<sup>10</sup> Since 3-, 6- and 12-month EURIBOR money market rates reflect the most liquid money market segments and are the common reference interest rates for banks in the euro area (see Bundesbank, 2019), and we deem them especially informative for pricing of the retail interest aggregates considered. Moreover, our results for time lending rates are robust to employing 3- and 6-month EURIBOR rates.

<sup>11</sup> Note that the effect of excess liquidity on the pass-through in the ample reserve regime as of 2012 is captured by money market rates as they reflect liquidity conditions in money markets. This can be seen in chart 1, where money market rates move below the corridor set by the deposit facility rate in 2020–2022. The inclusion of excess liquidity as an additional exogenous variable in our models yields little additional explanatory power.

and  $y_t$  denotes the relevant retail rate and  $m_t$  represents the corresponding money market rate. In equation (1),  $p$  denotes the maximum lag of the dependent variable and  $q$  is the maximum lag of the explanatory variable.

The above model can be reformulated in first differences of  $y_t$ :

$$\Delta y_t = \alpha + \sum_{i=1}^{p-1} \beta_i \Delta y_{t-i} + \sum_{j=0}^{q-1} \gamma_j \Delta m_{t-j} + \theta_1 y_{t-1} + \theta_2 m_{t-1} + \epsilon_t \quad (2)$$

and the associated error correction form is:

$$\Delta y_t = \sum_{i=1}^{p-1} \beta_i \Delta y_{t-i} + \sum_{j=0}^{q-1} \gamma_j \Delta m_{t-j} + \theta_1 \left( y_{t-1} + \frac{\theta_2}{\theta_1} m_{t-1} + \frac{\alpha}{\theta_1} \right) + \epsilon_t \quad (3)$$

where  $\theta_1 = -(1 - \sum_{i=1}^p \beta_i)$  and  $\theta_2 = \sum_{j=0}^q \gamma_j$  and the co-integrating equation is given by the expression in parentheses. The error-correction coefficient  $\theta_1$  represents the speed of adjustment to the long-run equilibrium. Moreover,  $\theta_2/\theta_1$  represents the long-run pass-through coefficient.

We determine the optimal lag orders  $p$  and  $q$  by minimizing the Akaike Information Criterion (AIC) over the whole estimation period. We then proceed by evaluating the existence and form of the co-integrating relationship by performing a bounds F-test and bounds T-test as in Pesaran et al. (2001). The existence of co-integrating relationships is important for the interpretation of the long-run coefficients. If the bounds test is not passed, only the short-run coefficients will have an economically meaningful interpretation.<sup>12</sup>

### 3.2 Asymmetries

Going one step further, we explore the potential for an asymmetric pass-through of positive and negative changes in money market rates to bank retail rates. Hence, we test for pass-through coefficients that are statistically different depending on whether money market rates increase or decrease. For instance, Egert et al. (2007) provide evidence for asymmetries in the pass-through of money market rates to bank lending rates for a sample of Central and Central Eastern European countries.

We analyze the possibility of an asymmetric pass-through in the following model specification following Greenwood-Nimmo et al. (2010) and Shin et al. (2014). Hence, the short-term parameters  $\gamma_j$  in equation (3) may be different for positive and negative changes in money market rates:  $\gamma_j^-$  if  $\Delta m_{t-j} < 0$  and  $\gamma_j^+$  if  $\Delta m_{t-j} \geq 0$

Due to the negative interest rate policy implemented between 2014 and 2022, one might expect  $\gamma_j^- \neq \gamma_j^+$ . Charts 2 to 4 already suggest that in some cases the pass-through to retail rates was more sluggish during this time. The legal framework in Austria preventing some deposit rates from entering negative territory (as

<sup>12</sup> An Augmented Dickey-Fuller test (including an intercept and no time trend) indicates that all variables concerned are  $I(1)$ . Furthermore, we confirm that combinations of variables employed in our models form stationary time series. Hence, we proceed by employing the Engle-Granger One-Step Approach by estimating the short-run and long-run coefficients in an ARDL specification.

discussed in subsection 2.1) could explain the asymmetric pass-through to household deposit rates in our sample.

The case for an asymmetric pass-through in the euro area has been made in empirical investigations, such as Sander and Kleimeier (2002), who attribute this finding to imperfections in market competition. According to this literature, positive changes in money market rates are transmitted faster to lending rates than negative changes, while deposit rates react more quickly to negative changes in money market rates than to positive ones.

### 3.3 Risk measure

Following Deutsche Bundesbank (2019, 2023) and ECB (2017), we use the spread measure  $s_t$  as an additional explanatory variable and allow for a maximum of  $k$  lags. Therefore, equation (1) is extended with  $\sum_{h=0}^k \rho_h s_{t-h}$ . The spread is computed as the difference between the overnight interest swap rate at 10-year maturity and the 10-year government bond rate. It captures risk and term premiums over time and across countries. We do not expect this variable to be a relevant explanatory factor for the interest rate pass-through in Austria. Nonetheless, it could play a crucial role in the pass-through model for loans in the euro area aggregate. In particular, it might have explanatory power especially in the crisis years of 2008–2020, where divergent country risk premiums may have had a significant influence on banks' refinancing costs.

## 4 Results

Table 1 contains our estimation results for the pass-through to Austrian retail rates (in the upper part) as well as to retail rates in the euro area (in the lower part). Column (4) indicates whether we use a linear ARDL model or a nonlinear ARDL model (NARDL), in which the coefficients differ depending on the direction of the change in the explanatory variables (see subsection 3.2). Moreover, the lag structure of the short-run and long-run coefficients is given in parentheses. We include short-run and long-run asymmetries in the model and perform symmetry tests on the coefficients. As we find no significant long-run asymmetries, we report only a single coefficient in column (7). Statistically significant short-run asymmetries are only present in the pass-through to deposit rates. Consequently, we report single coefficients also in columns (8) and (9) for the pass-through process to lending rates. Where we use a nonlinear ARDL-model, column (8) gives the coefficients for increasing money market rates, while column (9) shows the coefficients for decreasing money market rates. As discussed in subsection 3.3, we augment the models for euro area lending rates with a risk measure, whose long- and short-term coefficients are given in columns (11) and (12).<sup>13</sup> Finally, to assess the models' dynamics, in column (10) we report the inverse parameter of the speed of adjustment (i.e.  $\frac{1}{\theta_1}$ ) measured in months.

<sup>13</sup> As a robustness check, we include the risk measure not only in the pass-through equations for loan rates in the euro area, but also in all other equations. However, the coefficients associated with the risk measure do not exhibit statistical significance, as they are not significantly different from zero.

#### 4.1 Model results

According to the bounds test given in column (13) of table 1, we find stable co-integrating relationships for all types of retail interest rates in Austria. For the euro area aggregate, however, (overnight and time) deposits for households do not pass the bounds test. Consequently, only the short-run coefficients have an economically meaningful interpretation.

Our estimates of the long-term pass-through coefficients in column (7) for Austrian retail rates significantly deviate from zero and are close to one. The only exception are the estimates for overnight deposit rates for households, which are not significantly different from zero. Hence, we find long-run pass-through coefficients of monetary policy to Austrian retail rates for lending and deposits qualitatively in line with results of empirical studies conducted before unconventional monetary policy measures were introduced in the euro area. This observation aligns with the findings in the literature, as discussed in section 1.

For the euro area aggregate, a nearly complete pass-through in column (7) is evident only for lending rates and rates on time deposits of nonfinancial corporations. The other deposit rates suffer from the fact that they either do not pass the bounds test or their long-term coefficient is not significantly different from zero. Our findings for the euro area broadly confirm those of Kok Sørensen and Werner (2006).

When comparing long-term pass-through effects between Austria and the euro area, our results suggest that the long-term pass-through to lending rates seems more complete in the euro area aggregate. Conversely, there is evidence that the pass-through to term-deposits is more complete in Austria.

While the short-run pass-through to lending rates in columns (8) and (9) seems to be symmetric in Austria as well as in the euro area, we provide evidence that the short-run pass-through to deposit rates is asymmetric. In the short term, deposit rates seem to react more strongly to decreases in money market rates. In contrast, they react more slowly to increases in money market rates. It is important to note, however, that this relates only to the strength of the short-term adjustment, as our evidence suggests symmetric long-term coefficients. Column (8) of table 1 shows that the short-term pass-through (i.e. within one month) to overnight deposit rates in Austria and the euro area is basically zero. Hence, overnight deposit rates react more sluggishly than the other retail rates when money market rates increase.

Additionally, our estimations of the (inverse) adjustment speed parameters, as shown in column (10) of table 1, are economically meaningful for the pass-through equations of loans and time deposits. In particular, Austrian lending rates seem to converge to their long-run equilibriums within a year. Rates on nonfinancial corporations' time deposits react even faster, while rates on households' time deposits react a bit more slowly. The relative pattern seems similar in the euro area. However, our findings suggest that the speed of adjustment is in general higher in Austria than in the euro area aggregate.

Our estimates for the speed of adjustment of overnight deposits align with the coefficients in Deutsche Bundesbank (2023). Hence, in Austria as well as the euro area, the adjustment to the long-run equilibrium would take up to a decade. This finding is particularly intriguing because – despite statistical tests confirming a stable co-integrating relationship – there is no plausible economic explanation for why the adjustment to the long-run equilibrium takes so much time.



The risk measure we incorporate in estimating the pass-through to lending rates in the euro area is significantly different from zero, both in the long-term and the short term. The findings presented in column (11) of table 1 indicate that aggregate risk premiums indeed capture a significant part of variation in lending rates in the euro area.

#### 4.2 Model evaluation: cumulative dynamic multipliers and robustness

Cumulative dynamic multiplier plots, as shown in charts 5 to 10, are a graphical representation of the dependent variable's estimated response to a change in the money market rate over a given time horizon. The long-run limits in the charts correspond to the portion of money market rate changes transmitted to bank retail rates in the new equilibrium given no additional disturbances occur. In other words, charts 5 to 10 condense the joint information on short-run (asymmetric) and long-run coefficients presented in table 1.

Chart 5 to 10 illustrate the estimated cumulative dynamic multipliers for the pass-through models in Austria. In charts 5 and 6, we show the non-linear reaction of Austrian lending rates to a unit shock to the 12-month EURIBOR and the long-term equilibrium, respectively. For lending rates, we estimate symmetrical models. The graphical representation of our results show that the long-term pass-through coefficients are quite similar for nonfinancial corporations and households. However, it also becomes clear that lending rates to nonfinancial corporations adjust more quickly than mortgage rates for households.

Charts 7 to 10 show the reaction of deposit rates in Austria to their corresponding money market rates in nonlinear models. Time deposit rates for nonfinancial corporations mostly fluctuate around their long-run limit. This is because of their rapid adjustment, as indicated by the low value of the inverse adjustment speed parameter (see table 1, column (10)). Time deposit rates for households adjust more slowly. However, they also converge within the first few months. Households' time deposits respond more quickly to falling money market rates than to increasing money market rates. For overnight deposits, we see a more persistent asymmetry and the slow convergence to the long-run limit as discussed in subsection 4.1.

Finally, we conduct tests to identify any structural breaks in the estimated relationships shown in table 1:<sup>14</sup> An analysis of recursive coefficients estimated between January 2000 and September 2023 reveals no significant changes or discontinuities. This indicates that the pass-through mechanism via the interest rate channel of monetary policy remains effective in a stable manner. While we do not find significant structural breaks, we find tentative evidence that short-run asymmetry in overnight deposit pricing may have become more pronounced since the start of the current hiking cycle judged by recursive coefficients. Moreover, to detect possible structural changes in the pass-through mechanism we conduct CUSUM (cumulative sum) tests on the estimated residuals, which do not reveal significant structural breaks in the models shown above.<sup>15</sup> These findings lead us

<sup>14</sup> The results for Austria and the euro area are not shown but are available from the authors upon request.

<sup>15</sup> The model pertaining to the pass-through equation of time deposits for nonfinancial corporations presents the only exception in this regard. Recursive CUSUM estimates (employing non-robust standard errors) exceed the threshold set by the confidence interval between 2016 and 2018. However, as recursive-coefficient estimates are stable throughout the whole time horizon considered, we interpret these results tentatively. Moreover, we do not find evidence for residuals heteroskedasticity in any of the models presented above, as judged by Durbin-Watson statistics.



to conclude that the pass-through mechanism for bank lending and time deposit rates has exhibited a stable functional form since the start of EMU in 1999.

Table 1

(1) Region	(2) Name	(3) Sample	(4) Model	(5) Reference rate	(6) Long-term constant	(7) Long-term pass-through coefficient	(8) Short-term coefficient (+)	(9) Short-term coefficient (-)	(10) Inverse adjustment speed	(11) Risk measure - long-term coefficient	(12) Risk measure - short-term coefficient	(13) Bounds test confirms co-integration <sup>1</sup>
Austria	Loans to nonfinancial corporations	May 03–Sep. 23	ARDL(4,3)	EURIBOR 12m	1.55***	0.77***	0.3***		11***			Yes**
	Loans to households	May 03–Sep. 23	ARDL(4,5)	EURIBOR 12m	1.67***	0.74***	0.03		13***			Yes***
	Time deposits by non-financial corporations	Jan. 03–Sep. 23	NARDL(6,5)	EURIBOR 3m	0.31***	0.88***	0.78***	0.85***	5***			Yes**
	Time deposits by households	July 00–Sep. 23	NARDL(6,2)	EURIBOR 3m	0.57***	0.83***	0.29***	0.39***	19***			Yes***
	Overnight deposits by nonfinancial corporations	Aug. 00–Sep. 23	NARDL(4,6)	€STR	0.72*	1.15**	0.03	0.27***	75***			Yes***
	Overnight deposits by households	June 00–Sep. 23	NARDL(4,4)	€STR	0.55	0.8	0.001	0.14***	93***			Yes**
Euro area	Loans to nonfinancial corporations	Jan. 05–Sep. 23	ARDL(6,1,4)	EURIBOR 12m	1.63***	0.86***	0.49***		12***	0.51***	-0.12***	Yes***
	Loans to households	Sep. 04–Sep. 23	ARDL(5,4,0)	EURIBOR 12m	1.67***	0.82***	0.13***		35***	0.43***	0.01**	Yes***
	Time deposits by non-financial corporations	June 00–Sep. 23	NARDL(5,3)	EURIBOR 3m	0.37***	0.79***	0.54***	0.71***	21***			Yes***
	Time deposits by households	Aug. 00–Sep. 23	NARDL(4,6)	EURIBOR 3m	0.62	0.71***	0.26***	0.45***	85*			No
	Overnight deposits by nonfinancial corporations	July 00–Sep. 23	NARDL(6,3)	€STR	0.54	1.18	-0.07***	0.09**	136***			Yes***
	Overnight deposits by households	June 00–Sep. 23	NARDL(5,3)	€STR	0.21*	0.45***	0.03	0.12***	103***			No

Source: ECB MFI interest rate statistics, authors' own calculations.

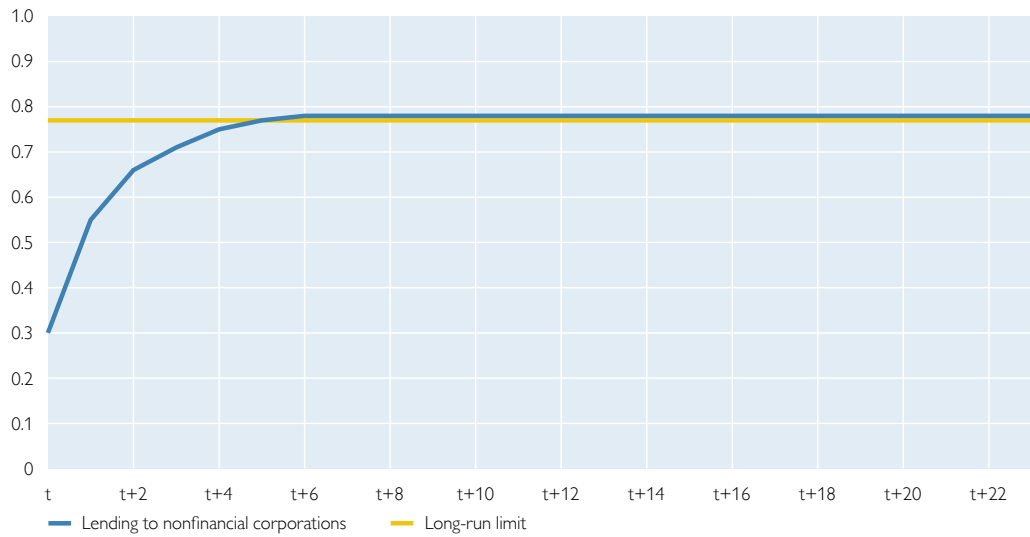
<sup>1</sup> Given knowledge of the order of integration of dependent and independent variable(s), the bounds test is an *F*-test on joint significance of the estimated coefficients of short-run lags.

Note: \*, \*\*, and \*\*\* denote significance at 1%, 5% and 10% levels, respectively. The plus and minus signs in parentheses in the header of columns (8) and (9) represent the positive and negative contributions in an asymmetric nonlinear ARDL model, respectively. A single coefficient is shown for standard ARDL models. We use heteroskedasticity- and auto-correlation consistent standard errors and covariances (Newey-West).

Chart 5

### Dynamic response of lending rates to nonfinancial corporations in Austria

Cumulative dynamic multiplier

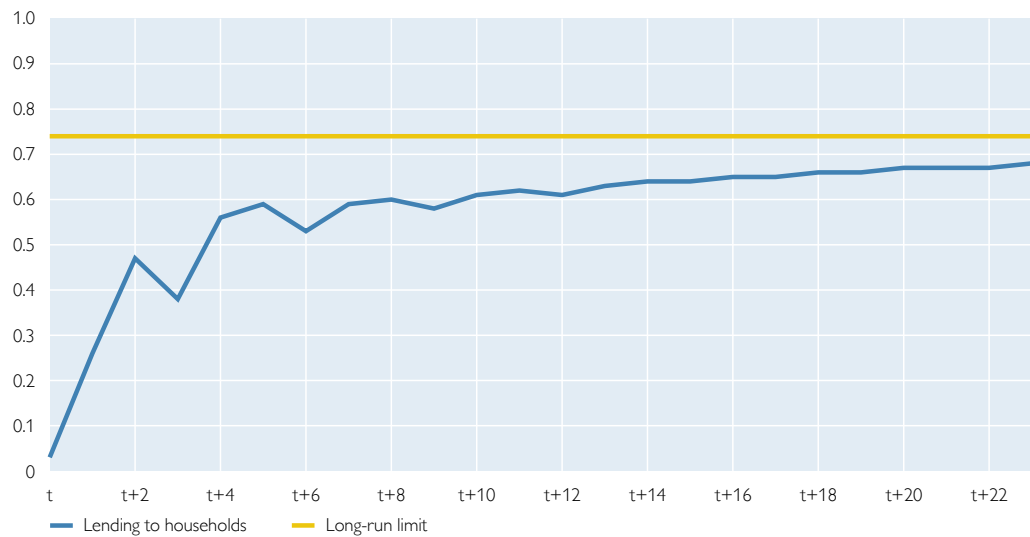


Source: ECB Statistical Data Warehouse and authors' calculations.

Chart 6

### Dynamic response of lending rates to households in Austria

Cumulative dynamic multiplier

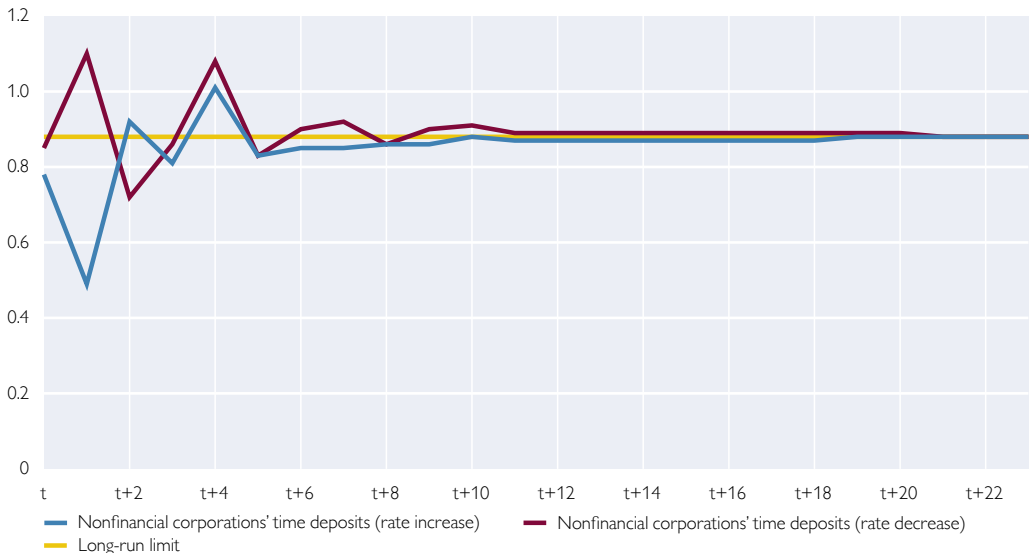


Source: ECB Statistical Data Warehouse and authors' calculations.

Chart 7

**Dynamic response of nonfinancial corporations' time deposit rates in Austria**

Cumulative dynamic multiplier

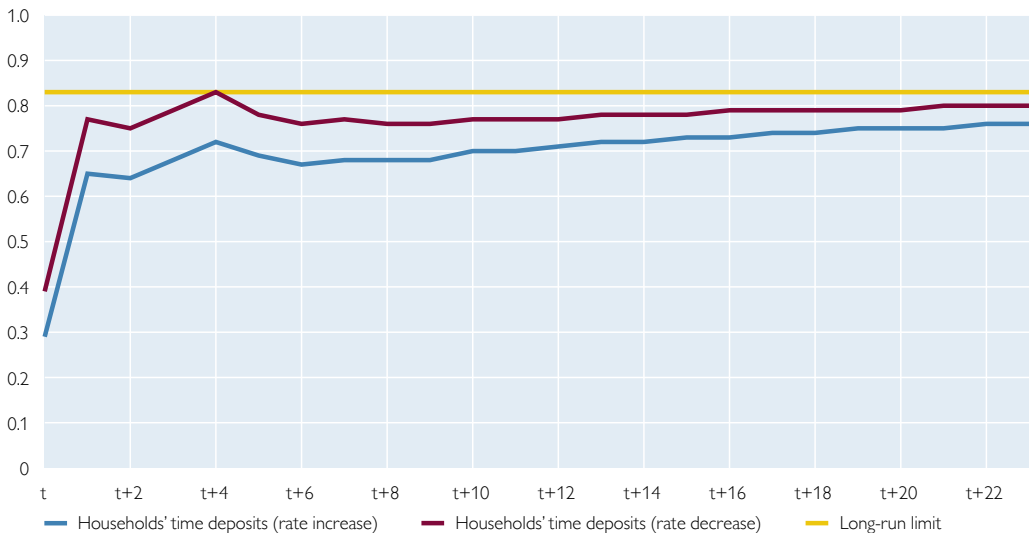


Source: ECB Statistical Data Warehouse and authors' calculations.

Chart 8

**Dynamic response of households' time deposit rates in Austria**

Cumulative dynamic multiplier

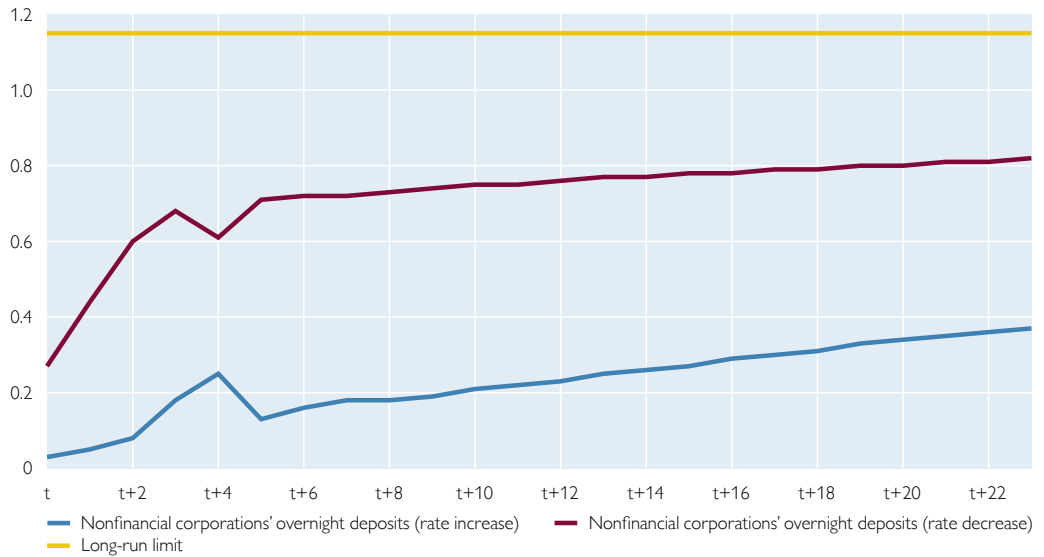


Source: ECB Statistical Data Warehouse and authors' calculations.

Chart 9

### Dynamic response of nonfinancial corporations' overnight deposit rates in Austria

Cumulative dynamic multiplier

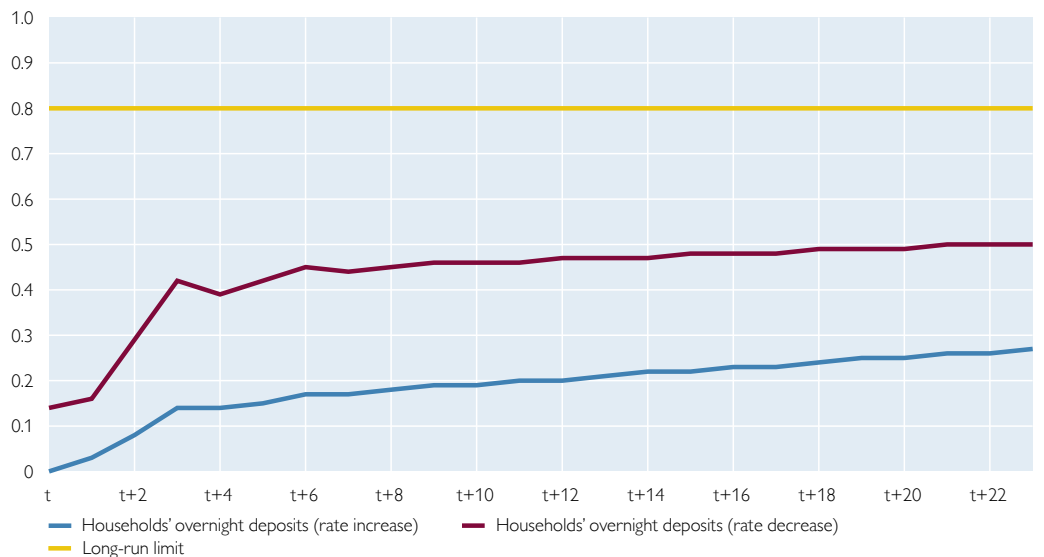


Source: ECB Statistical Data Warehouse and authors' calculations.

Chart 10

### Dynamic response of households' overnight deposit rates in Austria

Cumulative dynamic multiplier



Source: ECB Statistical Data Warehouse and authors' calculations.

## 5 Conclusion

It is crucial to understand the impact of the ECB's single monetary policy on refinancing conditions in Austria and whether it has changed in the last 25 years since the introduction of the euro. Our study sheds light on pass-through dynamics, i.e. how changes in policy rates drive changes in money market rates and further in retail lending and deposit rates for new contracts.

Our estimated long-term pass-through coefficients for Austrian lending rates and time deposit rates are below but close to one. Hence, the pass-through can be deemed nearly complete. In addition, the pass-through to retail rates of nonfinancial corporations (in each category) is generally faster than to households. Moreover, our results for Austria reflect quite well the findings of Kok Sørensen and Werner (2006), who find that the long-term pass-through to mortgage-lending rates in Austria is slightly weaker than for firm lending rates. For all categories of retail rates, we find that the pass-through process is generally faster in Austria than in the euro area.

The reaction of Austrian overnight deposit rates in response to changes in policy rates is much more sluggish compared to other retail rates mentioned above and is considered to be incomplete. Additionally, we provide evidence for an asymmetric short-term adjustment of retail deposit interest rates to positive and negative movements in money market rates. Within one month, overnight deposit rates respond somewhat to declining money market rates, while they do not change in response to rising money market rates. Hence, we argue that an asymmetric pass-through to retail deposit rates needs to be considered when assessing their short-run dynamics.

Our estimates of a short-term pass-through to overnight deposit rates of essentially zero (when policy rates rise) align well with observed Cumulative Deposit Betas<sup>16</sup> during the current hiking cycle. Ferstl et al. (2023) show that between July 2022 and June 2023 only 12.5% of the change in policy rates was transmitted to Austrian overnight deposit rates. Comparable results have been found in previous research for both the euro area and Austria (see e.g. Kok Sørensen and Werner, 2006; Messer and Niepmann, 2023; Sander and Kleimeier, 2004). Also, Breyer et al. (2023) document the stickiness of overnight deposit rates. They conclude that the difference in the adjustment speed between lending and deposit rates improves the average bank's net interest margin and thus boosts profitability.

Finally, we come back to the starting point of this article citing a recent strand of literature finding that some categories of retail rates have shown a more sluggish response to changes in policy rates in the current hiking cycle. However, consistent with previous pass-through research, we find a stable co-integrating relationship between money market and retail interest rates in Austria. This suggests that the underlying theoretical framework governing the pass-through process of monetary policy characterizes the empirical pattern in the given time frame sufficiently well. Furthermore, it leads us to conclude that the long-term pass-through process in Austria has not significantly changed since 2003. This finding is corroborated by stable recursive long-term pass-through coefficient estimates from 2012 onwards,

<sup>16</sup> The Cumulative Deposit Beta is a measure of the strength of pass-through at a given point in time. It is computed as the cumulative change of retail rates divided by the cumulative change in monetary policy rates since the start of a hiking cycle.

capturing the whole period of unconventional monetary policy measures that led to an ample reserve regime. However, we also find tentative evidence that the asymmetry of the short-run pass-through process to overnight deposit rates has become more pronounced. In other words, overnight deposit rates indeed seem to respond more sluggishly to policy rate changes in the current hiking cycle.

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# Exporting stability to the European neighborhood – the role of deposit euroization in CESEE revisited after 25 years of EMU

Thomas Scheiber, Julia Wörz<sup>1</sup>

*We review the prevalence of deposit euroization in ten Central, Eastern and Southeastern European (CESEE) economies since the inception of the euro area, using both macro and micro data. Specifically, we calculate the ratio of foreign currency deposits to total resident non-MFI deposits for households and nonfinancial corporates, and we build on findings from the OeNB Euro Survey. The macro data confirm that the relevance of deposit euroization continues to differ strongly across countries. The levels of deposit euroization are lowest in the inflation-targeting economies of Czechia, Hungary and Poland, while high and persistent levels of deposit euroization are observed in the Western Balkan economies of Albania, Bosnia and Herzegovina, North Macedonia and Serbia. Our micro evidence broadly confirms the macro picture, yet it further suggests that euro deposits are rather unequally distributed across the population and likely to be held more often by more affluent individuals.*

*JEL classification: D14, E41, G21*

*Keywords: deposit euroization, household savings, survey data, CESEE*

As a major global currency, the euro is in demand also beyond the euro area. In this article we look at the degree of deposit euroization in ten Central, Eastern and Southeastern European (CESEE) economies since the inception of the euro area and its possibly time-varying determinants. We first provide an update on the shares of euro deposits, describing developments over time and on a sectoral basis. We then review common drivers of deposit euroization as identified in the literature (Ize and Levy Yeyati, 2003; De Nicoló et al., 2005; Neanidis and Savva, 2009; Tkalec, 2013; Rajkovic and Urosevic, 2017; della Valle et al., 2018).

The main explanations as to why households prefer to keep savings in euro rather than in their national currencies include, on the demand side, inflation and exchange rate expectations, the interest rate differential between domestic and foreign currencies as well as minimum variance portfolio (MVP) motives aimed at reducing volatility through currency diversification. MVP motives add to our understanding of why households tend to retain foreign currency savings long after macroeconomic stabilization occurred, as the higher variance of domestic inflation relative to the variance of real depreciation offsets any cushioning effects from the real exchange rate. In addition, the persistence of high levels of deposit euroization is also explained by hysteresis effects (based on crisis experience) and network effects (widespread use of foreign currency deposits) (e.g. Oomes, 2001; Feige and Dean, 2004; Brown and Stix, 2015). On the supply side, major drivers include

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easy access to foreign funding as well as banks' hedging decisions on the currency structure of assets and liabilities (e.g. Luca and Petrova, 2008; Neanidis and Savva, 2009).

While the euro may serve to import stability to the region, high euroization can also represent a source of vulnerability given adverse exchange rate developments, and it may also contribute to funding risks in the banking sector (Basso et al., 2011). Hence, the countries with the strongest degree of euroization in the region all have macroeconomic stabilization programs in place to reduce euroization, especially foreign currency loans. However, the highly uncertain and volatile external environment, especially since Russia invaded Ukraine, has caused deposit euroization to rebound. Hence this update.

The time period we assess consists of four subperiods from January 1998 to July 2023 that are characterized by distinct macroeconomic conditions: the boom period in the run-up to EU accession which ended with the outbreak of the global financial crisis (up until September 2008), the financial crisis period including the euro area sovereign debt crisis (until end-2014), the period of ultra-low interest rates during quantitative easing in the euro area (until February 2020) and finally the period of heightened uncertainty starting with the outbreak of the pandemic and ensuing high inflation (since March 2020).

We review developments in deposit euroization in ten CESEE countries using both macro and micro data.<sup>2</sup> The set of countries comprises six EU member states (Bulgaria, Croatia, Czechia, Hungary, Poland and Romania) and four EU candidates (Albania, Bosnia and Herzegovina, North Macedonia and Serbia). Most of these countries have a long history of currency and asset substitution, having used the Deutsche mark (DEM), the Austrian schilling (ATS) and the US dollar (USD) as secondary currencies and safe haven assets before the euro. Unofficial euroization emerged in times of high inflation, currency and banking crisis, when foreign currencies were high in demand as a store of value (see also Reinhart et al., 2003).

We find that deposit euroization differs in level and dynamics between countries and sectors. Deposit euroization levels are lowest in Czechia, Hungary and Poland, while high and persistent levels of deposit euroization are observed in the Western Balkan economies of Albania, Bosnia and Herzegovina, North Macedonia and Serbia. In the highly euroized Western Balkan economies, the household sector shows higher levels of deposit euroization than nonfinancial corporates, while the opposite holds true for the less euroized countries in Central Eastern Europe. The rise in inflation since 2021 went hand in hand with rebounding deposit substitution in most countries. In general, deposit euroization has declined in most countries over the past 25 years, amid catching-up processes and macroeconomic stabilization. We further observe that the correlation between deposit euroization and its commonly found determinants has changed over time. On the microeconomic side, results from the OeNB Euro Survey show that foreign currency deposits – mainly euro deposits – are reported by a comparatively small number of individuals, often by relatively richer individuals.

This paper is structured as follows: Section 1 gives an overview of the existing literature on deposit euroization in CESEE. Section 2 presents sector data and

<sup>2</sup> National monetary statistics cover the whole period since 1998; complementing micro data from the OeNB Euro Survey are available from 2007 onwards.

provides some stylized facts for the past 25 years, looking also at the major driving factors as identified in the literature. Section 3 turns to microeconomic evidence and reports results from the OeNB Euro Survey, thus adding the individual perspective. Section 4 concludes.

## 1 Literature review

Manjani (2015) lists three main types of unofficial dollarization, which we apply to euroization: (1) monetary dollarization or currency substitution, i.e. the replacement of domestic currency with foreign currency for transaction purposes; (2) financial dollarization, i.e. economic agents' holding of foreign currency assets and liabilities; and (3) real dollarization, i.e. the indexation of wages, real estate and/or durable goods prices in foreign currency. Feige and Dean (2004) distinguish between “asset substitution” and “currency substitution.” Asset substitution refers to holding foreign currency assets (cash and/or deposits) as a store of value, while currency substitution refers to the use of a foreign currency as a means of payment.

The major macroeconomic determinants of dollarization emerging from the literature are (1) the minimum variance portfolio (MVP) motive, which explains dollarization as a function of second moments of inflation and real depreciation in the long run (i.e. Ize and Levi Yeyati, 2003; Honohan and Ize, 2005) and (2) – at least in the short run – the interest rate differential (IRD) between local and foreign currency deposits (Basso et al., 2011; for CESEE: Tkalec, 2013; and Rajkovic and Urosevic, 2017). The interest rate differential – defined as the gap between short-term interest rates in the domestic market versus the euro area – affects returns on deposits, thus also influencing the currency composition of deposits. The intuition behind the MVP view is that risk-averse agents minimize the variance of their deposits by choosing an adequate currency composition. Hence, when they expect inflation to be more volatile than the real exchange rate, the domestic currency becomes less attractive as a store of value and deposit euroization will increase. This theory explains why high levels of deposit euroization can persist despite macroeconomic stabilization, as the higher variance of domestic inflation relative to the variance of real depreciation offsets any cushioning effects from the real exchange rate.

Della Valle et al. (2018) derive a three-phase model of unofficial euroization from the literature and use it as a framework to generate policy advice on how authorities can promote de-euroization. In phase 1, euroization is a rational choice of economic agents to hedge against large exchange rate depreciations during periods of acute macroeconomic instability and high inflation. In phase 2, once macroeconomic stability has been achieved and the likelihood of large exchange rate depreciations has diminished significantly, agents still seek insurance against tail risks – even if the exchange rate starts to move in both directions (Feige and Dean, 2004; Uribe, 1997). In this phase the interest rate differential and the perceived likelihood of adverse scenarios play a more important role. As monetary authorities seek to stabilize the real exchange rate (cf. inflation targeting vs. exchange rate stabilization objectives of national central banks in CESEE), the insurance value of foreign currency deposits fades and the euroization of deposits becomes motivated by MVP portfolio optimization (phase 3).

Turning to microeconomic determinants, the dollarization literature of the last two decades stresses the central role that trust and confidence play in households'

financial decisions (Kraft, 2003; Feige and Dean, 2004; Guiso et al., 2004; Coupé, 2011; Brown and Stix, 2015). Furthermore, there is strong evidence that crisis experiences have long-lasting effects on household preferences and hence financial choices (Osili and Paulson, 2008; Mudd et al., 2010; Brown and Stix, 2015; Malmedier and Nagel, 2016). Two studies (Stix, 2013; Brown and Stix, 2015) drawing on data from the OeNB Euro Survey concluded that currency and deposit substitution in Southeastern Europe (SEE) are mainly demand-driven. Network effects of asset substitution and doubts about the stability of the local currency increase the preference for saving in euro cash and euro deposits.<sup>3</sup> Furthermore, Brown and Stix (2015) confirm that the observed persistence of deposit euroization across the region is strongly influenced by individuals' experiences of banking and currency crises during the 1990s.

## 2 Deposit euroization at the macroeconomic level

At the macroeconomic level, we measure deposit substitution as the ratio of foreign currency deposits to total resident non-MFI deposits in the financial sector, whereby we distinguish between deposits of nonfinancial corporates (NFC) and households including nonprofit institutions serving households. As such, we exclude deposits of other financial institutes (OFI) and of the general government.<sup>4</sup> This facilitates the juxtaposition of macro data and survey data below.

The availability of monthly data at the sectoral level from January 1998 to July 2023 varies from country to country. For Hungary and Bosnia and Herzegovina, no sectoral breakdown of deposits is available before April 2001 and January 2006, respectively. Missing monthly entries for the sum of NFCs and households are calculated by applying backward rates of change using the available monthly information on the currency structure of resident non-MFI deposits. We regard this approach as quite reliable, because at the earliest available point in the time series, (i) the combined share of the two sectors in total resident non-MFI deposits exceeds 96% and 81%, respectively, and (ii) their combined holdings of total foreign currency deposits exceed 98% and 94%, respectively.

For North Macedonia and Serbia, only year-end data are available before 2001 and 2004, respectively. Missing monthly entries for the sectoral time series are linearly interpolated, hence developments during these years in the charts below must be taken with caution.

Note that changes in the definition of foreign currency deposits, namely the inclusion of deposits indexed to a foreign currency, cause a shift in the time series of Bosnia and Herzegovina (in January 2019) and Croatia (in June 2006).

<sup>3</sup> Bittner and Scheiber (2022) present updated time series on CESEE residents' preferences for saving in cash since 2007 (i.e. one of the dependent variables used by Stix, 2013). The share of banked respondents indicating a preference to save in cash varies across the observed countries but remained remarkably stable across time, with the exception of Croatia, Hungary, Poland, Romania and Serbia. In these five countries, the share of respondents who prefer to save in cash increased significantly (at the 1% level) between 2009–11 and 2020–21.

<sup>4</sup> As a caveat, due to limited data availability, we do not exclude transactional deposits although the currency structure of the latter is defined by regulatory requirements rather than by agents' optimization decisions. This inflates systematically the local currency share in total deposits of the respective sector.

## 2.1 Deposit substitution varies in both level and trend by sector and country

Our focus on NFCs and households is well justified as these two sectors dominate savings. At end-2022, around 60% of resident non-MFI deposits were held by households and around 30% by NFCs. Deposits of OFIs and general government played a minor role. There are three exceptions: In Albania, the share of household deposits was considerably higher at 78%, while in Hungary the share of NFCs was higher than that of households. In Bosnia and Herzegovina, the general government held 15.8% of total deposits.

Over time, these shares changed only gradually, reflecting mainly structural changes. In the relatively poorer countries of Bulgaria, North Macedonia, Romania and Serbia, the share of households in total deposits increased substantially, as hoarded foreign currency cash slowly returned to the banking system and as economic catching-up as well as growing remittances allowed more people to save. In the relatively richer CEE countries and Croatia, strong economic growth boosted NFC deposits faster than household deposits, shifting the shares in favor of NFCs. Euroization is more relevant for households than for corporates. For the latter it is mostly related to trade and FX income and therefore less relevant from a financial stability perspective.

Levels and developments in deposit euroization are highly heterogeneous throughout the region. In the private sector (HH and NFC together), deposit euroization levels are lowest in the inflation-targeting Central and Eastern European (CEE) economies of Czechia, Hungary and Poland. In these countries, the euro accounted for 25% or less of all deposits in 1998. This was followed by a decline until the trend became reversed during the recent high inflation period that set in in mid-2021. Most recently, deposit euroization was further spurred by Russia's attack on Ukraine in 2022. Romania also started at a moderate level of 40%, followed by some fluctuation in deposit euroization between 30% and 40%.

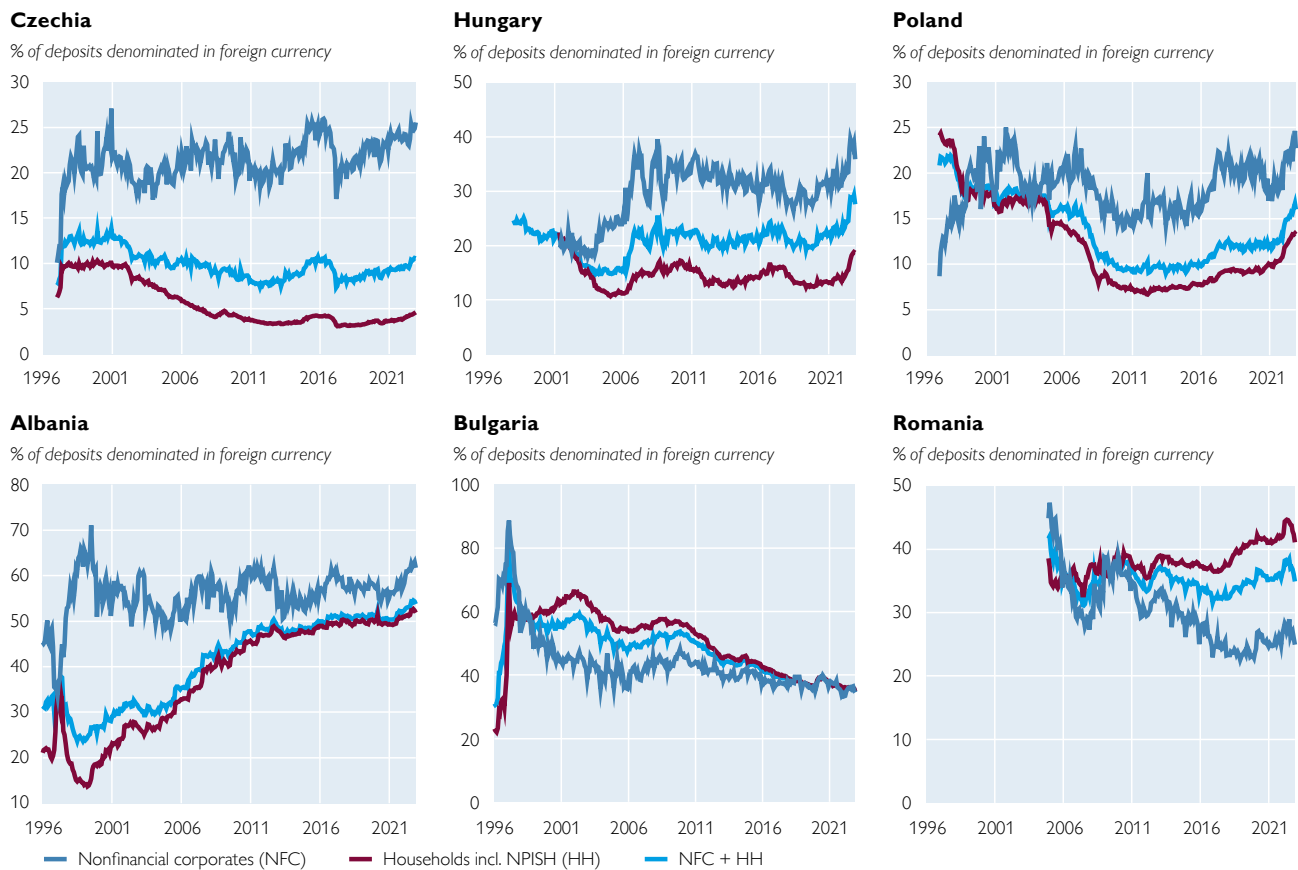
The Western Balkan inflation-targeting countries (Albania and Serbia) as well as North Macedonia also started out at moderate levels ranging between 30% and 35% in 1998. Yet, deposit euroization increased in those countries, reaching levels beyond 50%. In Serbia the peak was even as high as 80% in 2012, falling back to 60% in 2020 before the latest uptick in 2022.

The remaining three exchange rate-targeting countries showed a high degree of deposit euroization already at the outset of the sample period: 60% in Bulgaria, 80% in Croatia and 100% in Bosnia and Herzegovina. In all these countries, deposit euroization has since declined substantially and continuously, to around 40% (Bulgaria and Bosnia and Herzegovina) and 50% (Croatia) at end-2022.

In the household sector, deposit substitution declined gradually from even lower levels in Czechia, Hungary and Poland during the economic boom years around EU accession until this trend was stopped by the global financial crisis, followed by a sideways movement. With the return of two-digit inflation rates in 2021 and 2022, deposit substitution increased in Poland and Hungary to about 15% while it remained at 5% in Czechia.

More persistent high shares of foreign currency deposits for households are observed in the SEE economies as these suffered a higher initial shock to trust in institutions, which is a major determinant of deposit euroization for households: hyperinflation in former Yugoslavia and Bulgaria, the Yugoslav wars, weak institutions and endemic corruption caused a prolonged period of macroeconomic and

## Deposit substitution per sector



Source: National central banks, authors' calculations.

financial instability and as a result, muted real convergence. Due to persistent mistrust in the government, residents seek to insure themselves against weak policies and their adverse effects, such as for example frequent depreciations (see annex chart A1). Countries therefore often opted for various types of fixed exchange rate regimes to restore trust in the central bank and in the local currencies (cf. Begovic et al., 2016 – on the role of the currency boards in Bosnia and Herzegovina and Bulgaria in raising trust in local currencies).

All these countries started with euroization of household deposits well above 50%. In Bosnia and Herzegovina, Croatia and Serbia, deposit euroization was pushed up to 90% by extreme depreciation events.

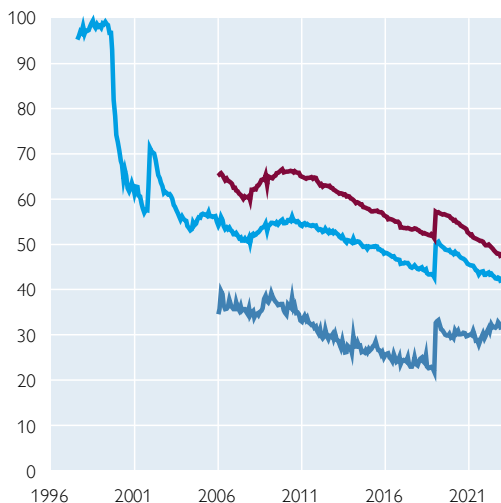
In most countries, the global financial crisis interrupted a general downward trend and reinforced deposit substitution for a few years. Yet, the decline continued in Bulgaria, Bosnia and Herzegovina and Croatia. Serbia introduced a dinarization strategy in 2012 and 2017, which marked the beginning of a sustained decline in asset substitution. In North Macedonia, deposit euroization of households moved sideways while a gradual increase can be observed in Romania, possibly reflecting disappointment with local politics, corruption and thus a preference for higher insurance.

Chart 2

### Deposit substitution per sector

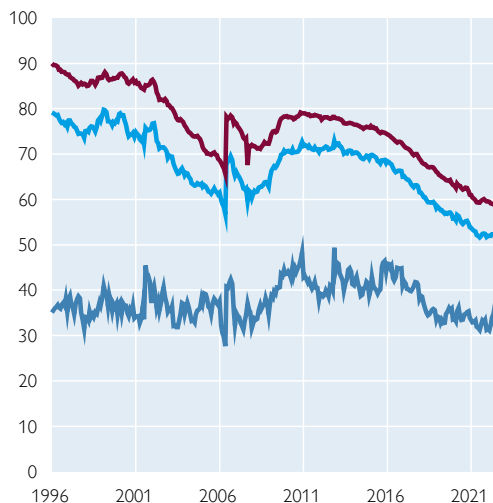
#### Bosnia and Herzegovina

% of deposits denominated in foreign currency



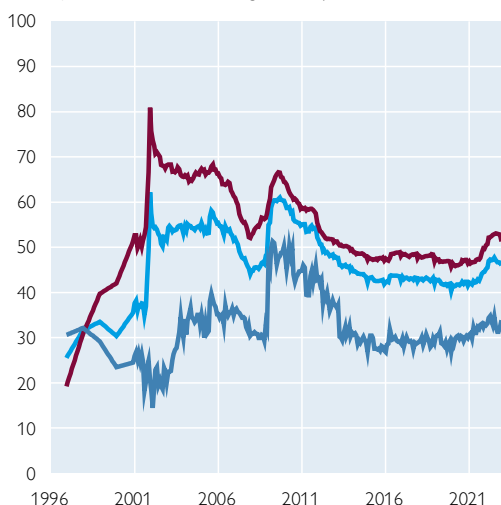
#### Croatia

% of deposits denominated in foreign currency



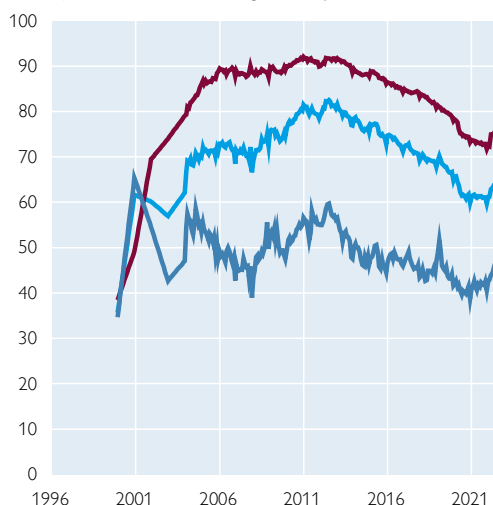
#### North Macedonia

% of deposits denominated in foreign currency



#### Serbia

% of deposits denominated in foreign currency



— Nonfinancial corporates (NFC) — Households incl. NPISH (HH) — NFC + HH

Source: National central banks, authors' calculations.

Note: Deposits indexed to a foreign currency were reclassified as foreign currency deposits by Bosnia and Herzegovina in January 2019 and by Croatia in June 2006.

Albania represents a rather special case as our sample period is predated by the collapse of a nationwide pyramid scheme in 1996/97. The following episode of civil unrest (under a dysfunctional government) wiped out deposits. Since 1999, deposit substitution among households has been rising steadily from a rather low level. Interestingly, this long episode of rising deposit substitution has not been driven by an erosion of confidence in the local currency as we know from OeNB Euro Survey indicators: trust in banks and the government has even increased, beyond the levels observed in neighboring countries. Improved confidence in banks



may partly even explain the increase in deposit substitution, as savings in euro cash have been transferred to the banking system. The trend also reflects economic growth, macroeconomic stability as well as substantial inflows of remittances, which implies that more people are able to save.

Turning to deposits of NFCs, we see rather different patterns. In Czechia, Hungary and Poland, the shares of foreign currency deposits of NFCs are in general higher than those of households. These shares have risen to 25% and 35%, respectively, for households and NFCs, fluctuating with high volatility within a band of 10 percentage points. Again, structural factors are the main driver of euroization, such as strong FDI inflows, rising trade flows with the euro area, access to cheap (euro) credit. These factors also fueled a catching-up boom in the late 1990s and around the time of EU accession in 2004, driving up demand for euro deposits (cf. optimal level of deposit substitution for a small open economy, della Valle et al., 2018).

With the exception of Albania, deposit substitution of NFCs is lower than for households in the SEE economies. Again, we can clearly see a strong initial increase followed by a sideways movement within a fluctuation band, which however ranges at a significantly higher level than in CEE.

## 2.2 Macroeconomic environment matters for deposit euroization

Given these heterogenous developments over time and across countries and sectors, let us dive deeper into the motives for deposit euroization. Following the above-referenced literature, we looked very briefly at the most often cited determinants and how they relate with deposit euroization over the past 25 years. We rely on fixed effects panel regressions relating deposit euroization to the interest rate differential (defined as the difference between the average local 3-month interbank rate to the average euro area 3-month interbank rate), the monthly consumer price inflation rate, the real exchange rate against the euro (monthly average) and a proxy for the MVP share. We approximate the MVP share as  $\frac{Var(inf) * COV(inf, xr)}{Var(xr)}$  whereby  $Var(inf)$ ,  $Var(xr)$  and  $COV(inf, xr)$  are calculated as the variance and covariance of 12-month rolling windows of the respective variables (consumer price inflation and exchange rate) respectively.<sup>5</sup> Country fixed effects are used in all specifications. More specifically, we use a fixed effects model to get a rough idea how these factors are associated with deposit euroization whereby we differentiate between the household and NFC sector. We further distinguish between the four subperiods with different macroeconomic environments (boom phase, global financial crisis, low interest rate environment, high inflation phase). The results should be taken as a very rough indication of a relationship between deposit euroization and its most obvious determinants – interest rate differential, inflation, exchange rate and MVP. We neither undertake a proper econometric identification nor do we take account of the long- versus short-term relationships between deposit euroization and its drivers. This would be beyond the scope of this study. Our simple framework is tailored more toward the household sector, hence we expect to find fewer and weaker correlations for the NFC sector. Results are displayed in tables 1a and 1b.

<sup>5</sup> For the calculation of the MVP we use the nominal exchange rate for the countries with a floating exchange rate regime and the real exchange rate for those with a (quasi-)fixed exchange rate regime.

Indeed, results for both sectors differ significantly. In the household sector (table 1a), the interest rate differential is often positively correlated with deposit euroization. Yet, the significance and magnitude of the coefficient varies between time periods. During the global financial crisis and its aftermath, the interest rate differential does not show any correlation with deposit euroization. In this period, deposits shrank in many countries as people moved into cash during the early stage of the crisis. This most likely reflects a loss in trust in the financial system and therefore a rising importance of factors that we do not capture in our simplistic analysis. In contrast, during the low interest rate environment, when inflation was low or when deflationary tendencies were seen in some countries, the correlation between the interest rate differential and deposit euroization was strongest. In this period, opportunity costs of holding the foreign, safer currency were lower. The overall interest rate level seems to influence the relationship between deposit euroization and the interest rate differential.

Overall, there seems to be a weak positive correlation between MVP and deposit euroization, but results differ somewhat between periods and subsamples. For instance, MVP appears to play a comparatively minor role in the countries with exchange rate targeting, judging from the different correlation coefficients between the total sample and the six inflation-targeting countries (right panel of

Table 1a

### Panel regression: main determinants of deposit euroization

#### Households

	All countries					Inflation-targeting countries				
	full sample period	boom phase	global financial crisis	low interest rate environment	uncertainty and inflation phase	full sample period	boom phase	global financial crisis	low interest rate environment	uncertainty and inflation phase
	01/98-07/23	01/98-08/08	09/08-12/14	01/15-02/20	03/20-07/23	01/98-07/23	01/98-08/08	09/08-12/14	01/15-02/20	03/20-07/23
IRD	0.696*** (0.180)	0.417** (0.153)	0.253 (0.363)	1.161** (0.377)	0.466*** (0.110)	0.469* (0.192)	0.270* (0.111)	-0.015 (0.074)	0.971* (0.414)	0.417*** (0.048)
INF	-0.378 (0.256)	-0.067 (0.103)	0.15 (0.227)	-0.093 (0.119)	-0.044 (0.363)	-0.074 (0.302)	0.034 (0.141)	0.333** (0.115)	0.009 (0.135)	-0.052 (0.136)
RER	0.006 (0.071)	-0.169 (0.111)	0.02 (0.053)	0.048 (0.045)	0.019 (0.036)	0.013 (0.072)	-0.1 (0.122)	0.017 (0.045)	-0.01 (0.035)	0.04 (0.025)
MVP	0.067*** (0.020)	-0.008 (0.015)	-0.098** (0.030)	0.059 (0.625)	-0.019 (0.230)	-1.733* (0.727)	-4.686* (2.226)	2.227*** (0.411)	-0.514 (0.882)	-0.102 (0.095)
Constant	39.029*** (0.549)	38.325*** (0.587)	42.833*** (1.548)	38.985*** (0.721)	38.088*** (0.186)	28.738*** (0.611)	22.813*** (0.471)	32.939*** (0.409)	31.050*** (0.787)	31.464*** (0.155)
No of observations	2,272	677	675	558	362	1,503	435	450	372	246
No of countries	10	10	9	9	9	6	6	6	6	6
R2 within	0.184	0.13	0.065	0.182	0.290	0.207	0.158	0.065	0.313	0.512
R2 between	0.091	0.076	0.185	0.293	0.442	0.417	0.286	0.171	0.793	0.348
R2 overall	0.060	0.048	0.120	0.190	0.131	0.129	0.25	0.070	0.454	0.063
corr(ui, Xb)	0.164	0.158	0.317	0.395	-0.409	0.299	0.455	0.251	0.649	-0.297
F statistic	8.28	1.9	18.93	4.2	13.86	11.16	2.18	24.57	5.72	19.41
p-value	0.004	0.194	0.000	0.040	0.001	0.010	0.207	0.001	0.041	0.003

Source: Eurostat, wiw, national central banks, authors' calculations.

Note: fixed effects panel regression; dependent variable: deposit euroization share of households in each country, independent variables: interest rate differential to the euro (IRD), monthly inflation (INF), real exchange rate (RER), minimum variance portfolio (MVP); standard deviations in parentheses, robust standard errors.



Table 1b

**Panel regression: main determinants of deposit euroization**

**Nonfinancial corporates**

	all countries					inflation targeting countries				
	full sample period	boom phase	global financial crisis	low interest rate environment	uncertainty and inflation phase	full sample period	boom phase	global financial crisis	low interest rate environment	uncertainty and inflation phase
	01/98-07/23	01/98-08/08	09/08-12/14	01/15-02/20	03/20-07/23	01/98-07/23	01/98-08/08	09/08-12/14	01/15-02/20	03/20-07/23
IRD	0.422** (0.183)	0.111 (0.143)	0.64 (0.389)	0.155 (0.540)	0.341** (0.135)	0.411* (0.183)	0,074 (0.200)	0.610*** (0.107)	0,031 (0.566)	0.453*** (0.069)
INF	0.097 (0.218)	-0.272 (0.204)	0.26 (0.251)	-0.415 (0.256)	0.268 (0.210)	0.257 (0.214)	0.142 (0.164)	0.476 (0.366)	-0.445 (0.248)	0.134 (0.273)
RER	0.09 (0.081)	0.177 (0.166)	0.160** (0.054)	0.287** (0.089)	0.148 (0.088)	0.147 (0.081)	0.268 (0.183)	0.181** (0.048)	0.354** (0.093)	0.176* (0.083)
MVP	0.035*** (0.003)	0.009 (0.006)	-0.176*** (0.027)	1.574 (1.169)	0.288 (0.330)	-0.47 (0.499)	0.055 (5.070)	6.709*** (0.865)	2.117 (1.118)	-0.043 (0.155)
Constant	31.973*** (0.603)	30.795*** (0.546)	33.449*** (1.691)	32.331*** (1.036)	32.450*** (0.306)	30.778*** (0.652)	27.036*** (0.839)	31.631*** (0.561)	33.185*** (1.203)	32.590*** (0.239)
No of observations	2,272	677	675	558	362	1503	435	450	372	246
No of countries	10	10	9	9	9	6	6	6	6	6
R2 within	0.088	0.017	0.158	0.021	0.209	0.135	0.025	0.352	0.043	0.376
R2 between	0.095	0.025	0.411	0.556	0.057	0.130	0.061	0.838	0.739	0.210
R2 overall	0.074	0.015	0.312	0.287	0.002	0.081	0.081	0.662	0.409	0.013
corr(ui, Xb)	0.163	0.078	0.430	0.516	-0.150	0.176	0.243	0.745	0.619	-0.224
F statistic	54.57	1.49	38.67	3.76	4.38	330.37	1.02	73.46	11.01	25.16
p-value	0.000	0.283	0.000	0.052	0.036	0.000	0.479	0.000	0.010	0.001

Source: Eurostat, wiw, national central banks, own calculations.

Note: fixed effects panel regression, dependent variable is the deposit euroization share of non-financial corporates in each country, independent variables: interest rate differential to the euro (IRD), monthly inflation (INF), real exchange rate (RER), minimum variance portfolio (MVP); standard deviations in parentheses, robust standard errors.

table 1a<sup>6</sup>) during the global financial crisis. In view of previous crisis experience, households in these countries may have feared strong devaluations of their local currency, which made foreign currency deposits more attractive as an insurance against adverse developments regardless of their costs. Remember that we observe a fall in deposits and in euroization in this period. During this period, also inflation shows a positive and significant correlation with deposit euroization.

Turning to nonfinancial corporates, we observe fewer and weaker correlations in line with our expectations (table 1b). Again, the interest rate differential is correlated with deposit euroization for the full sample period and particularly in the period characterized by rising and ultimately elevated inflation. This could be related to cash-management considerations. In sharp contrast to the household sector, exchange rate movements are more frequently correlated with deposit euroization due to valuation effects. Finally, the MVP share rarely shows a significant correlation. This is in line with our expectation that portfolio considerations do not play a role for firms in general, yet they seem to matter in crisis times.

<sup>6</sup> The six countries comprise Albania, Czechia, Hungary, Poland, Romania and Serbia. These countries introduced inflation targeting at different time periods whereby changes to the monetary policy regimes leading to more strict inflation targeting were made in all countries during the observation period: Czechia and Poland introduced a form of inflation targeting in 2001, Albania in 2000, Hungary in 2001, Romania in 2005 (following loosely structured discretionary policy and forming of clear policy targets in the early 2000s) and Serbia in 2009 (following political and economic stabilization with loosely structured discretionary monetary policy in the 2000s).

### 3 How important is deposit euroization at the individual level?

At the micro level, we refer to the OeNB Euro Survey, which has generated a wealth of information on euroization, trust in institutions, monetary expectations and financial decisions for our set of countries since 2007. During each wave, approximately 1,000 individuals are polled in a multi-stage stratified random route sampling procedure using national versions of a common questionnaire for all countries. The sample is representative of the given population with regard to age, gender and region and, where available, education and ethnicity. Interviews are carried out face-to-face at the respective respondent's home.<sup>7, 8</sup>

We base our descriptive evidence on four questions addressing the ownership and currency structure of saving deposits. Questions 1 to 3 below have been asked in every survey wave since fall 2007. Question 4 on the foreign currency share was asked in selected waves only, namely semi-annually from fall 2007 to spring 2009, and annually in spring 2010, fall 2011, fall 2012 and fall 2015.<sup>9</sup>

Box 1

#### OeNB Euro Survey questions on foreign currency deposits

Q1) Do you have any of the following bank products or assets? (Please refer only to those bank products or assets you hold personally or together with your partner.)

- a) A current account (giro account)
- b) Savings deposits (e.g., savings book, bank deposit, term deposit, postal bank deposit, etc.)
- c) A wage card/debit card

Answer categories for each item: Yes / No / Don't know / No answer

Q2) [ONLY IF Q1=yes] You said that you hold savings deposits. Are any of these savings deposits denominated in foreign currency?

Yes / No / Don't know / No answer

Q3) [ONLY IF Q2=yes] In which currency are these foreign currency savings deposits denominated?

- Euro
- US dollar
- Swiss franc
- Other

Answer categories for each item: Yes / No / Don't know / No answer

Q4) [IF Q2=yes] If you think about the overall amount of money you hold in savings deposits, which share is denominated in foreign currency?

\_\_\_ percentage of foreign currency savings deposits (answer between 1 and 100) plus  
\_\_\_ percentage of savings deposits in [LOCAL CURRENCY] (answer between 1 and 100)  
= 100% (total savings deposits)

Don't know / No answer

<sup>7</sup> Averages across groups of countries are not weighted for population size – otherwise Poland and Romania would dominate the results.

<sup>8</sup> For further information on the OeNB Euro Survey as well as access to the data see <https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html>.

<sup>9</sup> Item non-response, i.e., the combined share of “don't know” and “no answer” responses for questions 1 to 3 averages 2%, ranging from 0.3% to 7% across countries. Item non-response for the self-reported share of euro deposits (question 4) averages 14%, ranging from 6% (North Macedonia) to 38% (Romania).

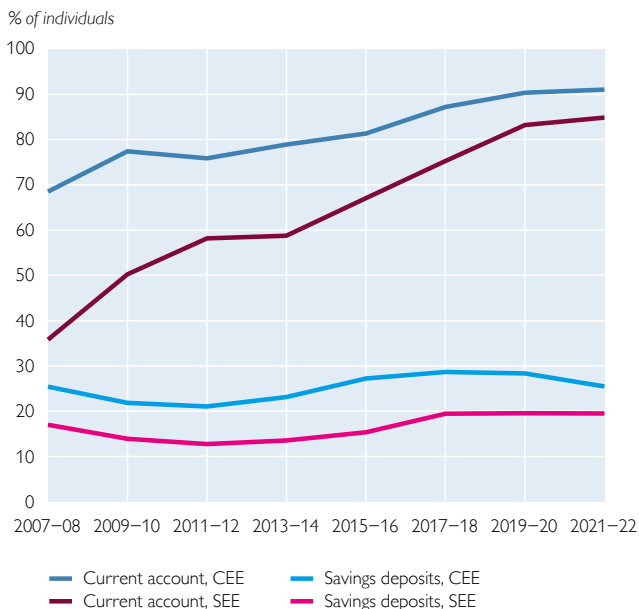
Please note that during the COVID-19 pandemic in 2020 and 2021, OeNB Euro Survey fieldwork in Albania was fraught with various sampling and interviewing difficulties. Therefore, after careful additional data quality checks, we decided not to use data for Albania for the 2020 and 2021 survey waves. Furthermore, the data for the waves 2016 to 2019 and 2022 do not cover North Albania and are, therefore, not representative of the whole population (for details see Olbrich et al., 2024 as well as [Methodology – Oesterreichische Nationalbank \(OeNB\)](#)).

As a first and important observation, we see rapid progress in financial development in this period in the form of increased use of bank products. For the analysis here, we split our sample according to the general level of euroization into CEE (Czechia, Hungary, Poland) and the notably more euroized economies in SEE (Albania, Bosnia and Herzegovina, Bulgaria, Croatia<sup>10</sup>, North Macedonia, Romania and Serbia). Current account usage increased from 60% in 2007 to 90% in 2022 in CEE and from below 30% to 80% in SEE over the same period. Yet, the ownership of savings deposits has hardly changed since 2007. Savings deposits are owned by around one in four persons (25%) in CEE and one in six persons (16%) in SEE (chart 3, left-hand panel).

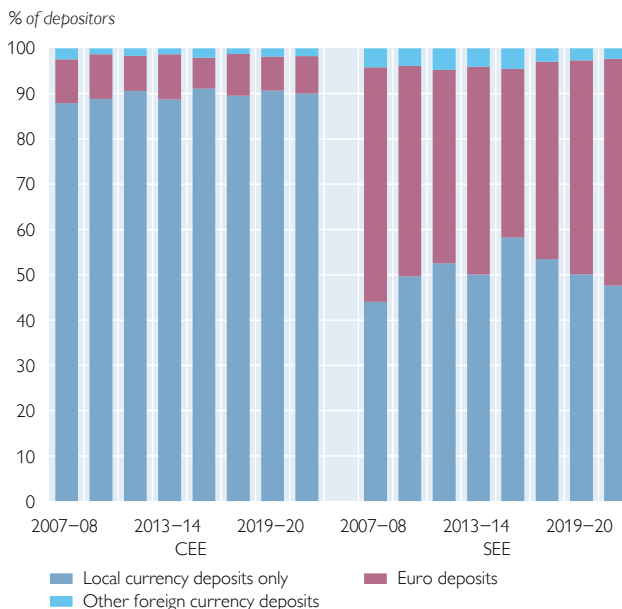
Chart 3

### Bank deposits: extensive margin

#### Ownership of current accounts and savings deposits by region



#### Currency denomination of savings deposits in CESEE



Source: OeNB Euro Survey.

Note: Weighted averages based on pooled data from survey waves in the period indicated in the legend, excluding respondents who answered “don’t know” or refused to answer. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country). Current accounts in the left-hand panel include debit cards and/or wage cards. Right-hand panel data refer to a multi-punch question, so respondents reporting euro or other foreign currency deposits may also have local currency deposits.

<sup>10</sup> Note that Croatia joined the euro area in January 2023, thus eliminating unofficial euroization. Yet, this does not affect our analysis as the latest survey wave was conducted in fall 2022.

Table 2

**Prevalence of savings, current accounts and deposits**

	Has savings	Has current account	Has deposits	Only local currency	Euro <sup>1</sup>	Other foreign currency <sup>1</sup>	Agreement: "It's common to hold FCD in my country" <sup>2</sup>	Has other financial assets <sup>3</sup>
	1	2	3	4	5	6	7	8
	% of individuals			% of depositors			% of individuals	
Bulgaria	43.0	87.3	25.4	65.9	30.8	3.2	34.0	23.3
Croatia	53.4	95.8	33.3	38.3	61.0	0.9	47.6	40.0
Czechia	68.9	92.8	35.8	94.7	5.2	0.1	15.0	55.6
Hungary	40.5	88.0	19.6	87.0	11.2	1.8	13.9	32.1
Poland	52.3	92.3	21.0	85.0	11.0	4.0	15.3	34.2
Romania	26.7	71.6	11.5	70.9	26.5	2.6	40.6	14.4
Albania	33.9	59.1	35.5	63.9	35.6	0.4	55.4	31.3
Bosnia and Herzegovina	30.8	78.2	5.8	56.9	37.9	4.3	30.9	14.2
North Macedonia	46.9	94.3	27.1	34.9	61.9	3.1	54.8	27.6
Serbia	25.2	90.2	9.8	13.8	82.7	3.1	68.1	15.4

Source: OeNB Euro Survey.

<sup>1</sup> The responses refer to a multi-punch question, so euro depositors or other foreign currency depositors may also hold local currency deposits.

<sup>2</sup> Percentage of individuals who agreed with the statement on a 6-point Likert scale. FCD = foreign currency deposits.

<sup>3</sup> Other financial assets include life insurance, mutual funds, equities, bonds, pension funds, a savings plan with a building society, and other assets. Figures refer to 2021 and in Albania to 2019.

Note: Weighted averages based on pooled data from the 2021 and 2022 survey waves, excluding respondents who answered "don't know" or refused to answer. Averages for Albania use data from 2019 and 2022. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country).

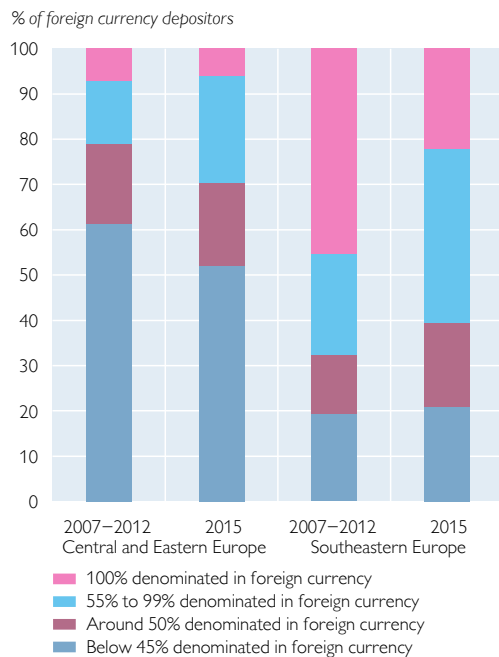
Turning to our main focus, the currency denomination of deposits, we see a stark difference between individuals in the inflation-targeting CEE countries and the remaining countries. In the former, most individuals only have local currency deposits; merely 10% report foreign currency deposits. This reflects the decline in foreign currency deposits already prior to the global financial crisis as shown in the macro series. In SEE the frequency of foreign currency deposits declined from 49% to 37% in 2015–16 and increased gradually to 43% in 2021–22 (chart 3, right-hand panel). Foreign currency deposits are mainly denominated in euro, with deposits in US dollar, Swiss franc or the British pound playing only a minor role.

Thus, we concur that the euro as a safe haven asset is still of importance in SEE. However, we should also bear in mind that euro deposits are rather unequally distributed across the population (table 2).

The share of individuals who report having any savings varies widely across countries, from around 25% in Serbia and Bosnia and Herzegovina to 69% in Czechia. A similar picture emerges for deposits (column 3). Of those who hold deposits in Croatia, North Macedonia and Serbia, a majority holds mainly euro deposits (over 60%, column 5), while the majority of savers in CEE (over 85%), Bulgaria, Romania and Albania (around two-thirds) as well as Bosnia and Herzegovina (57%) hold only local currency deposits (column 4). There is a weak correlation between self-declared holdings of euro deposits (column 5) and the perceived holdings of foreign currency deposits in a country (column 7, i.e., a self-reported measure of network effects). Savings deposits are more or less as much in demand as other financial assets taken together (column 8), which includes

Chart 4

### Self-reported share of foreign currency deposits in total deposits by region and period



Source: OeNB Euro Survey.

Note: Weighted averages based on pooled data from survey waves in the period indicated in the legend, excluding respondents who refused to answer whether they own (foreign currency) deposits. The weights used are calibrated on census population statistics for age, gender, region and, where available, education and ethnicity (separately for each country).

life insurance, mutual funds, stocks, bonds, pension funds, building society savings plans and other assets.

Turning to the intensive margin of deposit euroization, chart 4 depicts the self-reported foreign currency shares in more detail for those survey waves for which information is available (2007–2012 and 2015): individuals who reported to hold foreign currency deposits were asked to indicate the percentage share of their total deposits that is denominated in foreign currency (cf. question 4).

Among individuals in CEE who have foreign currency deposits, 55% hold less than 45% in foreign currency, 25% more than 90% in foreign currency. In SEE, the foreign currency share is significantly higher: almost 70% of holders of foreign currency deposits reported to keep at least 90% of their deposits in euro (majority 100%). These shares declined in SEE between 2007–12 and 2015 significantly but remained above CEE averages at a statistically significant level in 2015.

Squaring our survey evidence with banking sector statistics for the end of 2022, we observe from sector data that more than half of household sector deposits in Albania, Bosnia and Herzegovina, Croatia, North Macedonia and Serbia (= highest at 72%) are denominated in foreign currency, predominantly the euro. Bulgaria and Romania exhibit medium levels of deposits substitution of 35% and 41%, respectively. The rise in inflation since 2021 is associated with rising deposits substitution in Poland (13%) and Hungary (19%), too. Yet, the OeNB Euro Survey results suggest that deposits, and especially foreign currency deposits, are rather concentrated and therefore likely to be held more often by relatively richer individuals.

The rich set of socio-demographic and socio-economic variables of the OeNB Euro Survey allows to identify the factors that are associated with the ownership of euro deposits. To this end we set up a logit model using sampling weights and robust standard errors which are clustered at the primary sampling unit level. The binary variable of holding euro deposits is regressed on socio-demographic and socio-economic controls as well as country and time dummies using annual survey data covering all ten CESEE countries from 2015 to 2022.<sup>11</sup> The estimation results

<sup>11</sup> We use the following controls: age, age square, gender, education, employment status, household net income terciles, dummy variables whether respondent's household owns euro cash, financial or real assets or receives income in EUR or remittances. Detailed results available from authors upon request.

show that the likelihood of holding euro deposits increases strongly with higher educational attainment, higher net household income and holding euro cash and/or financial assets. Weaker but still positive and significant average marginal effects can be found for self-employed individuals, income in euro and/or remittances as well as wealthy households (proxied by owning a secondary residence or other real estate and living in a dwelling in excellent condition).

#### 4 Summary and conclusion

Having used foreign currencies as secondary currencies and safe haven assets, many CESEE individuals or corporates have a long history of currency and asset substitution. Unofficial euroization emerged in times of high inflation, currency and banking crisis but was retained even longer after macroeconomic stabilization had been achieved.

Our sectoral breakdown of resident non-MFI deposits reveals different dynamics of deposits substitution for nonfinancial corporates and households as well as across countries over the last 25 years. Deposit euroization levels are lowest in the inflation-targeting economies of Czechia, Hungary and Poland while high and persistent levels of deposit euroization are observed in the Western Balkan economies of Albania, Bosnia and Herzegovina, North Macedonia and Serbia. In the highly euroized Western Balkan economies, the household sector shows higher levels of deposit euroization than nonfinancial corporates, while the opposite holds true for the inflation-targeting countries in Central Eastern Europe. In general, deposit euroization has declined in most countries over the past 25 years, yet the rise in inflation since 2021 is associated with rebounding deposit substitution in most countries.

At the end of 2022, more than half of household sector deposits in Albania, Bosnia and Herzegovina, Croatia, North Macedonia and Serbia (= highest at 72%) are denominated in foreign currency, mostly in euro. Bulgaria and Romania exhibit medium levels of deposits substitution of 35% and 41%, respectively. The rise in inflation since 2021 is associated with rising deposits substitution in Poland (13%) and Hungary (19%), too.

The literature emphasizes the role of the minimum variance portfolio (MVP) motives for euroization in the long run and the interest rate differential between local and foreign currency deposits as a driver of euroization dynamics in the short run. Our partial correlation analysis replicates these findings for the household sector and NFC deposits for four distinct episodes over the last 25 years. In particular, the impact of the interest rate differential on the currency composition of household deposits seems to vary across episodes, highlighting a rather rapid adjustment of household portfolios to different macroeconomic circumstances. Fluctuations in NFC deposits appear to be less affected by interest rate spread and portfolio considerations. They correlate more often with exchange rate movements, most likely reflecting valuation effects. However, our proxy for MVP seems to capture these complex and time-varying interactions rather incompletely and may suffer from omitted variable bias. Further empirical research on the drivers of deposit euroization in different macro-economic environments is warranted.

The macroeconomic importance of deposit euroization in CESEE is put in perspective by results from the OeNB Euro Survey which show that deposits, and especially foreign currency deposits, are rather concentrated and therefore likely

to be held more often by relatively richer individuals. Particularly, Southeastern European savers are very likely to hold most of their deposits in euro.

In general, deposit euroization has declined in most countries over the past 25 years amid catching-up processes and macroeconomic stabilization. Which goes to show that deposit euroization can be influenced by effective economic policies. In addition, the main drivers of deposit euroization are likely to differ depending on the overall macroeconomic environment. Further research is needed to explore these complex and time-varying relationships.

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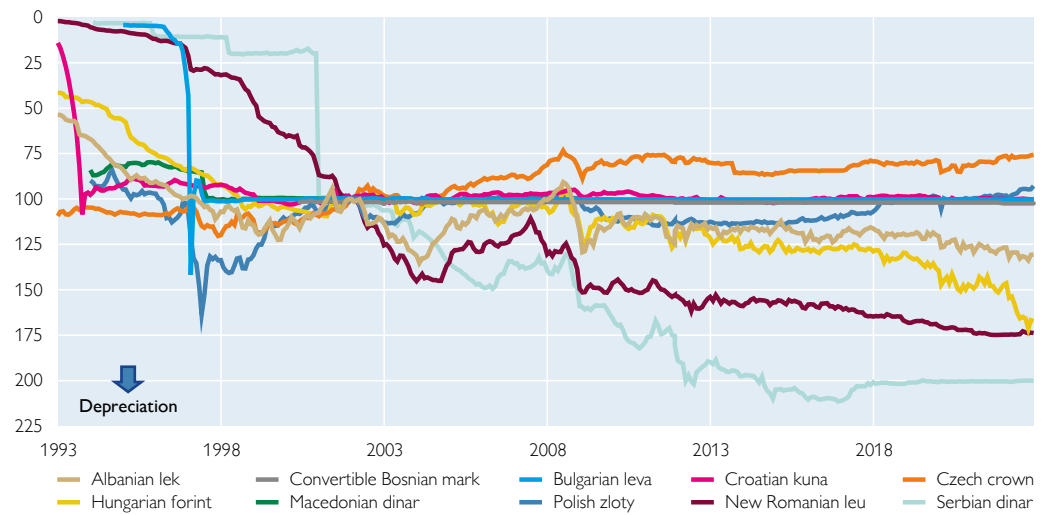


## Annex

Chart A1

### Bilateral nominal exchange rate vis-a-vis the EUR

Local currency/EUR, index 2002 January=100 (monthly average)



Source: wiw database, Eurostat, Macrobond, National Bank of Yugoslavia.

# 25 years of the OeNB in the Eurosystem – tracing the evolution of Governing Council governance

Ingrid Ettl, Anita Roitner<sup>1</sup>

This paper deals with the role of national central banks (NCBs), especially the Oesterreichische Nationalbank (OeNB), since the establishment of the European System of Central Banks (ESCB) and the Eurosystem 25 years ago. It draws on the experiences and perceptions of past and present OeNB governors and a former European Central Bank (ECB) Executive Board member with whom we conducted semistructured in-depth interviews in September and October 2023. After outlining the special setup of the Eurosystem, we investigate the question whether the decision-making process has changed over the last 25 years and what factors played a role. This relates to formal changes like the implementation of the rotation scheme of voting rights, and to the impact of economic conditions and of the presidents of the ECB. Attention is also given to the level of decentralization within the ESCB/Eurosystem and the working methods established to enhance cooperation and collaboration. We conclude by describing what the OeNB, a rather small NCB, has learned since joining the Eurosystem. This can be summarized as follows: the size of a central bank matters, personal contacts and networking are essential, collaboration needs strengthening and specialization can be an asset.

JEL classification: E58

Keywords: central bank, Eurosystem/ESCB

On 1 January 1999 Stage Three of Economic and Monetary Union (EMU) started with the introduction of the euro as the single European currency in 11 member states including Austria. This brought about a fundamental transformation of overall monetary and economic policy conditions for the OeNB. By transferring formal sovereignty over monetary policy to the ECB, all member states that adopted the euro saw a new distribution of roles between the ECB and the individual central banks in the Eurosystem, which fundamentally changed decision-making and working methods in NCBs.

There is a body of literature dealing with decision-making and the institutional setup of the Eurosystem, especially compared to other currency areas (e.g. Gerdesmeier et al., 2007). However, NCBs have always been an “*obscure part of EMU*” (Van der Sluis 2022, p. 27) as attention focuses on the ECB rather than NCBs. The small literature available is mostly from the time when the euro was introduced.

We want to shed some light on the institutional setup of the European System of Central Banks (ESCB) and the better-known Eurosystem (see section 1) from the perspective of a national central bank. A special focus is put on decision-making

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and (de)centralization within the system. We also investigate whether there have been any changes over the last 25 years at the level of the Governing Council.

We can draw on the experiences and perceptions of past and present OeNB governors and a former ECB Executive Board member with whom we conducted interviews. These were based on a predefined set of open-ended questions which allowed for an in-depth exploration of the research topic (see annex). The interviewees were addressed in their (former) roles as holders of offices. Such expert interviews are a well-known and often used approach in qualitative research designs in social sciences. We interviewed the former governors of the OeNB Klaus Liebscher and Ewald Nowotny as well as the current Governor Robert Holzmann in September 2023. Furthermore, we conducted an interview with former Vice Governor of the OeNB and former ECB Executive Board member Gertrude Tumpel-Gugerell on October 4, 2023. The analysis followed an interpretative approach which is based on sequencing the material along thematic structures, condensing and comparing (Meuser and Nagel, 1991).

This paper is structured as follows: Section 1 gives an introductory overview, from the perspective of the OeNB, of the preparations for the introduction of the euro and the very start of Stage Three of EMU. In section 2 we briefly look at the institutional setup. In section 3 we focus on decision-making in the Governing Council and its evolution over the last 25 years. Section 4 deals with (de)centralization in the ESCB/Eurosystem and the working methods established to enhance cooperation and collaboration. The final section deals with the lessons that the OeNB learned by being part of this system.

## 1 OeNB on the path to the ESCB

Preparations for the beginning of Stage Three of EMU started well before January 1, 1999. Austria joined the EU in 1995 and was from the very beginning committed to taking part in the monetary union as early as possible. Thus, the OeNB participated actively in the preparations for monetary union and was accepted as a full member of the European Monetary Institute (EMI), the ECB's predecessor.

From a macroeconomic perspective, the period prior to the start of Stage Three, which saw the introduction of the euro as a single currency, was characterized by the unprecedented convergence of economic parameters of the countries joining EMU.

The requirements of legal convergence in EMU imposed substantial changes on the OeNB as an institution and on its relationship with government and parliament to fulfill the requirements of the EU Treaties and the Statute of the ESCB (ECB, 2015). An amendment introducing numerous changes to the Federal Act on the Oesterreichische Nationalbank 1984 was put into effect in 1998. Moreover, an amendment to the Nationalbank Act, which reinforced the independence of the OeNB, set first a five-year, then a six-year<sup>2</sup> term of office for all members of the Governing Board and defined possible grounds for dismissal in line with the Statute of the ESCB (Dvorsky and Lindner, 2006). The biggest change was, however, when NCBs entered uncharted waters by the unprecedented simultaneous transfer of monetary sovereignty to an independent, supranational ECB. And the OeNB was no exception, on the contrary: Before the introduction of the euro, the OeNB

<sup>2</sup> In 2007 the legislative term in Austria was extended from four to five years. Accordingly, the term of office of OeNB Governing Board members was changed to six years to avoid synchronized appointments.

followed a hard-currency policy fixing the exchange rate of the schilling to the Deutsche mark. After two decades of following German monetary policy, the OeNB participated now actively in shaping the single monetary policy, on equal footing with all other participating NCBs, including the Bundesbank. NCBs experienced a “*shift in identity from national bodies to part of a European entity*,” they are more European than their name implies (Van der Sluis, 2022, p. 20). Liebscher described the very first Governing Council meeting as an exciting, cooperative, and forward-looking encounter between international experts with the awareness that the next six months would be decisive for the success of the single currency, the single monetary policy and the institution behind it, the ECB. “*We all knew we had something ahead of us for which there was no precedent*” (Liebscher, 2023).

The transition from the EMI to the ECB, however, was facilitated by an already established cooperative spirit – most members of the Governing Council knew each other from the EMI – and by the fact that many of the staff from the EMI were taken over by the ECB.

Despite the shared spirit of optimism among the Governing Council members (Liebscher, 2023), the first president of the ECB, Wim Duisenberg, faced a deeply skeptical world. Some parts of the global media, analysts and observers were betting on the presumed incapacity of the Eurosystem to deliver effectively on the main objective, namely, to start the new currency on time on January 1, 1999. But Duisenberg demonstrated a capacity to lead a team, i.e. the Executive Board and the Governing Council, with an excellent team spirit and in a collegial manner (Trichet, 2005). “*What central banks can do is build confidence, and that is the most important thing*” (Tumpel-Gugerell, 2023). After all the challenges at the beginning of EMU, the ECB proved that it could build confidence and the euro was no longer questioned at that time.

## 2 Institutional setup of the Eurosystem

Participating in EMU entailed a new institutional setup for central banking in the euro area. The newly established ECB constituted the core of the new ESCB. According to the Treaty on the Functioning of the European Union (TFEU), the ECB and the NCBs of all EU member states constitute the ESCB. The Eurosystem, by contrast, encompasses only the ECB and the NCBs of those EU member states which have adopted the euro. The NCBs are an integral part of the ESCB/Eurosystem and have their own legal personality. Their functional integration into the Eurosystem does not infringe upon their existing institutional, financial and administrative autonomy and they may continue to perform non-Eurosystem functions laid down in national laws.

Scheller (2006, p. 42) lists three reasons why it was decided to implement a system and not a single central bank in charge of carrying out central bank functions for the euro area: (1) A single central bank for the whole euro area, possibly in a single place, would not have been politically acceptable. (2) The ESCB is built on an established central bank structure in which the experience of NCBs is preserved as a valuable resource. NCBs keep their own institutional setup, infrastructure, operational capabilities as well as expertise and can continue to perform some non-Eurosystem-related tasks. (3) Credit institutions have an access point to central banking in each participating member state, which was considered appropriate given the large size of the euro area.

The Governing Council is the main decision-making body of the Eurosystem and consists of the governors of the euro area NCBs and the six members of the Executive Board of the ECB. The governors of the NCBs are appointed in their personal capacity and not as representatives of their NCBs or countries. This differs from the setup at the EMI and reflects the ECB's status as a supranational institution. According to Liebscher (2023), this was on display in the first Governing Council meeting, in which members were still seated in the alphabetical order of the names of their central banks, as was the case at EMI meetings and thus not reflecting the governors' "ad personam" (personal capacity) membership. One member immediately intervened and said that this must be changed, as it was not acceptable that the Executive Board of the ECB sat as a block facing the central bank governors as the Governing Council was a collegial body. Since then, seating has been in alphabetical order of the last name of the governors and the Executive Board members; only the ECB President and Vice-President have a fixed seat.

Although participation in the Governing Council is "ad personam," respondents noted some distinctions between governors from larger and smaller central banks. First, larger central banks brought with them essential international experiences as they were members of international groups like the G7 and the G20. This advantage in understanding international affairs was noticeable at the start of the Eurosystem and appreciated by the other members. Larger central banks were "*not more equal among equals, but internationally more experienced*" (Liebscher, 2023). Second, another distinction and comparative advantage for larger NCBs is their available workforce in a twofold manner: Larger NCBs were able to send a substantial number of staff to the ECB right from the beginning, which is an advantage in knowledge and information transfer; a higher number of posted employees can give the sending organization better information and more influence at the ECB. In addition, larger NCBs have more staff to deal with policy matters, which often means more in-depth preparation. "*Of course, the scope of a larger NCB is greater, apart from the fact that there are huge staffs behind it, and therefore they can prepare for more things*" (Nowotny, 2023). Third, persons from larger member states are more likely to be appointed as members of the ECB Executive Board. Fourth, larger NCBs have an advantage in the rotation scheme (see subsection 3.2).

It should be noted that, legally speaking, the ECB is the subsidiary of the Eurosystem NCBs. "*The national central banks shall be the sole subscribers to and holders of the capital of the ECB.*" (Article 28.2 ESCB Statute in: ECB, 2015). The key for the subscription of the ECB's capital is based on the population and GDP of member states. The OeNB holds a 2.41% share of the ECB's EUR 10.8 billion capital, corresponding to EUR 262 million. This specific ownership structure might influence the perception of the adequate degree of centralization and specialization, work-sharing and division of labor between the ECB and the NCBs. However, for collective success and effective action of the ESCB, it was necessary to encapsulate the NCBs within the ECB (Van der Sluis, 2022, p. 19) (see section 4).

Although we restrict our paper to the Eurosystem, we need to touch upon the establishment of the Single Supervisory Mechanism (SSM) in 2014, which was the biggest institutional change for the ECB and the Eurosystem (Nowotny, 2023). Tumpel-Gugerell (2023) felt that it would have helped if the ECB had "*full integration into banking supervision*" already when the Eurosystem was set up because national

competences slowed down the response to the 2008 banking and financial crisis. However, it was only after the global financial crisis that euro area member states were willing and prepared to establish the SSM, meaning the transfer of banking supervision in the euro area to the ECB. This was an important first step toward the Banking Union, and eventually a genuine EMU (Van Rompuy, 2012).

### 3 Decision-making in the Governing Council

The Governing Council acts as a collegial body in line with the “one member, one vote” principle. Governors must act in the interest of the euro area as a whole and not of their member state (Scheller, 2006, p. 54). Hence, participation in the Eurosystem has increased the OeNB’s influence as the governor of a medium-sized central bank can now participate actively in any decision of the Governing Council based on the “one member, one vote” principle (Dvorsky and Lindner, 2006, p. 61).

Blinder (2007) offers a typology of monetary policy committees distinguishing between individualistic and collegial committees. Accordingly, the Governing Council of the ECB can be described as a genuinely collegial committee which reaches decisions behind closed doors and ultimately arrives at a group decision with or without voting. This contrasts with individualistic committees like the Bank of England’s Monetary Policy Committee, in which group decisions are made by literal majority vote and unanimity is not necessarily expected or may not even be sought for.

The communication style of a central bank is deeply linked to the kind of decision-making practiced. Detailed statements are a more effective tool in collegial central banks, whereas the publication of minutes is more commonly used by individualistic committees as it is difficult to draft a common statement in real time without reaching a consensus (Demertzis et al., 2022, p. 4). Since its creation, the ECB has issued a monetary policy statement after the decision, with the ECB president holding a press conference. In 2015, it also started publishing a reduced version of minutes in the form of monetary policy accounts not mentioning the names of the governors.

The “one member, one vote” principle in the ECB’s Governing Council suggests that all members are equal, and their votes have the same weight in decision-making. This is true to the extent that the vote of the governor of the OeNB has the same weight as the vote of any other member of the Governing Council. However, under the rotation scheme, only members of the Executive Board of the ECB have a permanent voting right, whereas the governors of the NCBs lose their voting right temporarily under specific rules (see subsection 3.2). Based on a composite indicator of economic and financial weights, countries and their governors are divided into different rotation groups, with the larger countries being in a group with a higher voting frequency.

#### 3.1 Voting

According to the ESCB Statute and the Rules of Procedure, the Governing Council votes by simple majority (ECB, 2015). This means that given the rotation scheme (see subsection 3.2) and that there are 21 voting members in the Governing Council, 11 votes are needed for a majority.

However, for the founding members of the ECB, it was important to take decisions as unanimously as possible (particularly for monetary policy decisions) in



the sense of a supranational voice (single voice principle). Hence, decisions in Governing Council meetings<sup>3</sup> are mostly taken by consensus. Duisenberg (2002) described consensus as follows: “*Deciding by consensus means that the conclusions reached by the Governing Council as a whole on a certain decision, in a certain direction, or to decide not to change anything, are supported by the entire Governing Council, by some more enthusiastically than others, but this does not require a vote.*” Therefore, consensus is a blurrier concept than unanimity. In the process of decision-making, the arguments put forward and the exchange of views by all governors are instrumental in bringing about a convergence of views and, finally, decisions as unanimous as possible. The consensus approach crucially relies on the ability of the chairperson to lead the discussion in a sensitive but targeted manner. Nonetheless, Holzmann (2023) sees some merit in occasional formal voting which would force every member of the Governing Council to take a clear position on important issues.

Most of the time, votes are not weighted,<sup>4</sup> and the vote of the governor of the NCB of the largest euro area country counts as much as that of the NCB governor of the smallest country. As each vote is equal in the decision-making process, it is necessary for all members of the Governing Council to build coalitions and to determine the majority view. Telephone calls between the president and governors, and between governors before a meeting are an integral part of the opinion-forming process. At the beginning, this kind of networking and coalition-building was somewhat new to the officials of the OeNB. Thus, it had to be learned over the years and is now broadly institutionalized and applied at all technical levels in preparing for Governing Council meetings and responding to written procedures.

There is no strict distinction between winners and losers in the decision-making process by consensus and once a decision is taken, all members fully support it and represent it externally with “one voice.” The idea was that if the ECB was to speak for the euro area, as indeed dictated by its mandate, it had to ignore national preferences. To be able to convince the public, it would have to speak with one voice (Demertzis et al., 2022, p. 5). This also implies that the individual members of the Governing Council should not disclose their position or express their dissent in public. By speaking with a single voice in many languages and respecting diversity in communication traditions, the Governing Council ensures that information on its decisions reaches all citizens in a timely and comprehensive manner. Nevertheless, in recent years, opinions and voting decisions have become known, either due to deviations from the “single voice principle” by governors or due to the use of qualifiers in the monetary policy accounts (see subsection 3.3).

### 3.2 Rotation of voting rights

To ensure that the Governing Council can take decisions in a timely and efficient manner even in an enlarged euro area, the Council of the European Union adopted a decision in 2003 to adjust voting modalities in the Governing Council based on a recommendation by the ECB (2009). At the founding of the ESCB, it was

<sup>3</sup> Decisions can also be taken in form of a written procedure. According to the Rules of Procedures, written procedures require the express or tacit personal approval of each member of the Governing Council, which is why one could assume that they are taken unanimously.

<sup>4</sup> Only when the Governing Council takes decisions on the capital of the ECB and related matters, the votes are weighted according to NCBs’ shares in the subscribed capital of the ECB and the rotation scheme does not apply (Article 10.3 ESCB Statute).

expected that all EU member states (except the UK and Denmark) would eventually adopt the euro and that EU and euro area membership would therefore soon overlap. As this did not turn out to be the case, the Lisbon Treaty 2007 officially introduced the term “Eurosystem” that encompasses only the NCBs which have adopted the euro.

In the deliberations on voting modalities, the OeNB as a medium-sized central bank feared that its influence and power in the decision-making process would diminish. Long discussions in the Governing Council finally led to the decision to put in place a rotation scheme for voting rights in the Governing Council in 2003. According to Liebscher (2023), it was a discussion where differences between smaller and larger central banks became obvious. In decision-making and in organizations, it is important to know one’s allies, and coordination and cooperation is key for successful positioning. However, in the end, it took another 12 years until the rotation scheme was actually put into practice after Lithuania joined the euro in 2015 since the Governing Council had unanimously decided that the implementation of the rotation scheme would be postponed until the number of governors in the Governing Council had exceeded 18.

Since then, the number of Governing Council members with voting rights has been permanently limited to 21. As Executive Board members are not subject to the rotation scheme, the number of governors with voting rights will not exceed 15. Governors are allocated to different groups according to a country ranking based on two indicators: the share of their country in the aggregate GDP (weighted with 5/6) and in the total assets of the aggregated balance sheet of monetary financial institutions (weighted with 1/6). When the number of governors exceeded 18, two groups were formed, and when it exceeds 21, three groups will be formed. Currently, there are 20 euro area countries, which means that there are two groups of governors: the first group consists of the five governors of the highest-ranked countries sharing four votes, with the second group comprising the other 15 governors sharing 11 votes. The OeNB governor is in the second group (ECB 2009).

However, in practice, not much has changed for the governor of the OeNB after the implementation of the rotation scheme because decisions are taken by consensus, as described above. Furthermore, even non-voting members of the Governing Council participate in every meeting and are invited to discuss and share their positions.



### Enlargement of the Eurosystem and decision-making in the Governing Council

*EU enlargement is a prominent topic that has become and will remain a matter of public debate in the coming years. Surveys suggest that sentiment among the public and the political elite is very positive at the moment. The 2004 enlargement was framed as uniting Europe after the Cold War, and the ongoing war in Ukraine has changed the way the European public views the Balkan and Eastern Neighborhood countries, which are considered as “one of us” (Bonomi and Rusconi, 2023, p. 7). Although EU enlargement might have gained momentum, it will certainly take many years until new EU countries introduce the euro and become Eurosystem members. The same is true even for those EU member states that are not part of the euro area.*

*Nevertheless, all interviewees see some challenges for governance and decision-making in an enlarged Eurosystem despite the implementation of the rotation scheme. If the Governing Council counted more than 30 members, the decision-making process would be quite complex. Some interviewees mentioned the idea of organizing the Governing Council in constituencies comparable to the International Monetary Fund. However, others cautioned against constituencies, saying that this would contradict the setup of the ECB as a supranational institution. Eurosystem decision-making does not focus on voting rights or capital keys but on solid and valid lines of argument.*

*In fact, the rotation scheme was put in place exactly to adapt the decision-making process for Eurosystem enlargement. It would be difficult to argue for any “exclusion” of some members of the Governing Council because according to the principle of *ad personam* participation, governors would have a right to attend the meetings, and would retain the right to speak, irrespective of whether they have the right to vote.*

### 3.3 Evolution of decision-making

The Governing Council’s governance and decision-making evolved and changed over time due to both internal and external factors.

An important driver for change was the global financial crisis which forced the Governing Council to work differently than in the calm period of the Great Moderation around the time of the introduction of the euro. During the financial crisis, daily teleconferences of the Governing Council – even on weekends – were the rule. Decisions became increasingly controversial, especially when the crisis spread to euro area countries and later converted into a sovereign debt crisis in some euro area countries. Van der Sluis (2022, p. 23) draws the attention to the fact that this crisis highlighted the national character of NCBs as divergences between member states arose and influenced monetary policy debates. In retrospect, it is very clear that unity in the Governing Council began to weaken during this time.

Being a collegial system, the Eurosystem does not publish any votes. However, it is possible to analyze the monetary policy accounts and the explanations offered at the press conference after monetary policy meetings. Accounts of the monetary policy meetings have been published since the end of January 2015 and are a shorter version of the full minutes, which are not published. To give an impression of the discussion without attributing contributions to persons, soft qualifiers and impersonal references are used (ECB 2021, p. 34). Qualifiers include “unanimity,” “consensus,” “majority” etc. The president might add some additional adjectives during the press conference.

Claeys and Linta (2019) have built a comprehensive database on how decisions have been taken based on transcripts of ECB press conferences following monetary

policy meetings, the transcripts of the monetary dialogue with the European Parliament (EP) and letters sent to EP members and the accounts. They corroborate the impression that consensus eroded in the Governing Council over time and that it tended to resort to taking simple majority decisions in difficult times: *“Faced with critical crises and major challenges in the second decade of its existence, the ECB’s Governing Council, and its president, recognized that reaching unanimity or even a consensus on every decision was not the utmost priority (and was probably too difficult to achieve given the circumstances) and that decisions could be taken by simple majority if needed”* (Claeys and Linta, 2019). Also, the ECB confirms the decreasing level of agreement in its analysis ahead of the strategy review which took place in 2020 and 2021 (ECB, 2021, p. 35).

Perceived changes in the decision-making process over time may also relate to the different leadership styles of the different presidents chairing the Governing Council meetings. Using the example of the Fed, Blinder (2007, p. 111) points to the tradition of dominance by the chairman. Even though the Fed has an individualistic committee, as opposed to the ECB’s collegial Governing Council, it can be assumed that the discussions and decision-making reflect the leadership style of the chairperson. This was also confirmed by our interviewees.

Chart 1 shows that during the era of Duisenberg, all monetary policy decisions were reached by consensus. During the term of Trichet decisions were mostly reached by unanimity. At the most difficult times for the euro area, the sovereign debt crisis, which reached its peak under the presidency of Draghi, unity eroded and around 15% of decisions were taken by majority. Specifically, when it came to decisions on the asset purchase programs, the Governing Council could not always reach unanimity.

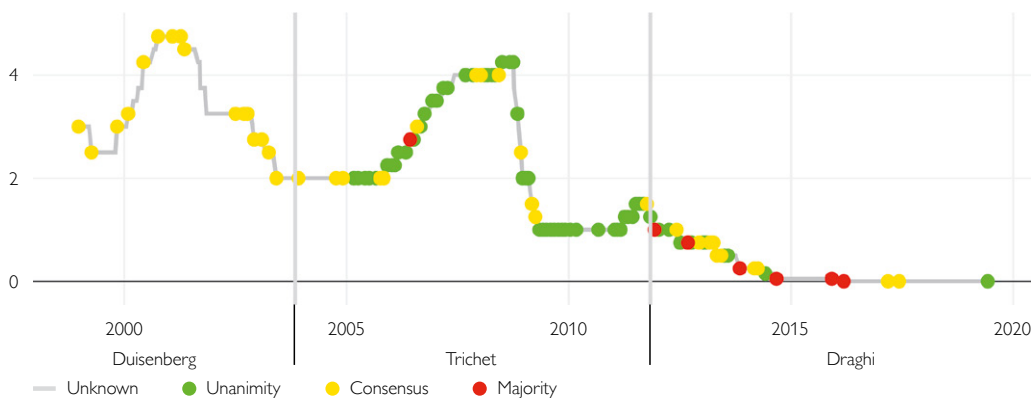
Our respondents report on the different styles of the presidents. Liebscher (2023) remembered Duisenberg as a person known for taking everyone on board, especially governors from smaller central banks, and for sometimes having quite lengthy debates about controversial issues. If it was unclear what decision should be made or no majority was in sight, he would postpone the discussion. Liebscher considered Duisenberg, an experienced politician and central bank governor, to be the ideal first ECB president for the start of the Eurosystem when many fundamental decisions had to be taken and mutual trust and a team spirit among governors had to be established. Trichet – who was in office from 2003 to 2011 – was perceived as leading the ECB in an open but more centralist way. Duisenberg could be seen as a moderator who enabled discussions and exchange of views, whereas Trichet was more active in the debates and did not hold back his own opinions and views. Draghi’s style of presidency was generally described as very efficient with a tendency to tenacity. However, Draghi had to deal with the most severe euro crisis during his term, and there was a need for resolute decision-making.

Whereas in the early days of the euro, national concerns were broadly aligned and it was felt that they were sufficiently taken into consideration, this changed with the global financial crisis, which aggravated differences and left small cracks in the setup of the Eurosystem in relation to the position of the NCBs (Van der Sluis, 2022, p. 27). One must not forget that different NCBs can have very different banking cultures. Whereas the Bundesbank aimed to maintain a stable currency and low inflation, other central banks had a tradition of wider responsibility for macroeconomic stabilization and financial market stability, e.g. the Banca d’Italia

Chart 1

### Interest rate decisions

Main refinancing operations %



Source: Claeys, G. and T. Linta (2019).

(Tumpel-Gugerell, 2021). These differences became more visible during times of crises.

The presidency of Christine Lagarde, which started on November 1, 2019, can be interpreted as a return to a more consensus-oriented approach. She introduced a new working and meeting culture, not only because the pandemic and environmental considerations made virtual meetings a sensible necessity, but also as she tried to achieve greater unity in the Governing Council. Therefore, she organized informal get-togethers in the form of working retreats which offered enough time to discuss difficult issues, connect on a personal level and build confidence. Holzmann (2023) shares this view: “I can say that [President] Lagarde makes a great effort to get people involved, to discuss things, to get them on board.” However, as regards the discussions about monetary policy decisions, Holzmann argues that there should be more time and room for a more in-depth and open debate where governors can give their opinions and explain their arguments.

#### 4 (De)centralization and collaboration

The basic principle of the Eurosystem is to have all decisions taken centrally by the ECB and the implementation of these decisions, i.e. operations, to be done by NCBs on a decentralized basis. NCBs act in accordance with the guidelines and instructions of the ECB and carry out the tasks which have been delegated to them by the ECB in line with the concept of decentralization. This is not to be confused with the principle of subsidiarity in the EU Treaties, which means that the need for centralization must be proven (Scheller, 2006, p. 50). In the Eurosystem, however, centralization of monetary policy does not have to be justified but it is the ECB’s responsibility to evaluate the extent to which decentralization is appropriate. Article 12.1 of the ESCB Statute (ECB, 2015) states that “to the extent deemed possible and appropriate [...] the ECB shall have recourse to the NCBs to carry out operations which form part of the tasks of the Eurosystem.” Reliance on the infrastructure and operational experience built up by the national central banks proved as an asset.

The Eurosystem mission statement<sup>5</sup> provides a clear summary of the concept of decentralization: *“We jointly contribute, strategically and operationally, to attaining our common goals, with due respect to the principle of decentralization. We are committed to good governance and to performing our tasks effectively and efficiently, in a spirit of cooperation and teamwork. Drawing on the breadth and depth of our experiences as well as on the exchange of know-how, we aim to strengthen our shared identity, speak with a single voice and exploit synergies, within a framework of clearly defined roles and responsibilities for all members of the Eurosystem.”*

During the interviews the idea of an enhanced division of responsibilities was mentioned, meaning that the ECB could form a strong center, whereas NCBs would specialize in certain areas in which they contribute to the Eurosystem. This could mean that not all NCBs would perform the full range of central bank tasks, and that eventually, under the model of “one for all” collaboration, only one NCB (or the ECB) would carry out specific tasks for the whole Eurosystem. It remains to be seen whether there is a majority for such ideas among NCBs. The global financial crisis, the euro area debt crises and the pandemic further slowed down ambitions to transfer – at least “critical” – tasks from NCBs to the Eurosystem. Nonetheless, NCBs collaborate to enhance efficiency and effectiveness of the Eurosystem, as described in the mission statement. Services, infrastructure and systems are provided by one or more NCBs for the benefit of some NCBs or the whole Eurosystem (as it is the case with TARGET2).

In addition, committees represent a special form of cooperation in the ESCB (Scheller, 2006, p. 65). To reap the benefits of decentralization in terms of broad information sharing and cooperation, a committee structure that was established under the EMI was retained and adapted at the beginning of Stage Three of EMU. In the ESCB, the Governing Council establishes committees to assist the work of the ECB’s decision-making bodies. The ESCB committees provide expertise in their fields, ensure the regular exchange of views among experts, and facilitate the decision-making process and implementation of decisions. Committees provide fora that allow best practices and expertise to be shared at the technical level, foster cooperation within the ESCB/Eurosystem and ensure regular and fruitful interactions between ECB and NCB staff. Like all NCBs, the OeNB appoints two members to each of the 18 committees, brings in expertise and experience, influencing the decision-making process. Participation in these committees brought a fundamental change to the NCBs which were confronted with new organizational and professional demands in an international work environment (Dvorsky and Lindner, 2006, p. 62). As a rule, the ECB chairs the committees. However, efforts have recently been made to allow NCBs to act as co-chairs.

As it is a big advantage to gather information and exchange positions early in the process, all interviewees see considerable merit in active participation and contributions of NCBs in the committee work to support the decision-making process. All respondents also said that larger central banks have an advantage in gathering and processing information at an early stage due to their international connections, their large employee base at their home NCB as well as at the ECB. It is therefore crucial to place excellent staff at the committees.

<sup>5</sup> <https://www.ecb.europa.eu/ecb/orga/escb/eurosystem-mission/html/index.en.html>

## 5 Conclusions – lessons learned from an Austrian perspective

First, personal contacts at top management level are essential: Joint decision-making in the Governing Council means that it pays to engage in networking and to foster personal contacts. Majorities must be found and, hence, coalitions must be built. The OeNB had to learn and adapt to the need of networking with other governors and the Executive Board. As mentioned above, while in the past, Austria had a fixed exchange rate regime with the Deutsche mark as the anchor, the country is now part of the euro area, with the governor actively contributing to the decision-making at the ECB on equal footing. Hence, Governing Council meetings (including retreats established by President Lagarde) naturally provide for opportunities to liaise. Furthermore, on a governors' level, networking activities take the form of (regular) bilateral meetings and calls with other governors. Establishing a good relationship with Executive Board members is vital, too. Clearly, having a national member in the ECB Executive Board is certainly an advantage.<sup>6</sup>

Second, the importance of personal contacts also holds true for the managerial and the technical levels, both with staff members at the ECB and colleagues in other NCBs. Against this background, cooperation in various committees is a crucial part of the game. This also implies the importance of sending and promoting excellent staff to the ECB at all managerial levels as well as to committees, task forces and working groups. This facilitates mutual understanding, information sharing and efficiency in fulfilling the joint tasks within the ESCB. The interviewees highlighted that attractive conditions by NCBs for outgoing as well as incoming employees must be in place to encourage international assignments.

Third, the structure of the Eurosystem can be thought of as a “hub-and-spoke” structure (ECB 2008, p. 20). The ECB's Executive Board is the hub, and NCBs, i.e. the governors of the NCBs in the Governing Council, are the spokes. This structure minimizes the cost of information gathering and sharing as regional assessment and analysis of economic developments can be best fed into the analysis of the euro area. It is an inevitable institutional development that in a single euro area the “hub” will get stronger. However, the “spokes” could specialize, and each governor can bring in specific areas of concern from the respective background of its country or central bank (Nowotny, 2023). Due to Austria's historical and regional economic ties with Central, Eastern and Southeastern Europe (CESEE), in particular as regards the financial sector, the OeNB has specialized in analyzing that region, and this expertise is highly esteemed at the ECB and among fellow NCBs.

In conclusion, our findings support the view that in the decision-making process in the Governing Council, it is not primarily the size of a central bank that matters but the best argument and the ability to liaise with other governors to build a solid majority, or even unanimity. Nevertheless, it helps to have a strong employee base at home as well as at the ECB, which is easier for larger NCBs to do. In this context, the efficient and effective preparational work in the committees supports and facilitates the decision-making in the Governing Council. The OeNB successfully specialized in CESEE region expertise, enabling it to provide input for discussions in the Governing Council. The decision-making process will further evolve, depending on many factors such as the chairperson, the size of the Governing Council, and the economic environment.

<sup>6</sup> Gertrude Tumpel-Gugerell, the former Vice Governor of the OeNB, was the only Austrian member of the ECB Executive Board up to now. She served from 2003 to 2011 at the ECB.

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## **Annex: Guidelines for the interviews**

### **Interviews with past and present governors**

1. What memories do you have of your first Governing Council meeting?
2. How did you personally experience the relationship with the ECB (President/ Executive Board)?
3. How did you experience the leadership style of the ECB President?
4. How was the cooperation in the Governing Council with the governors of the other central banks? (mood, alliances)
5. How do you see the work of the ECB as an instrument of EU integration? (euro as strongest symbol of EU, global financial crisis – ECB as savior of the EU ...)
6. How did you experience the organization (by the ECB) of ECB Governing Council meetings?
7. What was your biggest challenge? (Within the OeNB, national, but also euro area-specific)
8. In your opinion, what was the most important decision the Governing Council took during your term of office?
9. Specific memories of Governing Council meetings?
10. Regarding governance: What would you have done differently as ECB President?
11. What are key governance reforms?
12. How will the ECB function in 25 years?

### **Guidelines for the interview with Gertrude Tumpel-Gugerell**

1. What memories do you have of your first Governing Council meeting as an Executive Board member?
2. How did you personally experience relationships within the ECB Executive Board?
3. How did you experience the leadership style of the ECB President?
4. How was the cooperation in the Governing Council with the governors of the central banks?
5. How do you see the work of the ECB as an instrument of EU integration? (euro as strongest symbol of EU, global financial crisis – ECB as savior of the EU ...)
6. How did you experience the organization (by the ECB) of ECB Governing Council meetings?
7. In your opinion, what was the most important decision the Governing Council took during your term of office?
8. Specific memories of Governing Council meetings?
9. How did you perceive the change of position in the Governing Council – first as an accompanying person, then as a member of the Executive Board?
10. Regarding governance: What would you have done differently as ECB President?
11. What are key governance reforms?
12. How will the ECB function in 25 years?