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Table of contents

Introduction to the Special Issue “25 Years of the Euro: in the Era of Uncertainty”	v
<i>António Portugal Duarte, Pedro Bação, Fátima Sol Murta, Isabel Camisã, Dina Sebastião</i>	
Opening Address: Twenty-Five Years of European Monetary Union in Times of Polycrisis	ix
<i>Luís Máximo dos Santos</i>	
Building Up Legitimacy? Analysis of the European Central Bank Narrative During the COVID-19 Crisis	1
<i>Paulo Vila Maior, Isabel Camisã</i>	
From Euro to Digital Euro: A Survey of Literature	19
<i>Ovidiu Stoica, Adina Dornean</i>	
European Union Law and Governance in Times of Technological and Political Turmoil ...	33
<i>Marycruz Arcos</i>	
“There is no Alternative” for Southern European National Parties: Analysing Programmatic Convergence on Economic and Monetary Policy Issues in Euroelection Manifestos	45
<i>Dina Sebastião, Vanda Amaro Dias</i>	
Economic and Monetary Union: What Kind of Convergence?	73
<i>Igor Cvečić, Marko Tomljanović</i>	
Evaluating the Eurozone’s Impact on Portugal Amidst Modern Uncertainties	99
<i>Pedro Bação, António Portugal Duarte, Fátima Sol Murta</i>	
The Euro and Saving-Investment Imbalances over 25 Years: The Importance of Common Currency and Common Markets	115
<i>Margarita Katsimi, Ron Smith, Gylfi Zoega</i>	



Introduction to the Special Issue “25 Years of the Euro: in the Era of Uncertainty”

António Portugal Duarte^{*}, Pedro Bação^{**}, Fátima Sol Murta^{***},
Isabel Camisão[§], Dina Sebastião[°]

Marking a milestone of profound historical and economic importance, the 25th anniversary of the euro presents a pivotal opportunity to critically reassess the single currency's performance and explore its prospects. Until the international financial crisis of 2008-2009, the introduction of the euro was widely regarded as a (somewhat surprising) success. This assessment quickly gave way to renewed questioning of euro membership as countries such as Greece, Ireland and Portugal requested financial assistance. The euro crisis is now largely a memory, although Greece's real per capita GDP remains below its pre-crisis level. New challenges have emerged in recent years, from the economic and social consequences of the COVID-19 pandemic, to geopolitical instability and inflationary pressures.

On 26-27 September 2024, the Faculty of Economics (FEUC) and the Faculty of Arts and Humanities (FLUC) of the University of Coimbra, in Portugal, jointly organized the conference “25 Years of the Euro: In the Era of Uncertainty”. The event was hosted by the FLUC and was also supported by CeBER (Centre for Business and Economics Research), CEIS20 (Centro de Estudos Interdisciplinares do Século XX), Europe Direct Região de Coimbra e Leiria, and the Comunidade Intermunicipal da Região de Coimbra. It brought together academics from economics, international relations, political science and European studies, as well as policymakers, to reflect on the achievements and shortcomings of European Monetary Union (EMU) and to discuss the challenges ahead. The programme followed the model of a previous conference held in Seville in 2019 to mark the euro's 20th anniversary (Arcos *et al.*, 2019), with a combination of keynote addresses, thematic sessions and open discussion.

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The conference opened with a keynote lecture by Luís Máximo dos Santos, Vice-Governor of Banco de Portugal, on Twenty-five Years of European Monetary Union in Times of Polycrisis. This was a wide-ranging address reflecting on the euro's resilience in the face of successive crises and the institutional challenges ahead. It was followed by three thematic sessions. The first addressed the euro's resilience and vulnerabilities in the face of successive crises: from sovereign debt to COVID-19 and the economic impact of the war in Ukraine. The second examined legal and governance dimensions of the EU in times of technological and political change, including debates surrounding the prospective digital euro. The third explored structural and forward-looking challenges for the euro area, including convergence, investment-saving imbalances, and the political economy of EMU. The closing keynote, delivered by Gylfi Zoega (Birkbeck College, University of London, and University of Iceland), considered the euro's impact on saving-investment imbalances over the past quarter-century.

This special issue brings together the research papers presented at the conference, complemented by contributions from both keynote speakers:

Paulo Vila Maior and Isabel Camisão analyse the European Central Bank's narratives during the COVID-19 crisis, focusing on how the ECB framed the crisis, linked its communication to policy reform, and sought to build legitimacy in a period of exceptional intervention.

Ovidiu Stoica and Adina Dornean conduct a bibliometric analysis of research on central bank digital currencies, with particular attention to the digital euro. Their study identifies key trends, concerns and research gaps relevant to policymakers and scholars as the ECB advances its digital euro project.

María Cruz Arcos examines EU law and governance in an era of rapid technological and political change, with particular emphasis on the prospective introduction of a digital euro and the regulatory safeguards needed to preserve the principles of European integration in the digital sphere.

Dina Sebastião and Vanda Amaro Dias examine ideological and programmatic convergence among Southern European national parties in the context of EMU. Analysing Euroelection manifestos from 1999 to 2019, they find evidence of a "no alternative" dynamic, with convergence towards Keynesian policies within the EMU framework.

Igor Cvečić and Marko Tomljanović revisit the question of nominal and real convergence in the EU, contrasting the experiences of euro area and non-euro area Member States. They argue that sustainable real convergence remains a prerequisite for the long-term viability of EMU.

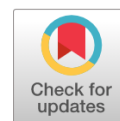
Pedro Bação, António Portugal Duarte and Fátima Sol Murta investigate the impact of euro area membership on the Portuguese economy, employing a Smooth Transition Vector Autoregressive model to capture gradual effects. Their results suggest that, beyond inflation stability and lower interest rates, euro membership has had a positive effect on Portuguese real per capita GDP.

Margarita Katsimi, Ron Smith and Gylfi Zoega assess the role of the euro and the single market in shaping saving-investment imbalances. By comparing countries with different levels of integration in currency and markets, they provide new evidence on how monetary and market integration interact with macroeconomic adjustment.

Collectively, these contributions illustrate the multiple dimensions – economic, political, legal, and institutional – through which EMU must be understood. They highlight the euro’s capacity to promote stability and integration, while also underlining persistent structural divergences, evolving governance challenges, and the need for policy innovation. As the euro enters its second quarter-century, and prospects for a digital euro emerge, this special issue offers insights to guide scholarly debate and inform decision-making in an era of uncertainty.

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Opening Address: Twenty-Five Years of European Monetary Union in Times of Polycrisis

Luís Máximo dos Santos*

The invitation to open this conference, which I most gladly accepted, is both an honour for me, on a personal level, and for the institution I represent.

The *Strategic Plan of Banco de Portugal for 2021-25* aims “to promote proximity and strengthen the trust” among Portuguese citizens, and one of the tools we use to promote proximity to society is precisely the interaction with academia and universities. My presence here today is an example of this.

I would also like to warmly congratulate the Faculty of Arts and Humanities and the Faculty of Economics, as well as the Centres directly involved, on the joint organisation of this Conference.

However, before I move on to the subject of my speech, since this is my first public event after receiving the sad news of the premature and unexpected passing of Professor Luís Silva Morais on 15 September, I would like to express a few words in his memory.

I met Professor Luís Silva Morais over three decades ago, at our “shared home” – the Faculty of Law of the University of Lisbon – and we remained friends thereafter. Naturally reserved, he leaves behind a remarkable body of work, recognised in Portugal and abroad, on competition law, regulation law, and European law, specialising in finance, regulation and the Banking Union. He joined the Appeal Panel of the Single Resolution Board in 2016 and was elected Vice-Chair in 2018, a position he still held. His untimely passing is a tremendous loss for Portuguese academia and, of course, for his family and many friends, whom I acknowledge here with profound sadness.

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It is extremely important to mark an anniversary so important at so many levels as the 25th anniversary of the European monetary union, celebrated on 1 January 2024.

The creation of the European monetary union was the most significant step forward in the European integration process to date. It was the largest structural reform of the European Union. It established a new economic regime for the participating Member States and also changed the landscape of the international monetary system.

The date is therefore a key milestone in the history of European integration. Portugal was one of the eleven founding Member States of the euro and, therefore, it is also a key date in the recent history of our country.

We must all congratulate the Faculty of Arts and Humanities and the Faculty of Economics of the University of Coimbra for providing us with this opportunity to discuss the present and the future while remembering the past.

The European monetary union is an unprecedented and highly original creation. Indeed, throughout history, several attempts have been made to create monetary unions, but none with the scale and characteristics of the European monetary union.

The European monetary union was the result of the will of a heterogeneous group of free nations, very different from each other in terms of economics, development, history, geography and culture. In 1999, there were eleven participating Member States and today there are twenty. Croatia was the most recent addition to the euro area on 1 January 2023.

The creation of the European monetary union in 1999 resulted directly from the Maastricht Treaty in 1992, but it materialised an ambition dating back to the 1960s and 1970s, with the first failed attempt carried out under the Werner Plan.

Behind it lies a long road of theoretical work and progressive monetary integration, particularly through the European Monetary System.

But it was not consensual. Especially when the process to build it was set in motion. In France, for example, the Maastricht Treaty was adopted by a very narrow margin. It has been passionately discussed and has always had political and academic opponents. Today, however, the approval rates of the single currency are at their highest in most Member States.

But the context surrounding the creation of the European monetary union could not have been more in contrast with today's circumstances. In 1999, the European Union was much smaller (there were only fifteen Member States) and, in a sense, so was the world, because several international players that are now extremely relevant were still emerging from a long period of lethargy and trying to find their place. The acronym "BRICs" was not used and China had not yet joined the World Trade Organisation.

At that time, optimism in Europe was evident, confidence in the future was high, and the triumphant international order seemed destined to be accepted almost without question.

The bursting of the dotcom bubble in 2000 was merely an episode of no major consequences, but in 2001, with 9/11, the world experienced a major shock.

After all, the 21st century did not begin under the best auspices: Francis Fukuyama's concept of the "end of history" was perhaps somewhat exaggerated or, at least, from the author's perspective, wrongly interpreted.

The first years of the European monetary union seemed to have been successful. However, under this apparent success, serious macroeconomic imbalances were building up due to design flaws in the Economic and Monetary Union (which were known but not sufficiently taken into account) and wrong economic policies in many Member States.

The big shock came with the dual crisis: the global financial crisis (2007-09) and the sovereign debt crisis in the euro area (2010-12).

At that time, the survival of the euro was clearly at stake, in a way that I believe could hardly happen again. Indeed, the major improvements to the governance of the Economic and Monetary Union and the regulation of the European banking system that stemmed from that dual crisis, in particular with the creation of the Banking Union (even considering that it is incomplete since its third pillar – the single depository insurance scheme – has never been created), make that very unlikely.

During this period, the European Union was in fact on the brink of a precipice, but under the tremendous pressure of reality, and as the worst-case scenarios became more likely, it had the energy and clarity to take measures to emerge from this situation, although at a very high cost, the effects of which are still being felt in some economies.

However, in my opinion, those measures could and should have been adopted earlier.

Still reeling from the financial crisis, in 2020, the world was hit by a pandemic, and, in 2022, it was hit by a war in Europe involving a nuclear power.

It is not surprising, therefore, that in recent times the term “polycrisis” has been increasingly used by several authors in light of a series of negative events that are interconnected in terms of global consequences, generating highly destabilising effects. One of these authors is Adam Tooze, who, however, ascribed the origin of the concept to Edgar Morin.

There are many examples of such negative factors, but climate change, COVID-19, the war in Ukraine and the Middle East, the problems arising from migratory flows or even the effects of artificial intelligence at different levels are worth mentioning.

I use the term “polycrisis” not to emphasise any structural pessimism in the sense that some use it (and which has historically always had intellectual traditions), but merely to underline how interconnected, complex and global the challenges of today’s time are.

In any case, and quoting Gramsci, any pessimism of the intellect must always be balanced by the optimism of the will. Regardless of our more optimistic or pessimistic view, it seems indisputable that the present poses enormous challenges and impactful choices if we want to have a decent future.

Therefore, this Conference could not have come at a better time, given that it takes place at a time of major public debate – which will continue – on the future of the European Union.

Indeed, in April this year, the report “Much more than a market” was presented to the European Council as a result of the work of a group chaired by Enrico Letta, former Prime Minister of Italy. On the 9th of this month, and with a much greater impact, it must be said, the report on “The future of European competitiveness” was released, prepared – upon request from the European Commission – by a working group led by another former Italian Prime Minister, Mario Draghi, whose reputation derives mainly from the fact that he was President of the Executive Board of the ECB from 2011 to 2019, a crucial period for the euro, whose crisis he addressed with courage, clarity and assertiveness.

The evolution of the European integration process is fraught with remarkable reports. Some have been more successful in terms of their consequences, while others, despite their potential significance, have ultimately not led to marked outcomes.

However, the European Union needed a report like the Draghi Report, also because of that “polycrisis” framework.

Indeed, the scale of the problems it faces calls for an approach that is not compatible with the usual production of ideas and policies under the Brussels bureaucracy or with the timid initiatives of the Member States, which are too absorbed in their own internal problems and, above all, overly focused on short-term and generally not ambitious management.

The content of the Draghi Report is not surprising, neither in terms of its diagnosis of Europe's economic and strategic situation, nor in terms of the substance of the measures proposed and the priorities selected. However, it is nonetheless very valuable and important. At the very least, it has provided an excellent roadmap for discussion and action on Europe.

Both the diagnosis made and the proposals presented are impressive and brave.

Mr. Draghi stresses that “the starting point is that Europe is facing a world undergoing dramatic change. World trade is slowing, geopolitics is fracturing and technological change is accelerating” (Draghi, 2024).

The Draghi Report identifies three key areas for action:

- closing the innovation gap with the United States and China;
- creating a joint decarbonisation and competitiveness plan;
- increasing security and reducing dependencies.

He notes that the European industrial structure is too static and that European companies support excessively high energy costs compared to US and Chinese companies. He even points to reducing the price of energy as the top priority of a common plan for decarbonisation and competitiveness.

He calls for a more balanced regulation that considers the different interests at play, particularly with regard to innovation, stressing the importance of consistent regulation across the Union.

He outlines a concept of industrial policy based on new parameters, considering the assertion that today the market is global.

He proposes a real investment and increased productivity shock, which is very difficult to achieve, but indispensable for bringing sustainable economic growth to the European Union.

Initial reactions to the Report were generally positive. But, as has already been written, “will EU leaders do whatever it takes” (Tordoir *et al.*, 2024) to achieve the objectives of the Report and put the proposed measures into practice?

Mr. Draghi is peremptory in stating that “integration is our only hope left”, as opposed to the alternatives of paralysis or exit, referring to the disappointment of Brexit, even for those in the UK who advocated for it.

But the problem is that the political leaders of the Member States are answerable to national electorates, and they do not seem to be moving towards the path of deeper integration.

We will see how positions evolve on topics such as new common debt issuances, as happened during the pandemic crisis, even if limited to the strict purposes outlined in the Report.

Despite its focus on competitiveness, the report explicitly states the need to preserve social inclusion. While it praises the US model for its productivity growth and innovation, the report also states that its social disadvantages should be avoided, and that the European strategy should make productivity growth and social inclusion advance concurrently. What is highly relevant in this context is the statement that Europe should avoid the mistakes of the “hyper-globalisation” phase, a concept popularised by Dani Rodrik and used in the Report.

In a sentence that hints at a strategy, it states: “More effective and proactive citizens’ involvement and social dialogue, combining trade unions, employers, and civil society actors, will be central in building the consensus needed to drive the changes. Transformation can best lead to prosperity for all when accompanied by a strong social contract.”

At the age of 25, the European monetary union is still in its youth. But, at a great cost, it overcame the storm of the financial and sovereign debt crisis.

The European response was indeed reactive rather than anticipatory, and therefore late and too slow. Nevertheless, it was a fully-fledged opportunity taken by the European Central Bank to assume its prominence.

On the other hand, it is fair to say that the reforms adopted, and in particular the Banking Union, have been effective and created a much more friendly and stable landscape for the euro area and the financial system. In Portugal, we have witnessed the effects of these developments in the financial stability we have experienced in recent years.

The focus of the Draghi Report is not the problems of the European financial field and that is not by chance. The institutional reform of the architecture of the Economic and Monetary Union is not complete but is far more advanced today.

There is certainly room for improvement. For example, we need to complete the European Banking Union with its long-delayed third pillar; we need to further enhance the crisis management mechanisms, especially those applicable to small and medium-sized banks; we need to eliminate the obstacles to a Capital Markets Union.

However, what most ensures the lasting stability of a monetary union is a high degree of convergence of the economies of the various member countries, as well as a closer alignment of their levels of economic development. And that is why we share a common currency. The single currency is not an end in itself, but a means to increase the convergence of the Member States’ economies and their prosperity (Knot, 2023).

On another level, it is generally acknowledged that the pandemic crisis received a strong European response, well complemented by that of the Member States. And the resurgence of inflation, notably after the war in Ukraine, was and continues to be contained, as the goal of price stability is pursued.

These references may seem benevolent. But they are not, at least not consciously.

Perhaps some of you are asking the following question: if the diagnosis in the Draghi report is correct and so drastic, then what is going on?

The point is that, for at least 15 years, there have been abnormally difficult moments, some of which are real “black swans”, all with multiple and significant negative impacts. However, these impacts are not symmetrical across different regions of the world. On the other hand, the so-called hyper-globalisation process has profoundly shaken the European economic and social fabric since the 1990s, with consequences that only later became fully apparent.

The term “polycrisis” has gained traction precisely because it aptly describes the succession of events we have experienced.

Moreover, we are in the process of rapid economic and technological transformation, with structural and global impact, which has slowly reconfigured global economic power to the detriment of Europe. This dynamic does not depend on us alone.

Europe’s demographic, economic and technological decline is real and self-reinforcing. As a result, it has lost prominence in global terms in all areas.

However, it is important to highlight the following: European integration is much more than a market or even an economic and monetary union.

It is primarily a space for sharing common values: democracy, freedom, the rule of law, human rights, peace, equity and prosperity in a sustainable environment (Draghi, 2024).

In a Faculty of Arts and Humanities, I need not say how all this brings us back to the field of culture. In a short and inspired book “The Idea of Europe”, George Steiner explains this very well.

Thus, more than all the issues I have mentioned throughout my speech, perhaps the main problem in Europe today lies in the slackening of these values. It is up to each one of us to do something to revive them every day.

Disclaimer

This article reflects the personal views of the author and in no way represents the official position of the Bank of Portugal.

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Building Up Legitimacy? Analysis of the European Central Bank Narrative During the COVID-19 Crisis

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Abstract: For the literature on crisis management, two of the most important undertakings are sense-making (what is going on) and meaning-making (causes and consequences; and solutions). They feed the public's understanding and support of crisis responses. Meaning-making is connected to change that emerges from the crisis, providing a relevant explanation of post-crisis policies: the way we perceive a crisis will determine to what extent we are willing to accept a post-crisis reform. The article addresses narratives of the European Central Bank's during the COVID-19 pandemic, building on the literature on crisis communication, and particularly on the "crisis-exploitation-reform script" combined with literature on policy narratives. Our goal is to answer three interrelated research questions: how did the ECB frame the pandemic crisis? Were ECB's narratives crafted onto policy reform? How did the ECB shaped narratives in order to build up legitimacy?

Keywords: meaning-making; sense-making; European Central Bank; crisis response.

JEL classification: E58; F59; H63; Y80.

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1. INTRODUCTION

When Europe was hit by the first cases of COVID-19, political authorities underestimated the threat due to the shortage of information and because previous health crises were less dangerous than foreseen. Unwavering dissemination of COVID-19 and high fatality rates rapidly changed threat warnings. Although crisis-alert mechanisms at the technical level were activated as early as January 2020 in the European Union (EU)¹, first responses came at the national level.

The standard procedure when an external security threat is at stake is member states reacting by closing national borders. Travel restrictions and strict quarantine measures were implemented, hindering one of the pillars of the European way of life, freedom of movement, but also other important citizens' rights. While national governments' actions were grounded on the protection of the population against an unfamiliar health disease, unilateral measures (instead of coordination at the EU level) raised the impression of lack of solidarity and clouded the EU with a prognosis of disintegration.

Indeed, media headlines spread the idea of disorder. This exposed the EU's failure to engage in sense-making, a crucial task in crisis management, paving the way for the disunion narrative. In this article we argue that the strong stance of the European Central Bank (ECB) in the area of economic policy-making (monetary policy, in particular) fed an input for the EU to gain control of the policy narrative. This, in turn, cleared the way for policy choices and reforms designed and coordinated at the supranational level and was fundamental to attract citizens' support.

Building on the literature on crisis management, and particularly on the "crisis-exploitation-reform script" proposed by [Boin and 't Hart \(2022\)](#), combined with literature on policy narratives (e.g., [Shanahan et al., 2017](#); [Mintrom et al., 2021](#); [Schlaufer et al., 2022](#)) we analyse how a crisis' narrative was shaped by the ECB during the COVID-19 pandemic (March 2020-December 2022). This the relevant period of analysis considering that in March 2020 COVID-19 was officially recognised in the EU, and December 2022 witnessed the phasing out of coronavirus' infections as approximately 80% of the population was already vaccinated.

Our goal is to answer three interrelated research questions: *How did the ECB react to the pandemic crisis? Was the ECB's narrative leaning towards policy change and reform? Was the ECB concerned with the legitimisation of policy change and reform?* The article is structured as follows. The theoretical framework and methods are surveyed in [Section 2](#). [Section 3](#) addresses the crisis narrative put forward by the ECB by looking at speeches by members of the Executive Committee between March 2020 and December 2022. The task is twofold: to provide an assessment of how the crisis narrative was shaped and to what extent policy change was targeted. [Sections 4 and 5](#) focus on the findings and seek answers for the abovementioned research questions. [Section 6](#) concludes.

2. THEORETICAL FRAMEWORK AND METHODS

Crises are intrinsic to mankind. They are broadly understood as a period of disruption and uncertainty that threatens fundamental values, norms, or basic structures, entailing a sense of urgency that requires political action commensurate with the management of the crisis ([Backman and Rhinard, 2018](#)). It is therefore understandable that a strand of political science focused on the theorisation of crises, notably on how crises are addressed by political

authorities. Two different junctures are at stake: assessment of the crisis, and an action-plan to mitigate and overcome (at different stages) the negative impact of the crisis. The sense of perennial crisis, or that different crises emerge within a crisis, nurture political science analysis of what was coined as “crisification” (Rhinard, 2019).

A strand of literature elaborates on the political strategy that aims at minimising the implications of a crisis. At the outset, the literature pointed out four tasks in that context: *prevention*, *preparation*, *response*, and *recovery*. Later on, the literature grew in sophistication to encompass a technical approach that added to the political analysis of crises. In that sense, political authorities face challenges on seven areas: (*early*) *crisis detection* (the awareness that a threat emerged, asking for an immediate response); *sense-making* (the meaning of the crisis, how it impacts on values and on citizens); *decision-making* (how to react to the crisis); *crisis coordination* (involving different actors, both within a country and at a transnational level); *meaning-making* (how underlying causes and consequences are communicated to the public, as well as alternative solutions to redress the crisis); *accountability* (provision of transparent information as to the effects of the crisis and the measures to handle it, as part of well-established democratic standards); and *learning* (perception that lessons were learnt from the crisis) (Boin *et al.*, 2011; Backman and Rhinard, 2018). For the purposes of the article, we focus on sense-making and meaning-making as they are critical to the way political authorities shaped the crisis’ narrative.

Since crises are about contingency, they entail non-conventional standards of political assessment and (re)action. Indeed, inaction during a crisis tends to exacerbate negative implications. For this reason, a sense of urgency is coupled with crisis’ management. The indeterminacy of the early stage of a crisis, when data fail to establish an unquestionable pattern of crisis, casts doubt on political actors. Information is not consistent as to the embeddedness of the crisis, or data is latent and political assessment is blurred. The first task is to make sense of the chaos and to provide a “shared situational picture” (Backman and Rhinard, 2018, p. 262). Collection and systematic analysis of critical information makes the difference in the early stage of a crisis. Political authorities should start addressing the crisis before it goes out of hand. They should focus on sense-making: a standard procedure for addressing crisis involves processing and sharing information with people and to recommend suitable policy action (Boin *et al.*, 2013). Although sense-making is more relevant in the early stage of a crisis, it is nevertheless a process that goes hand in hand with the development of the crisis. The outcome of task-forces appointed to monitor the crisis is of utmost importance for political actors’ decisions, notably to help them decipher the crisis and assess alternative responses (Boin *et al.*, 2021).

In addition to sense-making, meaning-making is an important stage of crisis’ management strategy. Meaning-making involves shaping a “compelling story” that helps people understand the events and the efforts to handle the crisis (Boin *et al.*, 2013). Moreover, meaning-making helps grab the public support for reforms deemed necessary after the crisis (Boin and ‘t Hart, 2022). Meaning-making is instrumental of the crisis management strategy at three levels (Boin *et al.*, 2021, p. 66):

- (i) providing a convincing narrative of the crisis, qualifying people to support of or to disagree from policy choices designed to overcome the crisis (*instrumental dimension*);
- (ii) giving ground to people’s informed decisions during the crisis (*empowerment dimension*); and

(iii) building the legitimacy (or the contestation) of political authorities throughout the crisis (*political dimension*). In the case of ECB's actorness during the pandemic crisis, it is particularly important to find out the input and the output dimensions of the monetary authority's contribution to turn around economic misfortunes. We will come back to this aspect (*legitimacy dimension*) later in the section.

The ingredients of a convincing narrative borrow from ordinary layouts of novels: it encompasses a setting, characters (victims, villains, and heroes), a plot and a moral prescription (Schlaufer *et al.*, 2022, p. 252). Importantly, a convincing narrative depends on how it fits with people's cultural identity and set of beliefs (Mintrom *et al.*, 2021). This precondition is consistent with expected standards of democratic governance. It is problematic when the crisis asks for a radical departure from established values and beliefs and political actors do not provide a compelling justification for the reformist agenda. In this case, the legitimacy dimension of crisis' management is absent.

Crises provide the context for a policy narrative. Viewed from the standpoint of the exceptionality of crises, they are grounded in an unfamiliar setting. Narratives are, therefore, useful for bringing in an intelligible meaning of the crisis and lessening people's anxiety. The first purpose of narratives is to help citizens to get familiarised with the crisis so that they will not feel alienated (Boin *et al.*, 2021).

In addition, meaning-making turns out to be highly relevant because the media has access to different sources of information. The array of disparate information increases citizens' difficulty to assess the crisis. The control of the narrative by political authorities becomes crucial: on the one hand, authorities cannot evade basic rules of free press; on the other hand, they should take the lead on the crisis' narrative, superseding (if necessary) contradictory information about the crisis. Citizens are therefore able to legitimise the leadership of political authorities in times of hardship. This is especially important since crises frequently require difficult and unpopular decisions, challenging the legitimacy of political actors involved in the process of crisis management. The efficiency of political communication is even more demanding during the crisis, as legitimation relies heavily on how efficient communication is (about the context, the consequences of the crisis and the political measures designed to overcome it) (Backman and Rhinard, 2018; Mintrom *et al.*, 2021). Another advantage of efficient political communication is that political actors' leverage increases the possibility of reforms in areas otherwise prone to reform resistance (Boin *et al.*, 2009).

Past experience shows that political authorities choose a conservative approach consistent with the preservation of institutions and policies. Yet, the exceptionality of crises might call for a reformist agenda in the aftermath (Capoccia and Kelemen, 2007), either to address the imperfections that became evident during the crisis or to improve preparedness for future crises.

Boin and 't Hart (2022, pp. 16-20) elaborate on political authorities' reactions while framing meaning-making in a post-crisis context. First, the *crisis-learning-adaptation script* emphasises how policy adjustment is a consequence of previous policy failure (doing after learning with past mistakes). Second, the *crisis-blame script* points out how the rhetoric of the crisis is manipulated by political actors to escape blame for something that went wrong. Third, the *crisis-exploitation-reform script* materialises the future shaped by the winners in the aftermath of a crisis (usually incumbents, because crisis fosters policy centralisation). They overstate institutional aspects of the crisis "(...) whilst selling ideas for doing things differently to diverse audiences and building momentum to see them enacted." (Boin and 't Hart, 2022, p. 19)

Based on the theoretical framework highlighted above, the article examines the role of the ECB in sense-making and meaning-making during the pandemic crisis. The aim of the article is to test whether the ECB intentionally acted in order to control the narrative of the crisis with a twofold purpose: to secure a role on economic policy coordination at the EU level in the context of macroeconomic challenges raised by the pandemic; and to acknowledge if the ECB fostered policy change in areas outside its remit, considering that reform faced resistance in the recent past (first and foremost within the ECB). To that purpose, the article analyses speeches by members of the Executive Committee of the ECB looking for a policy narrative (a setting; characters; a plot; and a moral prescription) and references to (specific) EU values. It also surveys the speeches looking for evidence of the following aspects (Boin and 't Hart, 2022, pp. 19-20):

- (i) the urgency of reform;
- (ii) a commitment to reforming the status quo;
- (iii) a plea for wide-ranging coalitions that encourage reform;
- (iv) and the opportunity to improve a reform that lost momentum beforehand (when actors realised that an ambitious reform was unfeasible).

Since the ECB is the focus of this article, the theoretical framework must encompass an important dimension of analysis: the issue of the limited (or even absent) democratic legitimacy of the ECB, widely recognised as the upshot of a central bank that enjoys the most extensive status of political independence. Earlier literature emphasised how the democratic legitimacy of the ECB was affected by absent channels of accountability vis-à-vis institutions of the EU with a democratic track record (Buiter, 1999; Amtenbrink, 2002). Since the ECB is the master of the Eurozone monetary policy, it affects citizens' welfare and companies' competitiveness. This raises the importance of accountability as a precondition of legitimacy.

Recently, after the ECB was pictured as the actor that crafted the U-turn of the Eurozone crisis following the intervention on public debt secondary market, some scholars accepted the legitimacy of the ECB based on non-conventional, non-state centric standards that emphasise output legitimacy instead on input legitimacy (Glencross, 2014; Tortola, 2020; Schmidt, 2022). The growing visibility of the ECB is the ground for a new analytical grid that assesses the ECB outside state-centric standards, although earlier justification of this idea predated the Eurozone crisis (Majone, 1999; Chang, 2002; McNamara, 2002; Moravcsik, 2002). This approach is not consensual, as some authors were not convinced of the rationale that pushes the ECB outside conventional parameters of democratic legitimacy assessed through the lens of nation-states (Amtenbrink, 2019).

A total of 23 speeches of members of the Executive Committee of the ECB were analysed. Documents were taken from the ECB's website. We resorted to narrative analysis to undertake an in-depth examination of relevant documents looking for evidence of sense-making and meaning-making. Sense-making was assessed through information on the nature of the crisis and how the crisis evolved. For meaning-making we sought ingredients of a policy narrative encompassing practical information that empowers the public to take informed decisions during the crisis and to assess the performance of crisis management strategy. The keywords "pandemic", "COVID-19" and "coronavirus" were the parameters of analysis. These documents cover speeches by the six members of the Executive Committee, which means that the full Board addressed the economic implications of the pandemic crisis, provided explanations about the appropriate monetary policy stance, and stretched avenues of economic policy reform.

3. THE EUROPEAN CENTRAL BANK AND SENSE-MAKING

Statements from members of the Executive Committee of the European Central Bank (ECB) show a distinctive path when compared with the reaction of members of the European Commission to COVID-19 pandemic. Indeed, while sense-making is almost absent in European Commission's statements at the outset of the coronavirus, the ECB was concerned with providing an explanation of expected macroeconomic consequences of the pandemic. The monetary authority, therefore, captured the threats that were pending from the combination of lockdown with the sudden stop of many economic activities. Notwithstanding isolating sense-making from meaning-making is reasonable for the ECB, the overall perception is that sense-making is connected to meaning-making. It is a sort of *ex-ante* legitimization of the monetary policy stance that the ECB was ready to implement when the accommodation of economic policy to the challenges of the pandemic crisis was at stake.

The ECB was prone to immediate action in the area of monetary policy. The monetary authority was not locked into member states' prolific reactions, because monetary policy is an exclusive competence of the central bank. The ECB was ready to move on without facing the hurdles of member states' activism, on the one hand. On the other hand, the ECB recognised how important it was to explain the macroeconomic consequences as to legitimise monetary policy decisions that were being considered.

Sense-making in the ECB was not limited to the early stage of COVID-19. Whenever circumstances changed (notably, new waves of the coronavirus and, hence, a different macroeconomic outlook), the monetary authority provided explanations that enabled policy-makers (at the EU and national levels), citizens and companies to realise how the context changed and how this impacted on the monetary policy stance.

3.1 Analysis and distribution of critical information

At the outset, the ECB delivered statistic data unveiling negative macroeconomic implications of COVID-19: for the first quarter of 2020, the expected GDP decline was somewhat in between 10 and 20 percent, while for the whole year a scenario of deep recession (GDP dropping around 12 percent) was to expect (Lane, 2020a). This recession was unprecedented. All macroeconomic indicators were falling substantially (consumption, employment, production, exports and imports, investment) (de Guindos, 2020). The recession was dubbed "highly unusual" (Lagarde, 2020b, p. 1). The pandemic crisis not only affected economic activity at large, but it also "(...) accelerated structural changes that will transform our lifestyles and our economies." (Lagarde, 2021a, p. 1) Remarkably, the ECB sent a message that left an open window to optimism amidst the catastrophe that was going on, which is consistent with the idea that crises also encompass their own opportunities. Right from the start, the monetary authority pointed out the need of policy coordination between monetary and fiscal policies (see below, sub-section on broader reform coalitions):

[a]s regards national governments, the immediate response of allowing automatic stabilisers to kick in and introducing discretionary support measures was correct in the midst of a deep recession. In countries with already limited fiscal space, however, the additional debt may give rise to debt sustainability issues in the future. (de Guindos, 2020, p. 3)

Yet, the ECB was apprehensive and did not hide from the public that immediate prospects were not gloomy. Uncertainty was blossoming and additional costs on consumer spending and business investment were growing as well. The ECB was aware that “(...) weak demand, continued supply constraints and ongoing social-distancing restrictions [were] hampering the normalisation of economic activity.” (Lane, 2020b, p. 1) In addition, a natural reaction of households was further depressing the economy, as they protected against uncertainty by resorting to precautionary savings (Lagarde, 2020a). Moreover, the impact on the economy was severe to the extent that structural changes were inevitable, considering the unprecedented challenges stemming from the pandemic (Schnabel, 2020b).

The ECB also pointed out inequalities (among and within countries) as a negative implication of COVID-19. In fact, member states

(...) that already exhibited low growth and limited fiscal space before the crisis have been affected most severely. As a consequence, the pandemic threatens to exacerbate existing cross-country differences. (...) Within countries, too, there are strong indications that pre-existing inequalities are being reinforced by the crisis. Lower-income individuals, those with lower levels of education as well as women and young people are affected the most. (Schnabel, 2020c, p. 1)

With the evolution of the pandemic, and notably the several waves of the virus and to their impact on economic policy adjustment, the ECB provided information that not only showed how economic recovery was slowed down and whether this entailed changes to the plans (Mersch, 2020a). Later, when it became clear that the first signs of economic recovery were underway, crucial information was delivered showing how the macroeconomic outlook was changing. The ECB warned how this economic recovery was atypical, as it was representative of “(...) rapid growth, but also to supply bottlenecks appearing unusually early in the economic cycle. It is also causing inflation to rebound quickly as the economy reopens.” (Lagarde, 2021b, p. 1)

3.2 Making sense of the crisis

The ECB also provided information about the cost of not acting. Central bankers' statements were not so many as in the analysis and distribution of critical information about the crisis. Perhaps the ECB was more concerned in vividly disclosing the expected costs of the crisis based on early statistical data and on estimations for the end of the first year of coronavirus as to build upon the legitimacy of the monetary policy stance. The ECB resorted to counterfactual scenarios (as it came to resort abundantly at a later stage, when statistical data for counterfactual scenarios became available). At the outset, it was only a “leap of faith”, without statistical substantiation, as it became evident that if the economic crisis triggered by the pandemic was not attended it “(...) would have put at risk the ECB's price stability mandate and endangered financial stability more broadly.” (Schnabel, 2020a, p. 1) For example, an early estimation of job losses pointed at more than one million (Panetta, 2020b, p. 1) Also, counterintuitive analysis lead one member of the Executive Committee to hold that if the Pandemic Emergency Purchase Programme (PEPP) was not created

*(...) we would **presumably** now be in the middle of a severe financial crisis with appalling consequences for the economy and employment in the euro area. Price and wage levels would probably have fallen significantly, which would have run counter to our price stability mandate. (Schnabel, 2020b, pp. 1-2) [Emphasis by the authors]*

4. THE EUROPEAN CENTRAL BANK AND MEANING-MAKING NARRATIVE (INSTRUMENTAL DIMENSION)

Right at the start of the crisis, the ECB started to build a narrative consistent with its intervention. In the first statement after the pandemic was recognised in the EU, the ECB warned that monetary policy decisions aimed at “(...) supporting firms and households in shouldering the substantial economic and social costs that this crisis would imply.” (Schnabel, 2020a, p. 1)

The main focus of the narrative dimension of the ECB was, however, based on the PEPP, maybe the most important input from the central bank to the economic policy mix with accommodative effects to the macroeconomic challenges of the pandemic. The ECB justified how buying member states’ public debt was crucial. It was instrumental to the centripetal role of fiscal policy (see below), as national governments were expected to resort actively to fiscal policy and, hence, growing public debt was expected. The intervention of the ECB stabilised the likely impact on the Eurozone yield curve and “interest rates (...) have declined even more strongly.” (Lane, 2020a, p. 3) The PEPP was anchored to two complimentary goals: market stabilisation and easing the monetary policy stance (Lane, 2020c). An additional advantage was flexibility, given the volatility of economic conditions following the uncertainty of the pandemic crisis (Lagarde, 2020b).

A few months into the programme, the ECB already emphasised how successful the first results were, since “(...) the evidence suggests that the policy package has stabilised markets, protected credit provision and supported the recovery.” (Lane, 2020c, p. 4) The success was striking because “(...) long-term government bond yields (...) [were] close to its lowest level since the outbreak of the global financial crisis. Low benchmark yields have in turn helped support credit growth for firms and households (...).” (Lagarde, 2020a, p. 3)

Overall, the ECB’s goal was to show that the intervention was based on “(...) a package of appropriate, proportionate and complementary measures.” (Mersch, 2020a, p. 2) From a legal point of view, the PEPP was critical to the fulfilment of the central bank’s mandate, thereby stressing the instrumental nature of the programme (Mersch, 2020b). Without the PEPP the EU would have to bear a larger disinflationary shock. The narrative of the ECB pointed out the necessity of the intervention to address the macroeconomic challenges of the pandemic crisis but also to ensure that the central bank’s mandate was not jeopardised. When signs of recovery were building up in the wake of the vaccination process, the ECB realised that the potential of the PEPP was that “(...) the more credible a backstop is, the less likely it is to be used (...).” (Panetta, 2022, p. 18), showing how efficient the mechanism was and its future potential as a dissuasive device against turbulence induced by market agents.

Counterfactual analysis was another ingredient of the narrative shaped by the ECB. Members of the Executive Committee engaged several times on counterfactual exercises that aimed at showing that the Eurozone would be worse off in the absence of the PEPP (and other monetary policy decisions that eased up liquidity difficulties that could have prevented banks from lending to companies). The following is a good example: “(...) euro area output would be 1.3 percentage points lower and the annual inflation rate would be 0.8 percentage points

lower by 2022 in cumulative terms” (Lane, 2020d, p. 3), and showing estimations are moderate and therefore they might underestimate the true impact, “[a] more realistic assumption for constructing counterfactual financial conditions is to recognise that, in the event of policy inaction, financial markets (...) would have gone into a tailspin, sending the economy into a meltdown” (Lane, 2020d, pp. 3-4).

Similarly (but without data coming from the simulation game), a comparison was established between two alternative avenues: one consistent with the choices of the ECB, and an alternative based on interest rate cuts only. The conclusion was that “(...) longer-term sovereign yields become virtually unresponsive to rate cuts in stressed conditions (...)” (Lane, 2020b, p. 13). Acting through interest rates cuts only would lag behind the efficiency of the policy choices of the ECB.

4.1 Helping people making informed crisis’ decisions (empowerment dimension)

Importantly, the rhetoric of the ECB also pointed to an efficient delivery of the message to the public. Monetary policy (and economic policy at large) is largely about designing solutions considering the context, the circumstances, the obstacles, and the social and political framework. It is fundamentally about implementing welfare-improving decisions. An important dimension is, therefore, empowering citizens and companies. Communication must be skilled so that the public understands the rationale of monetary policy decisions and the expected positive consequences they might entail.

The central bank wanted the public to understand that its input was essential to prevent a liquidity crisis. Moratoria, loan guarantees and capital relief were instrumental to companies’ diminished availability of capital, which in turn propelled the uninterrupted operation of economic activities and avoided insolvencies and massive unemployment (Lane, 2020d). The ECB focused on medium-term credit to the real economy, completing the measures that sought to avert a liquidity crisis (Lane, 2020a). Nevertheless, at some point, the monetary authority realised that a reinforcement of the PEPP was necessary, showing that events were flowing at an unprecedented speed, forcing economic policy-makers to incorporate. The decision to reinforce the PEPP was agreed in June and the ECB extended the timespan of the programme until June 2021 (de Guindos, 2020). It became clear that the ECB was committed to shelter economic activity and national governments’ fiscal policy as maximum as possible given that uncertainty about the evolution of the pandemic dominated the analysis and disturbed macroeconomic forecasts.

ECB’s communication with the public was prone to a psychological dimension. Indeed, it is especially in times of crisis that citizens are more sensitive to inequalities and supportive of economic policy measures that aim at addressing the underlying reasons of social inequality. The central bank stressed, more than once, how negative economic consequences of the pandemic crisis deserved special attention since social inequality was rising. Thus, the input of the ECB was justified also on grounds that

(...) it is the weakest in society who will benefit most from the ECB’s decisive intervention. Empirical studies show that it is above all people in poorer and less educated income groups who benefit from our monetary policy measures because their jobs are most at risk due to the crisis. (Schnabel, 2020b, p. 4)

Although savings increased during the most critical stages of the pandemic crisis, the ECB was aware of how unequal such higher rate of savings was, for a mismatch existed between younger households (they needed to resort to their savings to keep consumption patterns) and older, wealthier households (they were able to increase their savings, as they spend less than the youngest) (Panetta, 2021a).

The communication of the ECB was linked to prudential economic forecasts in the face of high uncertainty. The monetary authority not only recognised how contingent the adjustment was, but also that the priority was to contain economic damages, thereby avoiding that the “(...) exceptional downturn (...) does not turn into a more conventional recession that feeds on itself.” (Lagarde, 2020b) It is doubtful whether this message was consistent with building up the public’s confidence amidst the terrifying conditions of the pandemic crisis. Perhaps it was only the humble recognition that containing the downturn was not a minimalist reaction. In fact, at a later stage the ECB came back to the idea that “(...) macroeconomic policymakers should not bank on the most favourable scenario materialising. Their role is to ensure that the worst scenarios are ruled out.” (Panetta, 2021a, pp. 1-2) Caution was still paramount when the first signs of economic recovery were shedding light, as the ECB warned that worst-case scenarios should not be ruled out (Lagarde, 2021b).

When the pandemic crisis was finally weakening, the ECB emphasised how the challenge that overall economic policy faced bolstered an opportunity for a new paradigm of economic policy-making in the post-COVID-19 era. The message was to

(...) steer public and private investment towards the areas of the economy that will generate higher real incomes in the future, namely the green and digital sectors. Green investment is estimated to have a multiplier two to three times higher than non-green investment. The pandemic has already shifted activity in this direction, but we need to provide the financing and regulatory framework to help the economy adjust smoothly. (Lagarde, 2021c, p. 5)

At the same time, the crisis was an opportunity to complete the reform of the Eurozone, notably the Banking Union. The example of the accommodation to the pandemic crisis showed how the missing elements of the Banking Union should be added in order to reinforce the banking sector (de Guindos, 2022).

4.2 Backing up legitimacy (political dimension)

Several statements of members of the Executive Committee of the ECB stressed legitimacy issues. Growing criticisms on the weak democratic credentials of the ECB, backed up by absent accountability towards other institutions of the EU and by the lack of transparency, dictated the need to provide justifications of the monetary policy stance. The first communication right after the beginning of the pandemic is instructive, when the central bank stressed that “[s]wift and determined action was (...) needed to ensure that what had started as an economic and health crisis would not turn into a full-blown financial crisis, with self-fulfilling and destabilising price spirals and fire sales.” (Schnabel, 2020a, p. 1) Importantly, for the purposes of the public’s recognition of the input of the ECB, it was judged that the intervention was “necessary, suitable and proportionate (...) in order to ensure price stability in the euro area.” (Schnabel, 2020b, p. 1) Additionally, since the recession was exceptional and atypical, “(...) policymakers had to step in (...) to prevent an unjustified loss

of capital, jobs and incomes that would have deeply damaged our economic potential.” (Lagarde, 2021a, p. 2) In a nutshell, “[t]he extraordinary nature of the pandemic shock called for an equally extraordinary policy response from the ECB. (...) It was imperative to protect the economy from the risk of financial collapse” (Panetta, 2020a, p. 1).

As the results of the monetary policy stance became available and the mitigation of expected worse effects became noticeable, the ECB reinforced the legitimacy record by showing how monetary policy delivered: “(...) we have seen a measurable loosening in broad financial conditions since the adoption of our policy package introduced in response to the COVID-19 crisis”, (Lane, 2020b, p. 10) since “(...) the role of the ECB’s monetary policy measures as a backstop against adverse tail risks has been crucial.” (Lane, 2020b, p. 12) The ECB was self-laudatory again, since its contribution “vividly illustrated” how stability was preserved in the face of an adverse exogenous shock (Lane, 2020c, p. 1).

Another layer of political legitimacy comes from the comparison between the intervention of the ECB in the Eurozone crisis and in the pandemic crisis (Schnabel, 2020c). The monetary authority not only emphasised how proactive they were when faced with the pandemic crisis, but they also come to recognise, at a later stage, that they were reactive in the Eurozone crisis. The ECB resorted to output legitimacy by showing how the economy reacted so well to the package of monetary policy decisions approved by the monetary authority. By doing so, the ECB engaged on a comparison with the Eurozone crisis a couple of times (Panetta, 2020b). Legitimacy of the ECB’s intervention was made possible by the previous reform of the Eurozone, which also reinforced the political legitimacy of the Eurozone reform, by pointing out that

(...) we should not overlook the decisive role played by the EU financial sector in weathering the crisis. Our financial sector was more resilient than in the past, thanks to the progress we have made on deepening European Economic and Monetary Union and enhancing the EU’s regulatory and supervisory framework since the global financial crisis. (...) Banks had reinforced their buffers and the banking union allowed our single banking supervisor to respond decisively and uniformly, ensuring that banks continued to fund the real economy.” (de Guindos, 2020, p. 2)

The ECB extended the justification of monetary policy stance when economic recovery was underway. Forecasts available at that time showed how slow and incomplete economic recovery was (in terms of inflation and growth). This scenario asked for ongoing economic policy support “(...) until the output gap is closed and we see inflation sustainably back at 2%. For the ECB, this implies that we will have to maintain very favourable financing conditions well beyond the end of the pandemic period.” (Panetta, 2021b, p. 10)

Legitimacy came through the results of monetary policy accommodation. For this purpose, the ECB resorted once again to counterfactual exercises that stressed how macroeconomic conditions would deteriorate in the absence of such intervention:

(...) without our monetary policy measures, euro area output would be 1.8 percentage points lower and the annual inflation rate would be 1.2 percentage points lower by 2023 in cumulative terms. (...) [I]n the event of policy inaction, financial markets (...) would have gone into a tailspin, sending the economy into a meltdown. (Lane, 2022, pp. 15-16)

5. POLICY COMMUNICATION

The last analytical layer concerns the way policy decisions were communicated at four levels: (i) whether urgency for change was the template for the accommodation to COVID-19 pandemic's challenges; (ii) whether the ECB followed a non-incremental rationale that did not disrupt the *status quo*; (iii) whether the reaction to the pandemic crisis involved a broad coalition of economic policy-making actors, involving a commitment between the ECB and national governments; and (iv) whether the crisis softened existing reforms that, at some point, have stalled along the way (when new reform initiatives were perceived as not feasible). Of the four layers above mentioned, the only that does not fit with the position of the ECB is the latter.

5.1 Sense of urgency for change?

Early reactions of ECB officials showed some sense of urgency to handle the economic consequences of the pandemic crisis. Macroeconomic turbulence of an unprecedented type ticked the alarm of the ECB. Right at the outset, ECB statements were clear about the urgency of economic policy adjustment. The context was “(...) a significant negative shock to the inflation outlook, since the disinflationary pressures arising from greater economic slack are likely to outweigh any inflationary forces stemming from negative sectoral supply shocks.” (Lane, 2020c, p. 4) The ECB realised how deep deflation was likely to stall the economy for a long period of time, confirming the urgency of action. Later on, Panetta (2022, p. 17) remembered the “resolute response” of the ECB, remarking how the central bank acted “more decisively” (idem) when the economy was facing a deflationary shock when the pandemic crisis erupted. Similarly, the justification for the quick reaction of the ECB through the PEPP was based on a prophylactic approach that ought to avoid that a “(...) purely exogenous shock caused by the coronavirus would not exacerbate and deepen (...) heterogeneity through macro-financial channels, beyond the already wide-ranging economic and social repercussions that this crisis brings about.” (Schnabel, 2020a, p. 3)

5.2 Commitment to making non-incremental changes to the status quo

Our theoretical model includes a parameter that assesses to what extent a big leap forward was agreed as part of the adjustment plan to the pandemic crisis. In the case of the ECB, it does not make sense elaborating on this hypothesis, because the central bank and other institutions involved in the governance of the Eurozone had the opportunity to reap the benefits of the new governance structure following the reform of the Eurozone. Changes, in this context, were meaningful if they were not incremental, based on the legacy of the reform of the Eurozone. The ECB was keen in recognising this, since “[p]reviously tested instruments also meant that our decisions could be put in place much more swiftly (...)” (Schnabel, 2020a, p. 2)

An additional argument for gradual adjustment was based on the uncertainty that was still affecting macroeconomic forecasts and clouding the prospects of economic recovery. The ECB was aware that “(...) there is a case for the central bank to accompany the recovery with a light touch, taking moderate and careful steps in adjusting policy, so as not to suffocate the as yet incomplete recovery.” (Panetta, 2022, p. 1) [Emphasis by the authors]

5.3 Appeals to broader reform coalitions

This is an area where remarkable developments were registered for Eurozone governance. Until the pandemic crisis, the ECB and national governments acted as antagonistic actors, with several tensions between monetary and fiscal policies taking place. The U-turn was the creation of the Outright Monetary Transactions (OMT) programme in September 2012, when the central bank announced the intention to buy member states' public debt on the secondary market. Not only this was the U-turn for the Eurozone crisis, but it is also documented that national governments welcomed the intervention of the ECB since it helped national authorities to handle markets' pressures on public debt.

Macroeconomic challenges that emerged because of COVID-19 pandemic were an opportunity for close cooperation between the ECB and fiscal policy authorities. This was recognised by the ECB right at the outset. In fact, [Schnabel \(2020a, p. 6\)](#) warned that "(...) the recovery will depend on the right combination of monetary policy and effective fiscal and regulatory policy, both at national and at European level." The coalition was multidimensional, involving the EU and the national level and the institutions responsible for monetary and fiscal policies, but also bringing regulatory agencies into the cooperative game.

The extent to which cooperation was framed was explained in detail by the ECB. To start with, the issue of moral hazard (usually considered a threat by the central bank when incentives to fiscal policy prodigality are at stake) was downplayed. Considering the nature of the pandemic crisis, the ECB ruled out that active fiscal policy was an opportunity to overshadow future fiscal discipline ([Schnabel, 2020b](#)). Atypical economic crisis triggered by the pandemic required the complementarity between monetary policy and fiscal policy. It was not surprising that ECB officials asked national governments to step in and to resort to active fiscal policy, seizing the opportunity given by the adjusted monetary policy stance. For the ECB, "(...) the scale of the monetary policy adjustment required to neutralise the negative pandemic shock to inflation dynamics (...) depends on the extent of the fiscal support for the economic recovery." ([Lane, 2020c, p. 8](#)).

Fiscal policy was centripetal to economic policy adjustment as the ECB did not hesitate in acknowledging that "[f]iscal policy has to remain at the centre of the stabilisation effort (...)" ([Lagarde, 2020b, p. 4](#)) The role of monetary policy was to avoid crowding-out effects stemming from rising interest rates after national governments engaged in fiscal policy activism. On the multidimensional chessboard of coordination, the supranational level also played an important role. With the Next Generation EU (NGEU), the EU had the opportunity "(...) for the first time ever, to achieve genuine European fiscal stabilisation backed by common debt issuance. The ECB will continue net purchases under the PEPP (...)" ([Panetta, 2021a, p. 9](#)).

The ECB went beyond explaining the rationale of monetary-fiscal policies coordination by explicitly recognising how crucial was the input of fiscal policy to overcome negative economic implications of COVID-19. Words speak for themselves: "(...) it should be **recognised** that the extraordinary fiscal response has played a central role, with an estimated 2.5 percentage point positive contribution to 2020 euro area output" ([Lane, 2020b, pp. 12-13](#)) [Emphasis by the authors] and "[c]ontinued expansionary fiscal policies are vital to avoid excessive job shedding and support household incomes until the economic recovery is more robust. Today, confidence in the private sector rests to a very large extent on confidence in fiscal policies" ([Lagarde, 2020a, p. 3](#)).

The secondary role of the ECB was admitted by members of the Executive Committee. For example, [Panetta \(2020b\)](#) was aware that lower risk premia on member states' public debt was not an outcome of the PEPP alone, as the NGEU played a very important role as an input to the "(...) normalisation of risk premia." ([Schnabel, 2020c, p. 13](#)) Part of the explanation of the centripetal role of fiscal policy owes to the atypical nature of the pandemic crisis (its economic dimension), while another part relies on intrinsic, opposite characteristics of fiscal and monetary policies. While the one-size-fits-all monetary policy rules out flexibility to support some member states, fiscal policy is flexible and prone to adaptation to specific circumstances. For instance, [Lagarde \(2020b, p. 3\)](#) pointed out that

(...) fiscal policy can respond in a more targeted way to the parts of the economy affected by health restrictions. (...) [W]hile monetary policy can increase overall activity in this environment, it cannot support the specific sectors that would be most welfare-enhancing. Fiscal policies, on the other hand, can directly respond where help is most needed.

The targeted nature of fiscal policy explains why it was the leading policy on the accommodation to the pandemic crisis. Again, words are self-revealing of the position of the ECB, since the institution recognised "(...) a clear lead role for fiscal policy in driving overall demand and addressing sectoral asymmetries. This is even more the case under current conditions, since the effects of decisive and well-targeted fiscal action will likely prove to be stronger than usual." ([Lane, 2020d, p. 15](#))

The central bank provided a constructive assessment of the collaboration with national governments during the years of the pandemic crisis, as this experience showed that "(...) in response to a severe shock, simultaneous and ambitious policy actions by governments and central banks working in the same direction (...) can effectively complement each other." ([Lane, 2022, p. 19](#)) Lessons ought to be taken from the experience of the pandemic crisis for the future of the Eurozone governance, how synergies between the monetary authority and fiscal authorities suit well. Despite this being a constructive assessment, it is worth noting that the ECB formulated some recommendations for the future of fiscal policy in the Eurozone. On a statement that might be challenged on grounds of the separation of powers between the ECB and national governments, the central bank recommended that

(...) the scope of pandemic-related fiscal transfers will need to change from a blanket-based approach to a more targeted action plan. Fiscal policy will need to be surgical, meaning focused on those who have suffered particular hardship. (...) taking a medium-term perspective, fiscal policy will need to follow a rules-based framework that underpins both debt sustainability and macroeconomic stabilisation. ([Lagarde, 2021b, p. 6](#))

6. CONCLUSIONS

The input of the ECB to COVID-19 crisis management was based on a rhetoric that fits with many of the features of the literature on crisis management, notably how a narrative is framed to support policy action. Right from the start, the ECB was keen in explaining how different this crisis was from the point of view of macroeconomic challenges (sense-making). This time, the ECB was proactive right from the start of the crisis. The approval of the PEPP was coupled with several statements from members of the Executive Board providing a sense

of justification that was intended to capture public support (meaning-making). The ECB resorted frequently to counterfactual exercises that reinforced the appropriateness and the efficiency of the monetary policy stance. The strategy was geared towards embedded legitimacy. This is consistent with the overarching tenets of the literature on crisis management and bears a special meaning in the context of the several doubts raised by the literature about the legitimacy and democratic credentials of the ECB.

The plea for reform also fits with the theoretical model mentioned in section 1. The difference is that the monetary authority did not wait for the end of the crisis to recommend a broad coalition with national governments to reform the economic policy mix. The challenges of the economic crisis that followed the pandemic required a centripetal role for fiscal policy. This was recognised by the ECB, thereby phasing out a traditional reluctance to fiscal profligacy that always marked its position. Instead of recommending post-crisis reform (as it is encapsulated by the literature on crisis management), the ECB was open-minded about fiscal activism and the leading role of fiscal policy.

In doing so, the ECB framed its own narrative of the crisis that fits with two out of three possibilities raised by Boin and 't Hart (2022) model: the *crisis-learning-adaptation script*, since the monetary authority learned from past mistakes (in the context of the Eurozone crisis) and acted swiftly; and the *crisis-exploitation-reform script*, although it does not seem that lining up as one of the “institutional winners” of the accommodation to the challenges of the pandemic ranked among the priorities of the ECB. Yet, the central bank was pivotal to the broad coalition that materialised the reform of economic policy in the face of the pandemic’s challenges.

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Notes

- ¹ For a more detailed analysis of the management of the pandemic crisis by the EU during its first year see, for example, Vila Maior and Camisã (2022).



From Euro to Digital Euro: A Survey of Literature

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Abstract: Over the last decade, discussions about digital currencies have attracted an increasing number of researchers, financial institutions, and central banks. Later, the central bank digital currency became a hot topic, with major central banks investigating and even designing pilot projects in the field. More recently, the European Central Bank has become increasingly interested in a digital euro. The paper investigates the relevant literature on digital currencies, focusing on the digital euro, particularly from the European Central Bank's perspective, and analyses the implications for monetary policy, the payment system, the banking system, and related areas. Drawing on a bibliometric analysis based on the Web of Science database, using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses protocol and VOSviewer software, the paper sheds light on the main trends, concerns, and areas of investigation related to the possible adoption of a digital euro.

Keywords: euro; digital euro; European Central Bank; central bank digital currency; bibliometric analysis.

JEL classification: E42; E58; N24.

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1. INTRODUCTION

Following the creation of the first cryptocurrency, Bitcoin, in 2008, others began modifying its open-source code in order to create their own currencies. Therefore, all crypto coins issued after Bitcoin are classified as altcoins. Well-known alternatives include Ethereum, Solana, Dogecoin, and Cardano; nonetheless, Bitcoin continues to dominate as the market leader, accounting for 60% of global market capitalization. Because of the significant volatility of these digital currencies, it appeared the stablecoins, i.e., new types of cryptocurrencies designed to maintain a steady value, pegged to an existing (fiat) currency, like the US dollar. Later, were developed alternatives such as commodity-backed stablecoins (collateralized with precious metals - PAXG PAX Gold), crypto-backed (based on a reserve of other cryptocurrencies, like MakerDAO's DAI), or algorithm-backed stablecoins (collateralized by smart contracts that react to the supply and demand of the market, like Terra – UST).

According to www.coingecko.com, the global cryptocurrency market capitalization exceeded 3 trillion USD in 2025, with 18,415 cryptocurrencies tracked across 1,437 exchanges. In this context, more than a decade ago, central banks started to investigate the idea of a central bank digital currency. The international landscape is quite diverse in the field. While most central banks are interested in developing a Central Bank Digital Currency (CBDC), the practicalities (i.e., technical approaches) differ, as do the time frames for potential adoption.

In the USA, in early 2025, President Donald Trump issued an executive order on digital financial technologies titled “Strengthening American Leadership in Digital Financial Technology”¹. While recognizing the digital assets industry role in innovation and economic development of the US, a potential digital dollar was no longer under consideration: “taking measures to protect Americans from the risks of Central Bank Digital Currencies (CBDCs), which threaten the stability of the financial system, individual privacy, and the sovereignty of the United States, including by prohibiting the establishment, issuance, circulation, and use of a CBDC within the jurisdiction of the United States.” In addition, in July 2025, the “GENIUS Act” (Guiding and Establishing National Innovation for US Stablecoins Act), created the first comprehensive regulatory framework for payment stablecoins in the US. More recently, the South African Central Bank stated that there is no strong immediate need for a retail CBDC, though deploying one is technically feasible ([SARB, 2025](#)).

The European Central Bank (ECB) initiated discussions on the possibility of introducing a digital version of the euro in October 2020, nearly twenty years after the establishment of the single currency. At that moment, the literature as well as pilot projects on central bank digital currencies had already evolved. In its report ([European Central Bank, 2020](#)), the institution emphasizes that “a digital euro would create synergies with private payment solutions and contribute to a more innovative, competitive and resilient European payment system.” The artisan of the report, the High-Level Task Force on Central Bank Digital Currency (HLTF-CBDC) was established in January 2020 under the aegis of the Governing Council of the European Central Bank, gathering experts from the ECB and the 19 national central banks of the euro area at the time. After one year, the ECB initiated the investigation phase regarding the possible introduction of a digital euro, which took place from October 2021 to October 2023. From November 2023 to October 2025, the digital euro was in its preparation phase. It is expected that EU lawmakers adopt the regulation during 2026, and this will make possible the first issue of the digital euro in the course of 2029. According to the [European Central Bank \(2025\)](#), “the digital euro would be an electronic means of payment available free of charge for anyone to use”.

The primary objective of this paper is to examine the evolution of research in the field of the digital euro, uncover the most influential authors and journals, outline the research topics explored, and detect research gaps to propose future research avenues. According to Bradford's law (Bradford, 1934), a core set of scientific journals accounts for a substantial share of the literature in a specific domain. Within the bibliometric framework, this allows the reader to concentrate on the most relevant and influential journals in the field. Because bibliometrics can effectively link publications, authors or journals, identify research trends, and generate maps of published research (Zupic and Čater, 2015), it is currently employed across various fields of research and is gaining popularity in economics and business studies (Bota-Avram, 2023).

As a result, in the first phase of our study, we employed a bibliometric approach, using data retrieved from Web of Science for the period 2018 to 2025. This approach provided a comprehensive overview of research dynamics and trends within the field. In the second phase, we used the VOSviewer software to analyze the co-occurrence of keywords and visualize the resulting networks, thereby identifying dominant topics and emerging trends in the research. In the third step, the main papers in the field were discussed, organized by the main research directions concerning the digital euro.

The remainder of the paper is organized as follows: Section 2 presents the data and the methodology, Section 3 outlines the Results and discussion, and Section 4 concludes the study, highlights its limitations, and proposes future research directions.

2. DATA AND METHODOLOGY

This article provides a systematic literature review focused on the digital euro. A systematic literature review is a methodologically rigorous approach to reviewing research results (Kitchenham *et al.*, 2009), that can enhance the quality, replicability, reliability, and validity of the reviews (Xiao and Watson, 2017) and enables a comprehensive understanding of existing research in a specific field by analyzing and synthesizing empirical evidence from previous studies to address general research questions (Salas-Pilco and Yang, 2022).

In the initial query, following the approach of Cotugno *et al.* (2024), we search for documents that contain the terms “digital euro” or “central bank digital currency” in the keywords, title, or summary, and retrieve 1052 documents. The following inclusion criteria were used to select articles from the database, resulting a total of 316 documents: publication date starting between 2018 and 2025; published in English, Spanish, French, or Italian; published in a peer-reviewed journal indexed in the Social Science Citation Index (SSCI)²; journals fell in one of the following categories: Economics, Business Finance, Law, Computer science Information systems, Business, Management, Communication, Environment sciences, Multidisciplinary sciences, Information science, Telecommunications, Environment studies, Ecology, Mathematics interdisciplinary applications, Computer science artificial intelligence, Computer science software engineering, Social issues, and Demography.

Bibliographic information on the 316 documents was exported from Web of Science for data analysis. The data stored for analysis included the full record available, i.e., article title, article type, language, author(s) names, author institutional affiliations, keywords, abstract, number of citations, journal name, publisher name and address, publication year, volume, issue number, pages, and a list of cited references.

To provide an initial overview of the main research topics based on keywords, VOSviewer 1.6.20, created by van Eck and Waltman (2010), was employed to analyze the

co-occurrence of keywords and link them via clusters. Co-word analysis is a content investigation that reveals connections between concepts that co-occur in the selected documents' titles, keywords or abstracts (Zupic and Čater, 2015); it can also be used to forecast future research in the field (Donthu *et al.*, 2021).

When extracting terms from text (titles, keywords, and abstracts), VOSviewer calculates a relevance score to filter out general terms. Prior bibliometric research emphasizes that there is no universally accepted standard for setting minimum occurrence thresholds in co-word analysis; instead, thresholds should be adjusted according to dataset size, the novelty of the field under investigation, and analytical objectives. Thus, for instance, Khan *et al.* (2022) used a minimum threshold of two for the occurrences of a particular keyword to be included in the analysis, Prodan *et al.* (2024) used a frequency of 5, while Cicea and Marinescu (2021) used a threshold of 100.

For the keyword co-occurrence analysis based on all keywords (author keywords and Keywords Plus), a minimum threshold of six occurrences was applied, meaning that it appeared more than six times in the Web of Science (WoS) core collection database. This threshold was chosen to balance thematic coverage and network interpretability within a medium-sized dataset of 316 articles, in line with established bibliometric guidelines (Cotugno *et al.*, 2024).

Of the 1437 keywords, only 54 met the threshold. A keyword co-occurrence network reveals specific associations between authors' provided keywords; it refers to the statistical correlations between keywords that appear in the same document. The proximity of keywords on the map indicates greater relevance. Closely positioned keywords form clusters that define central research issues (Huang *et al.*, 2020). The results are presented in Figure no. 1.

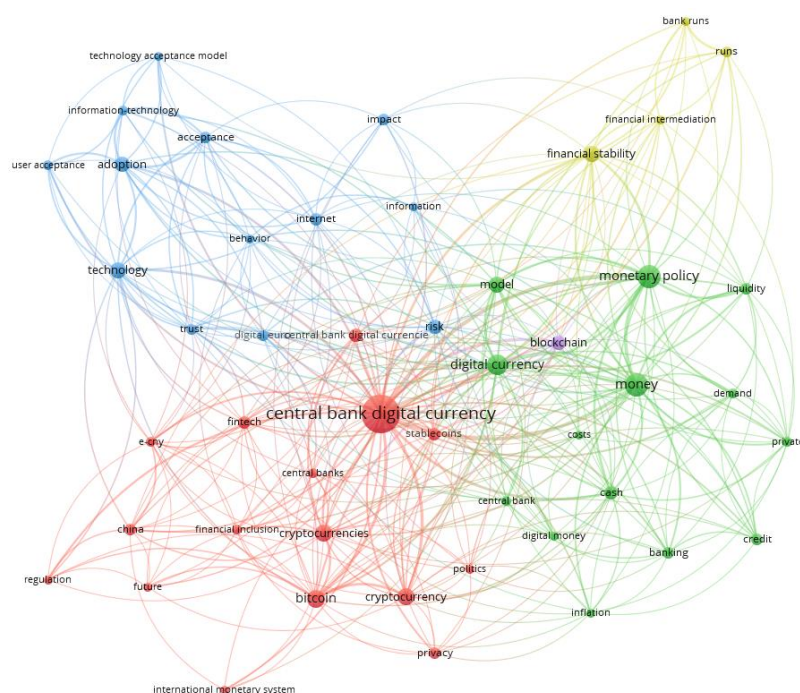


Figure no. 1 – Keyword co-occurrence network visualization using VOSviewer identified in articles addressing issues related to central bank digital currencies, including the digital euro

The author keywords co-occurrence analysis provides valuable insights into the primary themes that have been extensively examined in the field under investigation (Zupic and Čater, 2015). When examining the network visualizations generated in VOSviewer, we need to keep in mind that the node size reflects the frequency of the keyword, and as a result, larger nodes correspond to higher keyword occurrence, representing the number of times each keyword appears. Similarly, each color denotes a thematic cluster, with nodes and links within a cluster illustrating the topics covered and the relationships among those topics. Links between nodes represent the co-occurrence of keywords, indicating instances in which keywords appear together, while the link thickness indicates the frequency of keyword co-occurrence; i.e., thicker links denote a higher number of co-occurrences between keywords. All these helps us to identify the main research clusters.

As one might expect, the term “central bank digital currency” appears at the center, connected to terms such as “digital currency”, “bitcoin”, “cryptocurrencies”, or “stablecoins”. Key themes identified include “monetary policy”, “financial stability”, “financial intermediation”, “technology” and “fintech”, “adoption”, “(user) acceptance”, and “trust”. Additional keywords indicating areas of concern include “liquidity”, “risk”, “trust”, “inflation”, or “bank runs”.

A more focused representation, specifically concerning the keyword “digital euro”, is provided in the Figure no. 2.

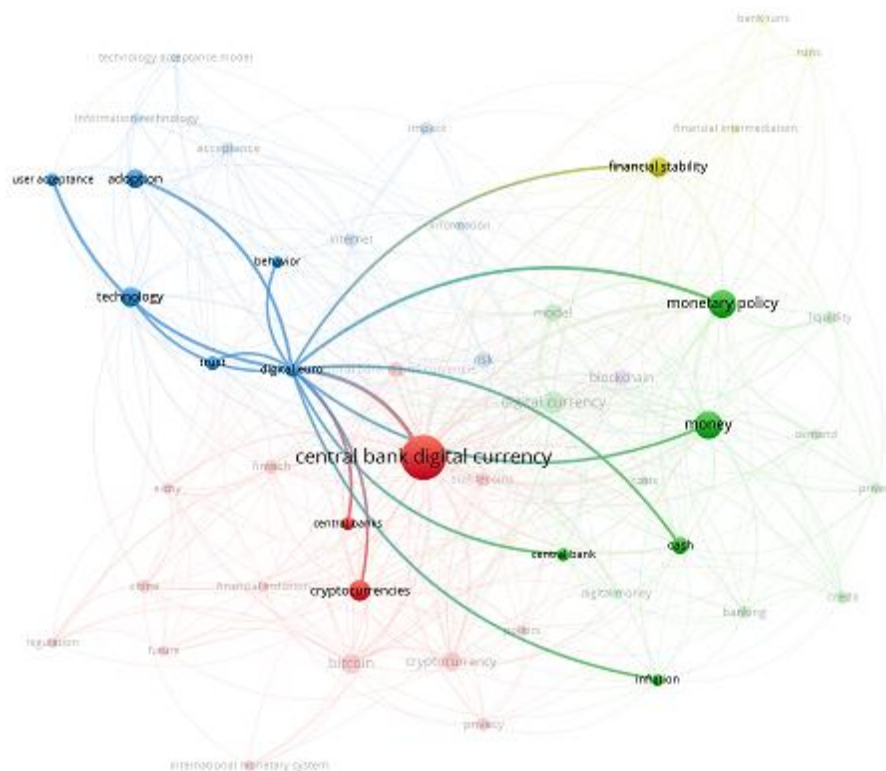


Figure no. 2 – Main connections between keywords centered on the digital euro - network visualization using VOSviewer

Figure no. 2 suggests the main connections between the “digital euro” and the “central bank digital currency”, but also “central bank”, “monetary policy”, “financial stability”, “inflation”, “technology”, “adoption”, and “acceptance”.

To focus on a more specific research area, an additional query was conducted in the Web of Science Core Collection using the keywords “digital euro” and “European Central Bank” or “ECB,” resulting in 40 papers. These were refined by “Type” (Article), reducing the number to 33, and then by “Language” (English), leaving 27 papers. To enhance clarity prior to using VOSviewer, the abbreviation “ECB” was replaced with “European Central Bank,” and “CBDC” was replaced with “Central Bank Digital Currency”. The results are presented in Figure no. 3.

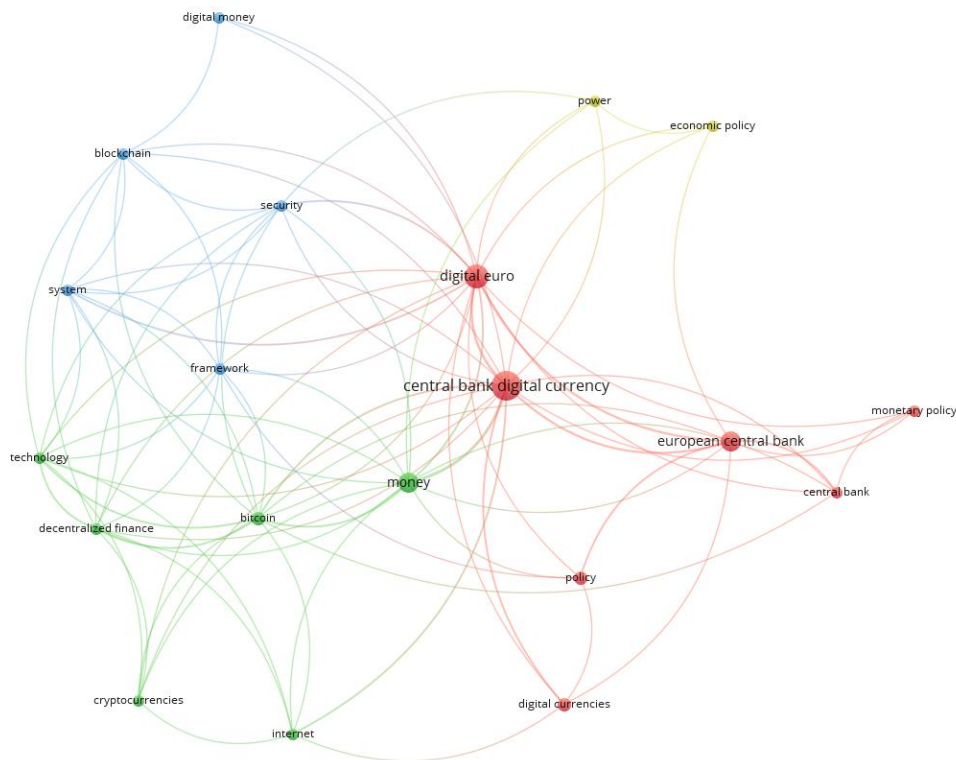


Figure no. 3 – Keywords network visualization for “digital euro” and “European Central Bank”, generated with VOSviewer

Three primary clusters are identified. The first cluster links the “digital euro” with “central bank digital currency”, the “European Central Bank”, “monetary policy”, and “digital currencies”. The second cluster connects “digital euro” with “digital money”, “blockchain”, “security”, “frameworks”, and “systems”. The third cluster associates “digital euro” with “money”, “Bitcoin”, “decentralized finance”, “technology”, “cryptocurrencies”, as well as the “Internet”. Additionally, a less prominent cluster relates “digital euro” to “power” and “economic policy”.

3. RESULTS AND DISCUSSION

At this stage, top-cited review papers on central bank digital currencies were surveyed to identify the primary topics and research areas, in order to connect them with the main research directions concerning the digital euro. The central bank digital currency is a complex and challenging topic that has attracted increasing scholarly interest. In the literature, we identified a large number of studies on central bank digital currencies, and the most important aspect to highlight is that this number increased significantly over the last six years (2020-2025). The primary research themes in the CBDC literature (Ozili, 2023) include: definitions of CBDCs; the design of CBDCs; CBDCs adoption and development; CBDCs and monetary policy; CBDCs and the functions and objectives of central banks; CBDCs and government bonds; CBDCs and commercial banks, with a focus on the impact of CBDCs on commercial banks' profitability; CBDCs and financial inclusion; CBDCs and macroeconomic and financial stability; CBDCs opportunities and challenges. To enable a systematic comparison of the main themes examined in relation to central bank digital currencies and those addressed in the context of the digital euro, the topics were aligned, where possible, to cover the same broad categories.

The introduction of a digital euro could significantly change the financial landscape and public access to money. As a result, the digital euro project raised questions among academics, first regarding the concept of the digital euro. There is agreement on the fact that digital euro as a central bank digital currency is a form of central bank money offered in digital form for use by citizens and businesses for their retail payments (Scarcella, 2021), accomplishing its functions as a medium of exchange and as a store of value; moreover, a digital euro must be a liability of the ECB and within the control of the Eurosystem (Jozipovic *et al.*, 2022). In addition, both studies examined the implications of adopting a European CBDC from a tax policy perspective. The introduction of the digital euro will increase tax compliance (Jozipovic *et al.*, 2022) and may reduce tax evasion and fraud by making transactions traceable (Scarcella, 2021). Grünewald *et al.* (2021) argue that the digital euro issued by the Eurosystem, which can be used by the public in daily life, would be a digital equivalent of euro banknotes.

In the literature, we have identified several motivations for introducing the digital euro. Ozili (2023) highlighted the motivations for issuing a central bank digital currency and noted that a CBDC can improve the conduct of monetary policy, enhance the efficiency of digital payments, and increase financial inclusion. For the digital euro, the literature emphasized its role to "enhance strategic sovereignty" and "ensure Europe's independence in managing its financial systems" (Benlemlih *et al.*, 2024), being "a matter of national security" (Warren, 2023), even more in the context of current geopolitical tensions (Westermeier, 2024), which require "the protection of the strategic autonomy of the retail payment system in Europe" (Quaglia and Verdun, 2025). A digital euro can reduce Europe's dependence on non-European payment providers and strengthen resilience during geopolitical uncertainty (Westermeier, 2024). The digital euro will address the consequences of a decline in cash (Maté and Brizar, 2024), meeting future digital payment needs and ensuring payments continuity during crisis (Westermeier, 2024). Additional benefits are enabling offline payments, improving cross-border payments, supporting the central bank's objectives of maintaining monetary and financial stability, and facilitating smoother transactions in a fragmented EU market (Oehler-Sincai, 2022; Duță and Oprea, 2023; Benlemlih *et al.*, 2024).

Another strand of literature was interested in digital euro's design features, specifically value-based versus account-based, wholesale versus retail-oriented, interest-bearing versus non-interest-bearing (Nabilou, 2020). An important characteristic of the design highlighted in the literature is that it would allow access for those currently unbanked (Mooij, 2023). To achieve this, a centralized system seems feasible for operating the digital euro, which would facilitate peer-to-peer payments and high-volume transactions (Mooij, 2023; Westermeier, 2024). Westermeier (2024) underlined an important feature of CBDCs, which is also true for the digital euro: it is not simply issued; it is designed. Design is important because it determines how digital currency can be used and how it enables and disables financial relations. In this context, the architecture of the digital euro infrastructure becomes important. Between a one-tier model, in which the central bank handles all payments and provides services to end users, and a two-tier model or a hybrid CBDC model, the ECB prefers a hybrid model in which the private sector intermediates the digital euro.

The adoption and development of the digital euro is another major research theme addressed in the literature. The adoption of a digital currency by the ECB and the national central banks of the Eurosystem is considered part of European security efforts (Westermeier, 2024). Grünewald *et al.* (2021) and Jožipović *et al.* (2022) focused on the legislative framework required by the adoption of the digital euro. They tried to clarify whether the Eurosystem is exclusively competent to issue a digital euro. If digital euro is seen as "banknotes", they argue, based on Article 128(2) of the Treaty on the Functioning of the European Union (TFEU) and considering the need to preserve the singleness of the euro, that the Eurosystem's competence to issue a digital euro is necessarily exclusive. Jožipović *et al.* (2022) focused particularly on the protection of the user's privacy (anonymity). Depending on the mechanism of transactions, based on an online or offline system, users could have a lower, respectively a higher level of privacy. But the digital euro might not allow for full anonymity in electronic payments due to regulatory policies, particularly related to anti-money laundering.

The literature has identified the potential risks associated with introducing a digital euro that need to be considered when designing a digital currency. Thus, ensuring user privacy is one of the challenges for the digital euro, as highlighted in the literature. Scarcella (2021) raised concerns about data protection, considering that a digital euro could allow the monitoring of each transaction involving this type of payment. Pelagidis and Kostika (2022) pointed out that privacy is "the most important concern for both citizens and professionals". Security issues, usability across the euro area, the absence of additional costs, and offline usability represent other concerns raised by the adoption of the digital euro. Scarcella (2021) also considers digital divide concerns and shows that it can arise primarily in relation to the level of connectivity and digital literacy.

Despite the challenges posed by a digital euro, this project of the ECB is supported by the opportunities it could create. A digital euro could increase financial inclusion (Mnohohitnei *et al.*, 2021; Buldas *et al.*, 2022) and could support macroeconomic and financial stability (Nabilou, 2020; Mnohohitnei *et al.*, 2021). In their study, Mnohohitnei *et al.* (2021) demonstrated that a euro-denominated CBDC in Central and Eastern European countries could support financial stability by accelerating the adoption of digital payments, improving anti-money laundering, and thus strengthening banks' ability to finance the economy. The empirical analysis conducted on non-Euro CEE countries (Romania, Hungary, Czech Republic, and Poland) revealed that these countries would benefit the most from the introduction of a digital euro.

Regarding the impact of the digital euro on bank profitability, the results are mixed. [Bellia and Calès \(2025\)](#) conducted an investigation for the period 2007-2021 on 398 banks operating in the euro area to assess the potential impact of introducing a digital euro. Using quantile regressions, they obtained that the adoption of a digital euro can reduce the profitability of banks, especially for large banks and for small banks that mostly rely on deposits as a source of funding, and if CBDC substitutes the deposits. Contrary to their results, [Mnohoghitei et al. \(2021\)](#) found that the adoption of a digital euro would have a smaller effect on bank profitability than a change in interest rates.

Moving to the macroeconomic level of the implications of implementing a digital euro, it is crucial to examine the literature investigating the effects of introducing the digital euro on the functions and objectives of the ECB. It is clear that the European Central Bank will assume the role of the architect ([Donnelly, 2025](#)), constructing a financial system that uses digital currency in addition to existing forms of money (cash, banknotes, etc.). However, there are also opinions that engaging in a digital currency project may affect the ECB's traditional mandate and core functions, thereby undermining its objectives of preserving price stability and promoting financial stability ([Quaglia and Verdun, 2025](#)). This is sustained also by [Grünwald et al. \(2021\)](#), who emphasized how issuing a digital euro would help achieve two key policy objectives: 1. a digital euro would help satisfy the continuing need for a form of public money that exhibits the unique features of cash; 2. a digital euro would offer an alternative to the use of "stablecoins" for European retail payments, thereby forestalling massive migration into private digital currencies. Therefore, a digital euro could contribute to the monetary transmission mechanism and thus to the ECB's control over monetary policy.

With reference to the ECB monetary policy, the Treaty on the Functioning of the European Union (TFEU) mandated the Eurosystem to maintain price stability. The objective of the ECB's monetary policy is to keep price stability, but, in the case of a digital currency, [Zellweger-Gutknecht et al. \(2021\)](#) explained that neither cash nor a digital euro can simultaneously be used as instruments in themselves to maintain price stability. [van Egmond and de Vries \(2024\)](#) evaluate the Eurozone's financial system and recommend reforms to improve stability and price control. They specifically propose implementing a fully central bank digital currency to stabilize the system. [Pirgmann and Wawrosz \(2024\)](#) examine the potential effects of the digital euro on the ECB's monetary policy flexibility, the effective lower bound, and negative interest rate policies. Using both theoretical modeling and surveys among EU citizens, they conclude that the implementation of a digital euro may result in more constrained on the negative interest rate policies.

In addition to widely discussed topics, several less-explored areas concerning central bank digital currencies, including the digital euro, warrant further investigation. Such areas include CBDC cross-border interoperability and related benefits ([Khawaja, 2025](#)), CBDC and competition between currencies ([Mayer, 2019](#); [Au, 2025](#)); the effects on bank competition ([Bellia and Calès, 2025](#); [Haan and Amtenbrink, 2025](#)), the connection between CBDC and climate change (specifically energy targets) ([Mooij, 2022](#)), and the influence of CBDC on tax policy ([Scarcella, 2021](#); [Jozipovic et al., 2022](#)). Notably, only a limited number of studies have examined the relationship between the digital euro and financial markets ([Pelagidis and Kostika, 2022](#)).

The impact of the digital euro on financial integration within the European Union remains largely unexplored in the existing literature. [Lane \(2025\)](#), a member of the European Central Bank executive board, suggests that the digital euro could enhance financial

integration by unifying the currently fragmented markets. Though in the political discourse of ECB staff the potential contribution of a digital currency to the financial integration in the euro area is mentioned, there is a lack of both theoretical and empirical studies on this topic. In the context of ongoing digitalization and geopolitical tensions, the digital euro may represent a strategic response to these transformations of the financial system and support the advancement of the financial integration.

While the majority of research papers are theoretical, a few empirical studies have also been conducted (Mnohohitnei *et al.*, 2021; Pelagidis and Kostika, 2022; Maté and Brizar, 2024; Au, 2025; Bellia and Calès, 2025). The empirical works include proposals for introducing the digital euro in Central and European Countries (Mnohohitnei *et al.*, 2021); provided evidence (Pelagidis and Kostika, 2022) on the existence of cointegration between selected cryptocurrencies (Bitcoin, Ethereum and XRP), stablecoins (Tether) and traditional financial assets (Dow Jones Industrial Average, S&P500, Eurostoxx 50, FTSE 100 Index and the MSCI World Equity Index; the EUR/USD exchange rate); analyzed the trends and determinants of cash usage in eight non-euro zone European Union countries between 2013 and 2021 to offer arguments that support the European Central Bank plans for introduction of digital euro, as a central bank digital currency, issued for the general public (Maté and Brizar, 2024). Additional studies have used content analysis of ECB documents related to crypto-assets and the digital euro, to illustrate the evolution of the ECB's position, shifting from hostile attitude to neutrality and eventually to cooptation in a period when the public had interest and positive sentiment toward cryptocurrencies (Au, 2025). Furthermore, quantile regressions have been employed to estimate the potential effects of introducing a CBDC in the European context (Bellia and Calès, 2025).

4. CONCLUSIONS

This study provides a systematic examination of the literature focusing on the digital euro, highlighting its potential implications for payment system efficiency, macroeconomic and financial stability, and financial inclusion in the euro area. According to the research, a well-designed digital euro could complement cash and existing electronic payment instruments, and strengthen the resilience and autonomy of the European monetary system in an increasingly digitalized world. At the same time, the investigation underscores critical challenges for the digital euro project, related to privacy protection, supporting financial intermediation, with a possible impact on the banking industry. The successful implementation of the digital euro project will depend on careful policy calibration, a strong technological infrastructure, and close cooperation between the European Central Bank, the national central banks (Eurosystem), and financial institutions.

The publications examined in this study were obtained from WoS, and the information was thoroughly and objectively examined. However, certain limitations of this study are still unavoidable. Only a subset of the new research papers that are added to the WoS can be indexed in the core database, specifically the Social Science Citation Index in this case. Additionally, papers written in languages other than English, French, Spanish, or Italian were excluded.

Identifying avenues for future research is essential in academic studies. The scope of analysis could be broadened to include Scopus indexed papers, as well as those from the Web of Science that are listed in the Science Citation Index Expanded, Emerging Sources Citation Index, Conference Proceedings Citation Index, or Book Citation Index – Social Sciences &

Humanities. Within the literature, particularly regarding the design as a research theme, there is no consensus on the optimal design of the digital euro, indicating a need for further investigation. The predominance of theoretical studies in the literature on the digital euro underscores the necessity for empirical studies to more thoroughly examine its effects, thereby helping to fill the gap in the literature. In the context of the European Union, future research could focus on the impact of the digital euro on financial integration and its potential to enhance integration.

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Notes

¹ <https://www.whitehouse.gov/presidential-actions/2025/01/strengthening-american-leadership-in-digital-financial-technology/>.

² As Zupic and Čater (2015) note, the Social Science Citation Index is by far the most common source of bibliographic data.



European Union Law and Governance in Times of Technological and Political Turmoil

Marycruz Arcos*

Abstract: Over the last 25 years, the EU and its environment have undergone many changes. The digital transition is perhaps the cross-cutting objective that introduces the most changes in the EU's achievements, affecting all (or most) of them. On the occasion of the 25th anniversary of the entry into force of the euro, we propose some reflections on the possibility and necessity of creating a digital euro. For more than 15 years bitcoins have existed in the global market, and not only sovereign states such as China, but also large platforms such as Facebook have created their own tokens. The European Commission is activating the necessary regulatory framework so that the single market can be digital without altering its essence. But with respect to the single currency, the issuance of a Digital Euro, under the supervision of the European Central Bank, must be surrounded by safeguards that allow it to act also in the digital market while complying with the basic principles of the European integration process. If we take too long to have it in place or the result is a regulation that is too much of a guarantor, we run the risk that the players, also in the European market, will opt for the use of other digital currencies that are more agile but also opaquer. Since the end of 2023, the European Central Bank has been dealing with these issues, and hopefully by the end of this year 2025 a proposal will be published that will allow operation in the efficient market but with respect for data protection and the EU's financial architecture. From 2026 onwards we have a long way to discover with the use of Digital Euro.

Keywords: Digital Euro; Digital transition legal framework; competitiveness; future of European autonomy.

JEL classification: F15; O33.

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1. INTRODUCTION

Twenty-five years ago, when Economic and Monetary Union came into force in 1999, as agreed in the Treaty on European Union signed in Maastricht in 1992, the scenario and the rules of the game we were working with were substantially different from those we have today.

At that time, the EU consisted of only 12 Member States, the main objective was to achieve the internal market envisaged in 1957 but not achieved until 1 January 1993, the EU's powers were structured between the pillar of integration (the Community) and other forms of cooperation, the European Parliament was making its first advances in legislative power, the balance of power was different and, consequently, the response in EU law also had to be different. At least the objectives remain the same (now set out in Article 3 of the Treaty on European Union) and the main instrument available to the EU to achieve them is its ability to create rules. The EU stands out as a regulatory power, and for this reason, this reflection on the legal framework 25 years after the introduction of the euro is necessary.

It is not the purpose of these pages to examine all the regulatory changes that have taken place in the EU over the last 25 years, but it is at least necessary to look back at the start of the previous institutional cycle (2019-2024) in order to understand the new scenarios that require a regulatory response from the EU so that it can continue to be useful and achieve its objectives.

When, in 2019, the newly elected European Commission, led by Ursula Von der Leyen, presented its work plan for the legislative term, it was designed around six guidelines, all of which are essential in themselves and at the same time interlinked¹.

The EU's success would be insufficient if its work were skewed towards promoting one objective or the other. The digital transition is inseparable from the green transition (the twin transitions), both of which will enable us to have an economy that works for people and promotes the "European way of life", which cannot be achieved without the democratic principle. All of this will lead to a stronger Union in the world, bringing about the much-desired "Brussels effect".

It should also be remembered that, shortly after taking office (March 2020), the EU and the entire world were surprised by an unexpected pandemic, COVID-19, to which the Von der Leyen Commission's excellent work programme provided imaginative solutions. And just as it was overcoming the devastation caused by the pandemic, it found itself facing war on the EU's doorstep, with Russia's invasion of Ukrainian territory calling into question European values themselves.

However, despite all these adversities, the European Commission has been able to maintain its work programme during this period and even strengthen it with imaginative solutions that facilitate the achievement of the planned objectives.

Although each of these priorities is essential and cannot be understood without the others, for the purposes of this paper, we will focus on the digital transition and the European regulations that have generated it.

2. THE DIGITAL TRANSITION AS A FRAMEWORK

There are undoubtedly many reasons why the EU has chosen this priority, but one of the most important is undoubtedly its cross-cutting nature. Digital technology is changing people's lives ([Anderton *et al.*, 2021](#)).

The EU's digital strategy aims to make this transformation work for people and businesses, while helping to achieve its target of a climate-neutral Europe by 2050.

For this reason, one of the Commission's vice-presidencies is in charge of this objective, managed by one of the Commissioners with the greatest experience and weight in the system, the Danish Margareten Vestager, even without quite off her traditional competition portfolio.

To start the work, one of the first initiatives adopted was declare the Decade 20-30 become the delay we have to transform the European Society and presented in 2021 the document "Digital Compass: the European way for the Digital Decade"².

This political impetus calls for an intensification of the work begun in the past decade to accelerate Europe's digital transformation – building on progress towards a fully functioning, but safeguarding the European autonomy (Codagnone *et al.*, 2021).

This Communication is part of a set of actions to strengthen the EU's open strategic autonomy and resilience. These include inter alia the Communication on fostering openness, strength and resilience of the European economic and financial system, the Trade Policy Review, and the upcoming updated industrial strategy for Europe and the 2021 Strategic Foresight Report³.

Digital Single Market, and intensifying actions defined in the strategy for Shaping Europe's digital future.

The strategy set out a programme of policy reform, which started with the Data Governance Act, the Digital Services Act, the Digital Markets Act and the Cybersecurity Strategy.

Moreover, a number of Union budget instruments support the investments necessary for the digital transition, including the Cohesion programmes, the Technical Support Instrument, and the Digital Europe Programme. The agreement by the co-legislators that a minimum of 20% of the Recovery and Resilience Facility should support the digital transition and will help underpin this reform agenda, with funding to build Europe's Digital Decade on solid foundations (Del Pozo Martín, 2022).

In order to afford the success for the Digital transition in the EU System, we can identify four cardinal points, or absolutely needs in the European scenario⁴.

1 – All the citizen must be able to digitalize the current life. And to be this objective possible, a digitally skilled population and highly skilled digital professionals, are essential.

2 – Secure and performant sustainable digital infrastructures. Europe will only achieve digital leadership by building it on a sustainable digital infrastructure regarding connectivity, microelectronics and the ability to process vast data.

3 – Digital transformation of businesses. By 2030, more than just enablers, digital technologies including 5G, the Internet of Things, edge computing, Artificial Intelligence, robotics and augmented reality will be at the core of new products, new manufacturing processes and new business models based on fair sharing of data in the data economy. Mainly in five subjects (ecosystem) Manufacturing, Health, Construction, Agriculture and Mobility.

4 – Digitalisation of public services democratic life and public services online will be fully accessible for everyone, including persons with disabilities, and benefit from a best-in-class digital environment providing for easy-to-use, efficient and personalised services and pools with high security and privacy standards. From e-vote to more efficient and improve public services.

3. THE LEGAL FRAMEWORK AND THE MAIN LEGISLATIVE INSTRUMENTS

The objective was clearly established but the main instrument for the EU is always the legal framework.

The digital principles are rooted in primary EU law, notably the Treaty on European Union (TEU), the Treaty on the Functioning of the European Union (TFEU), the Charter of Fundamental Rights and the case-law of the Court of Justice of the European Union, as well as in secondary legislation.

But it was necessary a digital policy programme to be adopted by co-decision of European Parliament and Council, setting the focus on delivery and constant commitment towards the common digital goals. And completed by Multi-Country Projects and International Partnerships, because the digital world is global, not only European.

Every year, the Commission publishes a report on the State of the Digital Decade, providing a comprehensive overview of the progress made in the quest to achieve the digital objectives and targets set for 2030 by the Digital Decade Policy Programme (DDPP)⁵.

These principles and these legal bases are coming to be developed by European regulations (even if the press call it laws).

1 – Digital Market Act Regulation⁶ - (EU) 2022/1925

This one is the most omni comprehensive and, for this reason, it was the first to be adopted.

It regulates the behaviour of gatekeeper services and 17 platforms are directly supervised by the Commission. If something is banned in the physical world, it must also be banned in the online market ([Cabral et al., 2021](#)).

But also, the Digital Markets Act (DMA) empowers the Commission to adopt implementing acts laying down detailed arrangements on issues identified in Article 46 of the DMA. The Commission intends to adopt an implementing regulation laying down rules concerning procedural aspects in April 23.

2 – Digital Services Act Regulation⁷ - (EU) 2022/2065

Digital services include a large category of online services, from simple websites to internet infrastructure services and online platforms. Digital services impact our lives in many different ways. We use them to communicate with each other, shop, order food, find information, watch films, listen to music and more.

Digital services also make it easier for companies to trade across borders and access new markets.

The rules specified in the DSA primarily concern online intermediaries and platforms. For example, online marketplaces, social networks, content-sharing platforms, app stores, and online travel and accommodation platforms.

The objective of DSA is: Protecting us from dangerous goods and illegal content, helping us tackle cyber bullying, limiting targeted advertising, helping us to understand and challenge content moderation decisions and Simplifying terms and conditions. In this way, we must be aware for the ethical, legal and social implications ([Turillazzi et al., 2023](#)).

3 – Artificial Intelligence Act Reg. (EU)⁸ 2024/1689, entry in force last August.

While most AI systems pose limited to no risk and can contribute to solving many societal challenges, certain AI systems create risks that we must address to avoid undesirable outcomes. The AI Act ensures that Europeans can trust what AI has to offer.

All AI systems considered a clear threat to the safety, livelihoods and rights of people are banned, from social scoring by governments to toys using voice assistance that encourages dangerous behaviour.

The AI Act introduces transparency obligations for all general-purpose AI models to enable a better understanding of these models and additional risk management obligations for very capable and impactful models. These additional obligations include self-assessment and mitigation of systemic risks, reporting of serious incidents, conducting test and model evaluations, as well as cybersecurity requirements.

The European Centre for Algorithmic Transparency (ECAT)⁹ have been established to supervise all this legal framework and its correct application under the EU law and their principles, as the most authoritative academic opinion claim some years ago ([Hacker, 2018](#)).

4. THE CHALLENGE OF COMPETITIVENESS

All this framework let us to build a safe, ethical and transparent online space, but also competitive?

The Draghi Report presented in September 24 draw the challenge of Europe nowadays:

We will not be able to become, at once, a leader in new technologies, a beacon of climate responsibility and an independent player on the world stage. We will not be able to finance our social model and this is our main root. We will have to scale back some, if not all, of our ambitions will lead to disaster.

The only way to meet this challenge is to grow and become more productive, preserving our values of equity and social inclusion. The only way for Europe to become more productive is to undergo radical change.

A new industrial strategy for Europe will not succeed without parallel changes to the institutional setup and functioning of the EU:

- Establishing a new “Competitiveness Coordination Framework” to foster EU-wide coordination in priority areas, replacing other overlapping coordination instruments. – “EU Competitiveness Priorities” – which would be formulated and adopted by the European Council.

- The Competitiveness Coordination Framework would be divided into Competitiveness Action Plans for each strategic priority, with well-defined objectives, governance, and financing.

- The regulatory burden on European companies is high and continues to grow, but the EU lacks a common methodology to assess it. The Commission has been working for years to reduce the “stock” and “flow” of regulation under the Better Regulation agenda. However, this effort has had limited impact so far.

Acting in to increase the competitiveness is urgently to achieve the prosperity and not lose the “Brussels Effect” ([Bradford, 2020](#)). Regarding this backstage, one of the measures to consider is about the possibilities of Euro Digital.

5. THE CHALLENGE OF THE DIGITAL EURO

Cryptocurrencies appeared as a consequence of the 2008 financial crisis in which States had to borrow to save bankruptcies and assume the risks of rescuing many financial institutions that had made significant profits in the past.

In 2008 bitcoin was launched with the support of blockchain technology with the advantage of transparency and direct access, since anyone can access their account with a code, consult it and verify the transactions made, without the need for intervention by banks or governments.

Thus, cryptocurrencies are a means of payment self-managed by the users, but they have the great disadvantage of being simply software without being backed by any asset. Its value depends solely on market fluctuations.

Nevertheless, a significant number of tokens based on this technology have emerged since 2017. While not strictly currencies, these crypto assets provide access to specific goods and services. They are more akin to game tokens than financial assets.

But in 2019 Facebook announces its intention to create a stable cryptocurrency, backed by the assets of a large group of multinationals and whose dissemination facilitated by the social network would make it competitive with currencies minted by States, or in our case by the European Central Bank. This would call into question the monetary sovereignty of the States and also compliance with a good set of essential values, such as competition or data protection, which are protected by current regulations but which would not be applicable to this figure (Bradford, 2023).

In response to this announcement, from the EU, which was outlining an Action Plan on financial technology (European Commission, 2018), presents a package of measures on digital finance COM (2020) 591 (European Commission, 2020a) and COM (2020) 592 (European Commission, 2020b) for the regulation of the crypto assets market both for retail payments and for the financial sector in Europe, with the horizon that by 2024 the set of proposed Regulations and Directives could be in force.

The regulatory reality of this proposal varies greatly between Member States. In some cases, it is regulated using different criteria; in others, it is not regulated at all, which facilitates fraudulent transactions using this payment method.

While financial transactions, even in the digital market, are regulated by state or European regulations, the traceability of these transactions is clear even if it involves significant bureaucratic burdens, thus preventing speculation and the financing of prohibited, even criminal, activities. Since the means of payment are not controlled by public intervention, the ease with which these undesirable activities can find a way to operate is obvious.

Thus, China created the digital yuan to avoid anonymous transactions with private cryptocurrencies not controllable by the State (Ferrari and Mehl, 2021). Or in Europe, although outside the euro zone, the Central Bank of Sweden, faced with the decline in the use of cash in private transactions, also created the “e-krona” which is distributed to individuals through authorized entities (Franco, 2021).

Therefore, the necessary response is the creation of digital currencies by the public authorities, i.e., by the Central Banks that guarantee the stability of these assets, as is done with cash or electronic money. These would be payment tokens, like bitcoin tokens, which could be purchased by individuals at central banks using secure software. These currencies would compete with private cryptocurrencies.

With this system, digital currency transactions would be traceable, as they would be validated by central banks, but instant transactions would be more efficient and individuals would have easier access to the digital economy. However, this system could be detrimental to private banking institutions, which would have an impact on their liquidity by reducing the deposits of individuals who decide to exchange them for digital currency accounts at the

Central Banks, which would have to assume supervisory functions in the fight against money laundering and financing of prohibited activities, which until now have been carried out by commercial banks, since they are the ones working with individuals. Given that this task would place a heavy workload on central banks, models are also being considered in which, once tokens have been issued as digital currencies by central banks, their distribution to individuals is done through financial intermediaries such as private banks, allowing them to compete with each other and thus not deactivate the banking market, which would be more in line with competition policy, an essential value in EU law.

Against this background, the response of the European Central Bank to create a Digital Euro that is in line with the European monetary system seems indispensable ([Hinojosa Martínez, 2021](#)).

One of the advantages of digital currency, such as the possibility of making instant payments, within the framework of the European monetary system, is well established. There is a payment system called TARGET¹⁰.

That allows financial operators in the EU to make instant payments and transfers at any time with a totally secure tool, even the instant payment system is also established among individuals, although always through financial institutions that verify them.

But many of the eurozone's central banks were considering the option of launching digital currencies, to discourage the use of private cryptocurrencies, but which would also be a clear competitor to the euro.

The ECB is competent to issue Digital Euro in accordance with the Treaty, since article 127 TFEU empowers it to define and implement EU monetary policy, as well as the exclusive right to authorise the issuance of "banknotes", considering the Digital Euro to be a type of banknote.

In wholesale transactions it would function as a kind of clearing house for payments between intermediary institutions, but legal support for individuals to open Digital Euro accounts directly at the ECB is less evident.

The ECB published in 2020 a report on the desirability of issuing digital euros, which was subject to public consultation in 2021, leading to the resulting report ([European Central Bank, 2020](#)).

It is clear that when the Treaty defining the tasks of the ECB and the ESCB was drafted in 1991, the concept of a digital currency was not even on the horizon, but fortunately the possibility of a teleological interpretation to meet the EU's objectives, as provided for in Article 352 TFEU, would make it possible. In any case, the rules of EU law that are indispensable to implement it must not neglect essential EU values such as privacy and security.

The preparatory phase of the project started in November 2023 and is laying the groundwork for the possible issuance of a digital euro. It includes the finalization of the operating rules for the digital euro scheme and the selection of vendors that could develop the necessary platform and infrastructure. The preparation phase involves numerous tests and experiments, as well as regular exchanges with the public and other stakeholders to ensure that the digital euro meets the needs of users and the requirements of the Eurosystem.

A digital euro would be a digital means of retail payment issued by the Eurosystem - which consists of the European Central Bank (ECB) and the national central banks of the euro area - available to all in all retail payment scenarios, throughout the euro area. It would complement cash, offering users greater freedom of choice by providing a secure and accessible payment solution.

A digital euro would also strengthen Europe's monetary sovereignty and reduce our dependence on the large non-European private payment providers that currently dominate the European landscape.

Following the completion of the research phase on the digital euro initiated by the Eurosystem in 2021, on 18 October 2023 the ECB's Governing Council approved the launch of a two-year preparation phase.

The aim of the preparation phase, which will last until October 31, 2025, is to build on the results of the previous phase and lay the groundwork for the possible issuance of a digital euro. The aim is to finalize the regulatory code for the digital euro (defining a single set of rules applicable to digital euro payments) and to select vendors that could develop a platform and infrastructure for the digital euro. As part of this phase, the Eurosystem is also conducting further tests and experiments and deepening the technical aspects of the digital euro, such as its offline functionality and a testing and deployment plan.

By the end of 2025, the Governing Council will decide whether to move to the next phase of preparations for a digital euro. The Governing Council will only consider a decision on the issuance of a digital euro once the EU legislative process has been completed. The ECB will then consider any necessary adjustments to the digital euro's design resulting from the legislative deliberations.

Once all the technical aspects are outlined from the ECB it will be necessary to implement the Digital Euro the legal framework in accordance.

The Commission, as a driver of integration, in the environment of an increasingly digitalized economy in accordance with the strategic lines of the Commission 19/24, repeating the coherence with the rest of the monetary policy as reflected in Articles 127 to 133 TFEU, as well as with the rest of the European policies in particular with the Digital Markets Regulation¹¹, presented in 2023 a proposal for a Regulation with legal basis in Article 133 TFEU, on which it had been working since 2021.

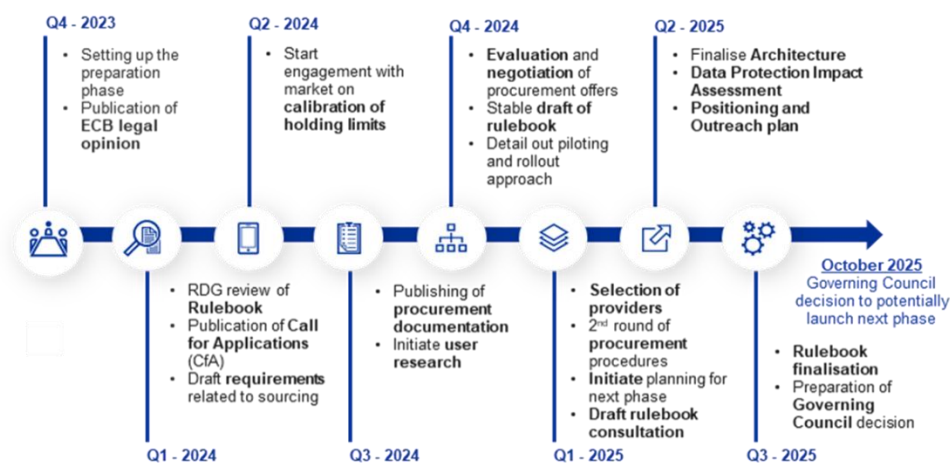


Figure no. 1 – Progress on the preparation phase of a digital euro

Source: https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202412.es.html

This interesting proposal for a regulation comprising 85 recitals and 42 articles initiates the legislative procedure. In the context of the necessary inter-institutional collaboration for its proper development, on 23 September 2024, Executive Board member Piero Cipollone participated in a public discussion on the digital euro at the European Parliament's Economic and Monetary Affairs Committee meeting, where he presented the package of proposals on the single currency¹².

In the presentation of the package of proposals, the aim is for the digital euro to be a means of payment that can be used in any situation of everyday life by any citizen and, like cash payments, must enjoy the same protection in all parts of the euro area.

To this end, it is essential that the legislative framework reflects all the technical requirements on which the Governing Council of the European Central Bank is working.

The four key aspects that have been worked on in the preparatory phase have focused on ensuring the stability of the financial system; and providing a higher level of privacy when making digital payments.

1 – Search for potential suppliers to develop the platform and infrastructure of a digital euro. Since the beginning of 2024, the selection process was initiated to find potential suppliers that could develop the platform and infrastructure of a digital euro. The potential suppliers provide the technical options available and this, in a way, delimits the decisions to be taken.

Calls for applications to sign framework agreements were published, but in order not to question the autonomy and security of the digital euro, only legal entities that have their registered office in the EU and are controlled by entities such as these or EU nationals may be suppliers of the platforms.

2 – It is necessary to develop rules for the operation of the digital euro.

There is currently no universally accepted European digital means of payment throughout the euro zone. This forces Europeans - consumers, merchants and banks - to resort to international card solutions for their daily payment activities, which have doubled their fees in the last five years.

The intention is that all eurozone citizens should be able to make and receive payments in digital euros regardless of their intermediary or country of origin, as is currently the case with cash. This would reduce dependence on non-European operators, while fostering competition among European operators.

The operating rules will define a single set of rules, standards and procedures for the digital euro that will ensure their harmonious application and avoid partitioning of the single market.

3 – These advances that will allow the use of the Digital Euro cannot fail to guarantee the stability of the financial system.

The use of digital payments is a growing reality. Since central bank money is currently only available in physical form (cash), if a digital euro is not offered, the risk is that the European Central Bank will be excluded from payments.

Some safeguards are foreseen for this:

– Since digital euro holdings will not be remunerated by the ECB, as is the case with cash, they will not compete with savings deposits of private institutions, which could always offer higher returns to retain deposits.

– Secondly, there will be limits to the amount of digital euros that individuals can hold. For their part, businesses and public sector organizations would be able to receive and process payments in digital euros, but would not be able to hold them.

– And third, users would be able to pay with digital euros online without needing to load their wallets first, simply by linking their digital euro account to their payment bank account. This would allow them to make and receive online payments even when they exceed their digital euro funds or holding limit.

In this way, the Digital Euro as a means of payment and not as a form of investment will not hinder the role of financial intermediaries and the banking business.

4 – Need to offer a higher level of privacy in digital payments.

So far, the highest level of privacy is found in cash payments, and citizens will continue to be able to use it as a means of payment. To a large extent this same level of privacy is reflected in the Commission's proposal for the use of Digital Euro, compliant with the Data Protection Regulation and supervised by independent data protection authorities will monitor compliance with EU data protection regulations. Although the Digital Euro foresees its off-line use, which would be absolutely respectful of privacy, the proposed Regulation also includes provisions to avoid its use for money laundering (art.37).

But money, both digital and cash, is based on trust, and for Digital Euro to effectively meet all these expectations, it is essential that it is strongly supported and that it is provided with an appropriate legal framework. The rulebook is essential to ensure that digital euro payments are accepted throughout the euro area, in the same way as cash payments, and will work in a harmonised manner. The draft digital euro rulebook will be sufficiently flexible to accommodate any future adjustments and will be updated in accordance with the outcome of the digital euro legislative process.

At the time of going to press, two reports had been submitted by the European Central Bank's working group. After the first phase, which started in November 2023, on June 24 and after the second phase, on December 2, 2024, the second report was presented, which allows us to confirm that the work is progressing in the right direction and at a good pace to be completed by the end of 2025 with the decision of the Council and the Parliament¹³.

6. CONCLUSION

Thus, on the 25th anniversary of the euro and Monetary Union, considering all the progress achieved, we can conclude that the establishment of the digital euro is a necessity, but we still need to wait for the digital euro to become a reality with all the necessary guarantees in accordance with the European legal framework.

We need a rigorous legal framework but at the same time with sufficient flexibility to adapt to the new realities that cannot leave the Digital Euro stranded in the face of what private cryptocurrencies would facilitate. In this sense, the proposed Regulation itself provides for reports from the Commission one year after the issuance of the first Digital Euro and then every three years. We have already wasted too much time, considering that digital currencies began to be used in practice more than five years ago, and there are still three more years to go before our regulation, which is still incomplete, comes into force. However, it is important not to delay it any further, while always respecting the European regulatory framework ([Arnal et al., 2024](#)).

The real challenge is to ensure that the digital euro, created with these characteristics that respect the European model, will be used by market participants. It would therefore be of great interest if the preparatory work being carried out by the European Central Bank took into account the involvement of these agents in the use of the digital euro, as otherwise it would mean leaving the European system out of the real world. It will be necessary to create a sufficiently agile and flexible system, but without losing sight of the European values and principles that give us security and credibility.

Undoubtedly, the creation of the Digital Euro would have many advantages both internally and externally. It would facilitate not only the intra-European payment system, thus avoiding the use of cryptocurrencies pernicious to the European way of life and also, in the global market it would strengthen “European monetary sovereignty”, making it more attractive both as a means of payment, but also as a store of value. The establishment of the Digital Euro will allow the EU to achieve its objectives, to respect its values and also to be more competitive and efficient in the global world, but probably we will arrive on late. For the moment, just wait the October 2025 Governing Council decision for further progress in the roadmap.

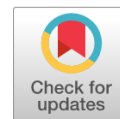
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Notes

- ¹ See: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024_en.
- ² See: <https://eufordigital.eu/library/2030-digital-compass-the-european-way-for-the-digital-decade/>.
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- ⁶ See: https://digital-markets-act.ec.europa.eu/index_en.
- ⁷ See: <https://digital-strategy.ec.europa.eu/en/policies/digital-services-act-package>.
- ⁸ See: <https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai>.
- ⁹ See: https://algorithmic-transparency.ec.europa.eu/index_en.
- ¹⁰ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02022O0912-20231120>.
- ¹¹ See: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023PC0369>.
- ¹² See: <https://www.ecb.europa.eu/press/key/date/2024/html/ecb.sp240923~cccba29006.en.html>.
- ¹³ See: https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202406.en.html and https://www.ecb.europa.eu/euro/digital_euro/progress/html/ecb.deprp202412.en.html.



“There is no Alternative” for Southern European National Parties: Analysing Programmatic Convergence on Economic and Monetary Policy Issues in Euroelection Manifestos

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Abstract: Drawing on a framework combining Europeanization with a critical political economy approach, this research aims to assess if the Eurozone crisis induced an ideological and programmatic convergence of national parties in four Southern European member states: Greece, Italy, Portugal and Spain. Based on the quantitative analysis of parties’ ideological classification and of Euroelection Manifestos’ content from 1999 to 2019, the research hypothesizes that the Economic and Monetary Union (EMU) political economy and, particularly, the Eurozone crisis effects on Southern Europe created a “no alternative” policy for national governments, thus impelling parties to ideologically and programmatically converge with the supranational preferences for the EMU’s future. Conclusions indicate that the Eurozone crisis triggered a consensual turn to the left of national party systems, and a convergence on demands for Keynesian policies within the EMU. This reveals a contradiction between the political aspirations of national parties and their representative role, and their executive political commitments during the austerity-led governmental approach in the crisis.

Keywords: Eurozone Debt crisis; Economic and Monetary Union; European elections; Europeanization; Eurozone; Southern Europe.

JEL classification: P16; P52.

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1. INTRODUCTION

The Eurozone sovereign debt crisis posed significant economic and political challenges to the European Union (EU), testing the Economic and Monetary Union (EMU) governance and sparking reactions at the national level that are consensually considered in the literature to have ignited a growing wave of Euroscepticism, nationalism and populism across the Union (Kriesi, 2016; Zeitlin *et al.*, 2020). Some member states, dealing with severe bailout programmes, had to apply strict austerity measures and face massive economic downturns, leading to shaky social outcomes, including high unemployment rates and the fragilization of the welfare state, particularly in Southern Europe.

The EU addressed the crisis with conjunctural financial emergency actions, through bailouts, involving also third parties like the International Monetary Fund (IMF), and structural measures aiming at reinforcing the original economic rationale of the Eurozone economic governance, deepening the financial discipline principles over national politics, and strengthening the coordination, surveillance and punishing mechanisms within the EMU. The crisis further revealed the asymmetrical financial model created by the EMU and consolidated a regional cleavage between creditor and debtor states (Laffan, 2016), re-opening the old debate on the EMU's political economy architecture.

The financial, economic and social effects of the crisis, and the member states governments difficulties in addressing the risk of bankruptcy, originated a political turmoil at the national level, leading to increased volatility in party systems and unprecedented shifts in citizens' support to the EU (Hutter and Grande, 2014; Otjes and Katsanidou, 2017). An unexpected raise in the politicization of the EU in member states occurred, evidencing that the "permissive consensus" era had definitely come to an end, with the EU becoming a hot topic in domestic politics. Several studies document a significant crisis' effect on national party systems in terms of electoral volatility, particularly noticeable on the emergence and growth of nationalist, populist and Eurosceptic parties, and on the decrease of representativeness of mainstream parties (Taggart and Szczerbiak, 2018; Kneuer, 2019; Szczerbiak and Taggart, 2024).

Scientific literature on the crisis impact on party competition patterns has focused mainly on expert survey studies, election results and citizens preferences. While some studies point to the enhancement of party ideology in these patterns, others suggest the prominence of the integration cleavage – pro- or anti-EU – to shape policy preferences towards the crisis (Otjes and Katsanidou, 2017), thus smoothing the role of ideology. However, given the diverse national contexts, it becomes difficult to standardize EU crisis' effects in national party systems. Whereas most research is based on political parties' conjunctural preferences towards emergency responses to the crisis, it remains absent from the literature reflections on how national parties programmatically project the crisis's effects in terms of policy options regarding the future of the EMU. This study contributes to fill this gap in the literature. Based on an interdisciplinary theoretical framework, it intends to analyse the influence of the Eurozone debt crisis in parties' programmes, concerning preferences for the future of EMU, and to assess if there is an ideological convergence over the issue, particularly among mainstream national parties.

The following research-question structures the analysis: is there an ideological convergence of national parties following the Eurozone debt crisis in Southern European countries? In case a convergence is identifiable, the research further aims to understand

whether it occurs at the left or at the right of the political spectrum, and if there is a trend for uniformization of supranational preferences concerning EU policy on economic and monetary affairs. Theoretical assumptions of political parties' Europeanization studies, complemented with a critical political economy approach to the study of the EMU, frame the analysis of national parties' Euromanifestos in four Southern European countries: Greece, Italy, Spain and Portugal. It is contended that, as the Eurozone debt crisis imposed a "no alternative" policy for governments struggling with eminent bankruptcy, when projecting policy preferences for the future of the EMU, parties are also confronted with no alternative, thus advocating for the opposite policies applied or supported during bailouts. This makes a relevant contribution to debates on the edification of a transnational cleavage of national parties in the EU, based, within the scope of the current research, in a structural regional fragmentation between creditors/high grow rates/surplus economies *versus* debtors/low growth rates/deficit economies.

To do so, the chapter is structured as follows: [Section 2](#) contextualizes the Eurozone debt crisis in Southern Europe, focusing on the four members states under study. The following sections articulate the interdisciplinary theoretical premises of the research, integrating a critical political economy approach to the EMU – [Section 3](#) – with political science literature on the Europeanization of political parties – [Section 4](#) –, in order to sustain the argument on how the political economy rationale of the EMU enables an ideological uniformization of policy preferences at the national level. [Section 5](#) explains the research methodology, whereas [Section 6](#) presents and discusses the results of data analysis. The paper finishes with the review of the most relevant conclusions of the analysis and suggestions for further research ([Section 7](#)).

2. THE EUROZONE SOVEREIGN DEBT CRISIS IN SOUTHERN EUROPE

The Eurozone Debt crisis (2010-2013) was preceded and triggered by the 2007-2009 global financial downturn, sparked off by the collapse of the subprime mortgage market in the United States starting from 2007. Since the inception of the Eurozone many member states failed to comply with the requirements foreseen in the Maastricht Treaty, and later institutionalized in the Stability and Growth Pact (SGP), namely a fiscal deficit below 3% of Gross Domestic Product (GDP) and total government debt no higher than 60% of GDP. This resulted mainly from the lack of real punitive enforcement mechanisms that together with an apparently stable international financial environment provided little incentives for member states to abide by the Maastricht guidelines. As a consequence, the Eurozone' integrity and the sustainability of member states public finances was mostly assured by the so-called 'market discipline hypothesis', meaning that it was up to sovereign bond investors to either benefit or punish fiscal performances through interest rates and funds availability ([Chang and Leblond, 2015](#)).

When the crisis hit the Eurozone, effects were particularly notorious in Southern Europe, fragilized by a declining competitiveness resulting from manifold challenges associated with their integration in the EMU ([Hopkin, 2012](#)). This includes the limitation of the range of policies national governments could resort to in a context of growing heterogeneity in the EU, despite increased macroeconomic stability, along with the EMU institutional flaws and development around neoliberal principles based on market efficiency in a broader context of international financialization, which 'was always destined to be vulnerable' ([Parker and Tsarouhas, 2018](#); [Filoso et al., 2021](#)). Delays and insufficiencies in the implementation of

public policies, also compromised the resilience of Southern Europe to economic and financial crisis (Da Gonçalves Gonçalves *et al.*, 2021). In this context, although crisis in Portugal, Spain, Italy and Greece was due to different long-term internal structural factors (Quaglia and Royo, 2015) – from a burst housing bubble and severe banking crisis in Spain, to slow economic growth in Portugal and Italy, and fiscal imbalances in Greece – they all posed a threat to the survival of the euro. As a response, the EU and the IMF promised significant loans to support Eurozone economies in exchange of a wide range of economic reforms.

This response was provided against a backdrop of growing Europessimism, highlighting the trumping of sovereignty and national-security considerations over institutional reinforcement and the forging of a common vision at the EU level, understood as an explanatory variable of the EMU poor functioning, the limited success of European integration without meaningful – fiscal – federalization, and concerns over EU growing neoliberalization's impact on the Welfare State, democracy and the distribution of power inside the Union. Regarding the latter, market pressure to implement bailouts in the EU periphery on terms dictated by Northern creditor countries further strengthened perceptions about the unbalanced structure of the EMU. This was aggravated by the fact that the EU opted to respond to the crisis by stipulating significant reduction in public spending and increase in taxation resulting in prosperity contraction in the intervened countries, contrary to the traditional Keynesian response of counter-cyclical government economic stimulus (Glencross, 2014).

The process was similar in all countries. It started with signs of financial stress accompanied by a growth in public debt and deficit alarming markets and resulting in a spike in borrowing costs. This then led to the raise of taxes and cutting in public expenditure, which further depressed economic activities and increased even more borrowing costs. As the latter became unsustainable, EU institutions intervened by lending bailout money upon the promise of deficit reducing through further fiscal austerity. By 2012, Portugal, Spain, Italy and Greece had all reached the final stage of what Paul Krugman labelled as a 'death spiral' (Hopkin, 2012). Although Greece and Portugal were the first to be bailed out, respectively in 2010 and 2011, it was the situation in Spain and Italy that posed higher risks. The third and fourth largest economies in the Eurozone were simultaneously seen as 'too big to fail' and 'too big to bail', since the dimension of their debts could trigger the financial collapse of the Eurozone and bailout costs would require greater resources than those allocated to small periphery economies (Hopkin, 2012). Because of this, Spain was granted loans to provide financial assistance for its banking system, in 2012, but Italy never received a bailout, although it also had to implement strict financial austerity measures and structural reforms (Parker and Tsarouhas, 2018).

Faced with this dilemma, in the short-term, the EU opted for measures preventing a collapse of the Eurozone relying on the EMU's neoliberal paradigm. This was not without economic and political costs for Southern European countries, but also for the Eurozone and the Union as a whole, noticeable in the spread of a crisis of confidence, the acknowledgement of the limits of the European Central Bank (ECB) response mechanisms and a clear division between Eurozone governments regarding the best course of action (Hopkin, 2012). Furthermore, it added to the existing asymmetries in terms of competitiveness in the Eurozone, a fundamental divide between creditor or surplus states and debtor or deficit states, also referred to as the division between resilient and non-resilient countries or core and periphery states, the latter including Greece, Italy, Portugal and Spain (Yener *et al.*, 2017; Parker and Tsarouhas, 2018).

The political risks associated with the Eurozone debt crisis led EU leaders to pressure for more technocratic governments, capable of implementing austerity measures under the strict supervision of European and international institutions. This is closely associated with the resignation of the then Prime Ministers José Socrates (Socialist Party – PS); Silvio Berlusconi (Pole of Freedom – PdL) and George Papandreu (Panhellenic Socialist Movement – PASOK), and their replacement by Pedro Passos Coelho (Social Democrat Party – PSD), Mario Monti and Lucas Papademos (both independent leading national unity governments), in Portugal, Italy, and Greece, respectively.

In Spain, no formal resignation occurred, but Minister José Zapatero (Spanish Socialist Worker's Party – PSOE) called for anticipated elections resulting in the election of Mariano Rajoy (People's Party – PP). These technocratic-leaning governments adopted a number of neoliberalizing reforms – including fiscal austerity, wage reduction and labour market deregulation (Storm and Naastepad, 2016) – either by persuading social partners that there was no alternative, or by sidelining them altogether based on a narrative of necessity and urgency in complying with the EU neoliberal conditions (Moury and Standring, 2017), even in the case of Italy which was not formally constrained by the terms of other Southern European countries bailout agreements (Monaco, 2024).

National austerity policies were sided by the creation of temporary emergency rescue instruments at the EU level, such as the European Financial Stability Fund and later the permanent European Stability Mechanism (ESM), in December 2010. As these mechanisms and austerity led-policies revealed its insufficiency in ensuring the euro's integrity, in December 2011, the ECB started its long-term refinancing operations providing cheap liquidity to banks upon member states' capability to abide by fiscal discipline. Confronted with only mild results, it was the outstanding statement of the then President of the ECB, Mario Draghi, in July 2012, that the ECB was ready to do 'whatever it takes to preserve the euro', announcing the launch of the Outright Monetary Transactions – implying the purchase of depressed countries' public debt in secondary bond markets, thus circumventing the EU legal constraints to supranational risk sharing mechanisms –, that signalled the beginning of the end of the Eurozone debt crisis (Chang and Leblond, 2015).

However, despite the political emphasis on rendering European economies more resilient through green and digital transition, the bulk of attention was channelled to the control of macroeconomic indicators such as government debt and inflation, whereas economic growth and competitiveness and the improvement of public services ranked lower in national and European priorities. Additionally, more than being conveyed as guidelines of emergency crisis management instruments, monetarist and neoliberal economic principles were actually reinforced in subsequent EMU governance structural reforms, reactivating the original debates over the political economy of the EMU. Notwithstanding, the debate was captivated by the political context of divergent economic interests and political power between creditor and debtor member states, as the following section demonstrates.

3. EMU REFORM AND TRANSNATIONAL CLEAVAGES: CREDITOR VERSUS DEBTOR COUNTRIES

The reasons for applying such strict depriving economic and financial measures are at the core of the impossibility of using a nationally tailored monetary policy to face downturns and asymmetric shocks. Therefore, constrained by the SGP criteria, the only alternative

available for Southern European countries was using tax raising and cuts in public expenditure as automatic stabilizers, causing an overload of taxation for citizens and a contraction of demand, with depriving economic and social consequences.

Whereas academic studies have demonstrated that high levels of debt constrain economic growth, reducing the ability of governments to provide public service and leading to fiscal aggravation, they also showcase that low levels of growth increase the pressure on fiscal and external debts, producing similar outcomes. Both European institutions and technocratic-leaning governments preferred to center the crisis resolution on bailouts and austerity-oriented neoliberal conditionality programs. These envisioned to rapidly reduce public debt (Da Gonçalves Gonçalves *et al.*, 2021), but remained oblivious of private debts' economic impact and fell short of promoting sustainable economic growth and competitiveness in Southern European countries. Overall, preoccupations over investors' perceptions of high debt-to-GDP ranked higher in national and international decision-makers calculus, resulting in the imposition of severe austerity measures and fiscal discipline aiming at restoring debtor nations financial credibility, with little care about the consequences of the concomitant raise in unemployment, deflation and the risk on depression on their citizens (Yener *et al.*, 2017).

In the event of downturns, countries historically affected by low growth rates and high deficits are more exposed to shocks and constrained in the range of policies they can adopt to address them. As such, the difficulty to recover and the economic structural impact is higher (Stiglitz, 2016; Stockhammer, 2016). While this was undeniably related to the Eurozone debt crisis, it reactivated the early economic warnings about the EMU architecture, which had been intensively debated during the intergovernmental conferences organized to define the economic governance norms underpinning the Euro, in preparation for the Maastricht Treaty (Gerbet, 2016).

To overturn the hardship associated with rendering the single currency stable in a highly heterogeneous economic realm, two opposing models were considered: the monetarist model and the Keynesian inspired Optimal Currency Areas (OCA) model (De Grauwe, 2012; Hix and Høyland, 2022). According to the latter, as the EU was not an OCA *per se*, it should be provided with similar instruments, including a system of fiscal transfers between states and exchange rates flexible enough to promote economic growth and face crises (De Grauwe, 2012; Krugman, 2013; Stiglitz, 2016). This would also serve the purpose of mitigating the lack of a full flexible labour, capitals and products market in the EU, while compensating member states for losing the ability to use nationally tailored monetary policies to face asymmetric shocks. However, it was the German-inspired Ordoliberalism model – a derivation of the monetarism and neoliberal political economy consensus of the 1980s – that became the EMU's ideological archetype (Lang, 2004; Dinan, 2014; Hix and Høyland, 2022). This neoclassical macroeconomics contends that fixed exchange rates and strict budgetary deficit control grant credit markets confidence and prices' stability, therefore sustaining economic growth (Lang, 2004).

In terms of the EU competences, this resulted in the EMU's institutionalization in two different pillars: a 'federalised' monetary policy, incumbent to the ECB; and the economic policy, under national competence, but contingent upon strict European coordination and surveillance, through the legally binding SGP. Hence, the maintenance of financial stability and the capacity to face downturns and asymmetric shocks remained solely under member states' responsibility (Chang, 2009).

The Eurozone debt crisis reactivated this political debate, consolidating a European cleavage between creditor and debtor countries. The former claimed for the financial system stabilization by strengthening the fiscal discipline of infringing states, and refused to share responsibilities leading to a transfer of economic competences to the supranational level; the latter complained about the EMU's contribution to aggravate economic differences domestically and deepen the interdependency of two creditor/debtor national asymmetric models, thus pressing for shared responsibilities at the EU level (Schimmelfennig, 2015; Armington and Cranmer, 2018). During the crisis's climax, this debate was intense both in the European Council and in the Eurogroup, forming a significant public fracture between Northern and Southern European countries (Schimmelfennig, 2015; Csehi and Puetter, 2020) – the EU's economic and political core and periphery, respectively (Laffan, 2016). This cleavage contributed to an increase in the EU's politization and triggered expressive electoral volatility in the domestic sphere (Riekmann and Wydra, 2013; Laffan, 2014; Parker and Tsarouhas, 2018).

In this setting, debtor countries have often been compared to emerging market economies, in the sense both issue public debt in currencies not controlled by their national central banks, both enjoyed cheap access to capital in times of international financial stability and a fast reversal once financial crises began, and both are subject to pressures to prioritize compliance with fiscal rules externally imposed than to create the fundamental and structural conditions to assure economic growth and resilience against international crises (Chang and Leblond, 2015). The creditor-debtor cleavage rendered the possibility of European countries mobilization around a reformist Keynesian demand-management response more remote and reinforced the Union's monetarist and ordoliberal leaning, along with core-periphery imbalances inside the EU (Glencross, 2014; Stockhammer, 2016; Parker and Tsarouhas, 2018).

Tempered by creditor states governments' political empowerment during the crisis (Csehi and Puetter, 2020; Sebastião, 2021), this ideological quarrel conduced to the approval of structural reforms to the EMU governance, deepening the political economy of the Euro original paradigm. Even though some banking sharing risks mechanisms were created, with the Banking Union putting in place the Single Supervisory Mechanism, the Single Resolution Mechanism and the European Deposit Insurance Scheme (EDIS), new legislation created on the economic governance realm enforced the financial criteria logic. This is the case of the two-pack and six-pack, further enshrined in the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union, the European Semester and other new instruments fortifying the coordination, surveillance and punishment mechanisms of the EMU, tightening member states financial margins to formulate their budgets (Ryner, 2015; Schimmelfennig, 2015). This solution was promoted by Germany-led creditor countries, which were able to advance their interests, in a context of financial emergency for debtor states (Laffan, 2014; Ryner, 2015; Schoeller, 2019; Sebastião, 2021). Consequently, proposals close to the OCA model related to sharing financial and economic responsibilities in the Eurozone addressing debtor countries needs and interests – including fiscal transfers, debt mutualisation, a specific budget for the Eurozone, an unemployment insurance scheme, or expansionist policies with specific funds to boost public investment – were overturned (Laffan, 2016; Stiglitz, 2016).

Faced with the EMU's political economy immobility, debtor governments in Southern Europe were left with no alternative than applying austerity policies to tackle the crisis. Within the prevailing EU normative framework political parties – in government and before their national parliaments – had to commit to and implement monetarist austerity policies.

Notwithstanding, the same sense of ‘no alternative’ for national economies, may justify their defense of the opposite *Keynesian* model when addressing the EMU’s future governance.

Based on the limits posed by the EMU’s political economy to the governing options of debtor member states (Krugman, 2013), this research hypothesizes that Southern European mainstream political parties have converged programmatically on the policy preferences for the future of EMU, pledging for transnational share of financial risks, reinforcement of redistribution at the supranational level, and capacity for expansionist economic policies. This assumption derives from the Europeanization theoretical arguments that the EU has a significant top-down impact on national party systems, thus leading to adaptational processes that may trigger bottom-up responses in the multilevel European polity.

4. EUROPEANISATION AND PARTIES’ PROGRAMMATIC EVOLUTION

Generally conceptualized as a process of influence, impact and adaptation of national actors to the EU, Europeanization implies responses by national agents to the European integration impacts (Risse *et al.*, 2001; Ladrech, 2002), which in turn channel preferences to the EU polity. Dealing with the level of influence the EU exerts on national constitutive elements, Europeanisation is conceived as a bilateral phenomenon, encompassing a top-down relation – the EU modulation of national actors, institutions and processes –, and a bottom-up perspective – the reaction of the domestic actors triggering a flux of preferences to the supranational polity (Graziano and Vink, 2007; Vink and Graziano, 2007; Ladrech, 2009). National political parties are prominent actors in the Europeanisation process. Ladrech (2002) systematizes parties’ Europeanisation in five main dimensions: 1) programmatic change; 2) organic change; 3) competition patterns; 4) party-government relations; 5) and relations beyond the national party system. This study focuses on the first dimension in articulation with the third, thus contributing to scholarly debates on the EU influence on both ideological convergence and domestic political competition.

The first decades of the ‘permissive consensus’ evidenced European integration’s little influence on national political competition and reduced ideological impact on parties’ discourse (Mair, 2007), which remained limited to the scope of supranational norms constraints on domestic economic policies (Dorussen and Nanou, 2006; Mair, 2014). However, as the ‘sleeping giant’ awakened (Van Der Eijk and Franklin, 2004), more recent research shed light on a more significant role by the EU in the unfolding of national political competition (Otjes and Katsanidou, 2017).

Considering that European integration introduced a new cleavage (the integration cleavage: supranationalism *versus* intergovernmentalism) to party politics, pioneer scholars have attempted to find patterns of competition based on relational models between integration and ideological cleavages. As the EU has increasingly evolved to a policy-making actor, parties’ preferences started to move beyond the intergovernmental-supranational competition paradigm (Marks *et al.*, 2002), and become more engaged with classical political left-right dynamics. Marks and Steenbergen (2004) systematize the several patterns of competition proposed by scholars in four main models: 1) the international relations model – framing party competition around the more or less integration (Gabel and Hix, 2002); 2) the Hix-Lord model – claiming that there is both a left-right and integration dimensions of competitions but independent with no standardized relation; 3) the Regulation Model – that reduces the EU to a single competition over a more regulated or free market Europe (Tsebelis and Garrett, 2000);

and 4) the Hooghe-Marks model, considering the left-right/economic cleavage and the integration one with a relation that is contingent upon the trajectory of the European integration (Hooghe and Marks, 1999).

These different models demonstrate the challenge of standardizing parties' Europeanisation. The growing body of literature on the politicization of the EU in national politics in contexts of (poly)crisis further suggests that national diversity prevents the standardization of the EU's impact on political competition. In each crisis, national structures convey different interest and positions, thus rendering political parties' Europeanization contingent upon domestic mediating factors (Risse *et al.*, 2001; Börzel and Risse, 2003). Even though politicization intensified as more competences were transferred to the EU and European integration and governance became a 'super-issue' within the scope of an emerging political system (De Wilde and Zürn, 2012; Hutter and Grande, 2014), this is far from being a linear and uniform phenomenon (Kriesi, 2016; Hutter and Kriesi, 2020). Contrarily, it depends on European and national events (Hutter and Grande, 2014), and on national mediating factors (De Wilde and Zürn, 2012), with a significant role played by political (Euro-sceptic) entrepreneurs, historical and economic structures, and government-opposition dynamics (Hooghe and Marks, 2009; Hutter and Grande, 2014).

Arguably, the Eurozone debt crisis triggered differentiated national dynamics, representing a milestone for the emergence of latent EU impacts in national party structures, evidencing different competition dynamics between Northern/creditor and Southern/debtor countries. Overall, Northern states experienced an early political secularization process, enabling the establishment of a new left in its party system and the prominence of, e.g., cultural issues in public debates. As these states were less affected by the financial and economic turmoil, reactions to the crisis were dominated by nationalist and anti-immigration arguments conveyed by – extremist – right parties (Kriesi, 2016; Otjes and Katsanidou, 2017). Differently, in Southern states secularization occurred at a later stage, allowing class and religious issues to figure high in the political arena until recently. In this context, and with the more significant impact of the crisis in Southern Europe, reactions emerged mostly from – (new) radical – left parties defending the national interest, as the paradigmatic case of Greece illustrates (Kriesi, 2016; Otjes and Katsanidou, 2017; Hutter and Kriesi, 2020). Therefore, while in the South the relational left-right economic conflict was stronger, in the North the cultural conflict was more pronounced, structured around particularistic and universalistic positions, the former associated with nationalist and anti-immigration stances related to anti-EU preferences (Kriesi, 2016; Otjes and Katsanidou, 2017; Hutter and Kriesi, 2020).

Within these national variations, the EU can impact party competition simultaneously on the left-right and anti-pro integration dimensions. For instance, during the Euro Greek crisis citizens' preferences on the Economic Adjustment Program were structured around pro- and anti-EU positions. Opinion polls indicate that anti-EU voters tended to reject its implementation, while pro-EU voters inclined to support it (Katsanidou and Otjes, 2016). Despite the uniqueness of the Greek case in the Eurozone crisis, it reflects both a transversal effect of the EU crises in national politics, and a diachronic impact of European integration in party systems. On the one side, during the crises, radical right and left parties emerged as the main drivers of politicisation, leaving for traditional parties the moderation of the debate and the support to the EU (Hutter and Kriesi, 2020). On the other side, this political dialectic reproduces the early integration *permissive consensus* logic of mainstream parties (Mair, 2007), which are bound by supranational norms – particularly in economic and monetary affairs – and pressured by an historical burden for political coherence, as the founders and drivers of European integration.

As a result, ideological convergence is observed between mainstream parties since the inception of European integration (Spoon and Klüver, 2019), which has been a determining factor for electoral volatility and the growing of non-traditional and challenger parties in national party systems. As traditional parties preferred political coherence and programmatic continuity, the increasingly dissatisfied electorate tended to mode its support to radical – left and right – parties promising an alternative (Spoon and Klüver, 2019). Gradually, this sharpened the cleavage between established and new parties (Hutter and Kriesi, 2020), generating spill-over effects at the EU level. In the European Parliament (EP), the Eurozone crisis in conjunction with the changes in domestic party systems induced the integration dimension in voting behaviour, thus promoting the convergence of traditional parties. From the 6th to the 7th legislature (2009-2014) the pro- and anti-EU dimension became stronger in structuring voting, while the more classical left-right conflict loss influence in that regard (Otjes and Van Der Veer, 2016).

In a nutshell, three main conclusions can be drawn from the existing literature: 1) EU politicisation demonstrates the significant effects of the European integration in national party politics; 2) the standardization of national impact is difficult to achieve due to variations in crises and national mediating factors; and 3) a longitudinal trend for ideological convergence between mainstream parties in economic issues, occurring either during the *permissive consensus* era or the Eurozone crisis, is noticeable. Thus, despite national variations, recent crises seem to trigger the double effect of reinforcing pre-existent political structures, by promoting the integrationist strength of traditional party politics, and of enabling the emergence of new actors challenging the *status quo*.

Literature supporting these conclusions relies mostly on electoral studies and expert survey studies on parties' classification and voting preferences. However, studies assessing the articulation of those perspectives with programmatic and ideological preferences, based on the analysis of parties' manifestos, are still marginal (Otjes and Katsanidou, 2017). The study of electoral manifestos offers a fundamental distinction of parties' executive policy and their ideational aspirations. Assuming Europeanization processes of national politics translate into influences in political competition and parties' programmatic preferences, the present research aims at filling this gap by addressing the question: is there an ideological convergence of national parties following the Eurozone debt crisis in Southern European countries? In case a convergence is identifiable, it further envisages to understand where in the political spectrum it occurred and if a convergence of centre and extremist parties is noticeable. We assume convergence as the approach of parties' programmatic preferences on policies as a result of a Europeanisation process, the equivalent of what some studies postulate as the end-result of a number of structural dynamics occurring both at the national and supranational levels (Nanou, 2013; Pizzimenti *et al.*, 2024).

Based on the above-analysed literature on political parties' Europeanisation and the EMU's political economy, and considering that the Eurozone crisis exposed the economic asymmetries of the EMU member states, consolidating the creditor-debtor's cleavage, and confronting Southern states with a 'no alternative' policy, some hypotheses are essayed.

H1: *At the end of the 1990s, following the EMU's institutionalization and in the context of launching the Euro, convergence was high between mainstream parties at the right side of the ideological axis.*

H2: *From the onset of the Eurozone debt crisis, convergence increased between parties at the left side of ideological axis.*

Additionally, considering the EMU's influence in the Europeanization of parties' programmatic preferences, we hypothesize that:

H3: *At the end of the 1990s, following the EMU's institutionalization and in the context of launching the Euro, supranational policy preferences for economic orthodoxy were generally high, and supranational Keynesian policies, including transnational solidarity in EMU, were low or absent.*

H4: *From the onset of the Eurozone debt crisis, supranational policy preferences for economic orthodoxy were generally low or absent, and supranational Keynesian policies, including transnational solidarity in the EMU, were high.*

5. RESEARCH METHODOLOGY

To test the hypotheses of 'no alternative' for Southern European countries within the supranational norms of the EMU, this study takes the cases of Greece, Italy, Portugal and Spain – four member states with historical public deficit imbalances and affected, in different manners, by the Eurozone debt crisis. Despite the fact that Italy is a net contributor for the EU budget, and formally not a debtor state, as above-mentioned, it has historically struggled with high public deficits and debts, impelling it to also apply austerity measures to tackle the crisis.

The empirical data is composed of national parties' European elections manifestos from 1999 to 2019, subject to the content analysis of the *Euromanifesto Project* (Carteny *et al.*, 2023), one of the five components of the *European Election Studies*. The *Euromanifesto Project* provides content analysis to the parties' manifestos, through a classification scheme of invariant general categories, applied to coded units of text, i.e., the amount of text needed to produce an argument. This is further subject to quantitative analysis to determine issue emphasis and policy positions of parties (Carteny *et al.*, 2023).

The 1999-2019 timeframe includes five European elections that represent key moments in the trajectory of the economic and monetary integration, including the launching of the Euro, a still relative peaceful financial period within the neoliberal consensus, the 2009 elections, in the aftermath of the 2008 Great Recession, and the 2014 and 2019, during and after the Eurozone crisis.

Considering the recent volatility of national party systems, the heterogeneity, ephemerality and instability of some parties, only parties and coalitions represented in the EP were considered in the analysis. For assessing the hypothetical programmatic convergence, ideological family characterization of parties is also undertaken. The framing of each national party within the EP political groups, as displayed by the *Euromanifesto Research Project*, was used as criteria given that ideological categorization in the EP is in coherence with a supranational policy preference approach. Figure no. 1 displays a list with the parties/coalitions considered for analysis and their EP group membership. Parties integrated in political groups of the ideological center – e.g., EPP, S&D and Liberals/Renew Europe – are considered as mainstream parties, due to the fact that they have been historically dominant in the national governments and pro-European integration.

Although the general categories defined in the *Euromanifesto Project* for codification are too broad to determine very specific policy positions on the EMU, they allow to define the ideological umbrella for EMU preferences, offering a scientific reliable source for party's manifestos content analysis. Thus, categories 4087 'EMU – Transnational Solidarity', 409 'Keynesian demand management', 414 'Economic Orthodoxy' were analysed considering only the variable on transfer of power to the EU, framed in the national context, given the scope of the research (Carteny *et al.*, 2023).

Parties	Greece					Parties	Portugal				
	1999	2004	2009	2014	2019		1999	2004	2009	2014	2019
	EP Groups	EP Groups	EP Groups	EP Groups	EP Groups		EP Groups	EP Groups	EP Groups	EP Groups	EP Groups
ME - Koinonistikió Kómma Elládas (Communist Party of Greece)	GUE/NGL	GUE/NGL	GUE/NGL	N/A	N/A	BE - Bloco de Esquerda (Left Bloc)	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL
SYRIZA - Synaspismós Ríspostastikís Antístasis (Coalition of the Radical Left)	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL	CDU - Coligação Democrática Unitária (Unitary Democratic Coalition)	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL	GUE/NGL
PASOK - Panellinio Sosialistikó Kínima (Panhellenic Socialist Movement)	S&D	S&D	S&D			PS - Partido Socialista (Socialist Party)	S&D	S&D	S&D	S&D	S&D
D.K.K.I. - Democratic Social Movement (Dimokratiko Koinoniko Kínima)	GUE/NGL					PSD - Partido Social-democrata (Social-Democratic Party)	EPP	EPP	EPP		EPP
ND - Níka Dimokratía (New Democracy)	EPP	EPP	EPP	EPP	EPP	PP (CDS-PP: Centro Democrático e Social / Partido Popular) (Democratic and Social Center / People's Party)	UEN		EPP		EPP
LAOS - Laikós Orthódokos Synagmós (Popular Orthodox Rally)		IND	EFD			PSD-PP (coalition PSD and CDS-PP parties)		EPP		EPP	
CPAEP - Ecologist Greens - Pirate Party of Greece			Greens/EFA			MPT (Movimento Partido da Terra / Partido da Terra) (The earth Party Movement/Earth Party)				ALDE/RE	
ANEL - Anarchoi Ellines (Independent Greeks)			S&D			PAN (Partido Pelos Animais e pela Natureza) (Party for Animals and Nature)					Greens/EFA
ELIA-DIPA - Elia Dimokratiki Parastasi (Elia Democratic Alignment)				S&D							
TP - To Potami (The River)				S&D							
LSCA - Laikós Syndesmos - (Golden Dawn - Peoples Association)				N/A	N/A						
KINAL - Kínima Atlagi (Movement for Change)					S&D						
EL - Greek Solution (Ellas&Us)					ECR						

Parties	Italy					Parties	Spain				
	1999	2004	2009	2014	2019		1999	2004	2009	2014	2019
	EP Groups	EP Groups	EP Groups	EP Groups	EP Groups		EP Groups	EP Groups	EP Groups	EP Groups	EP Groups
PRC - Partito della Rifondazione Comunista (Communist Refoundation Party)	GUE/NGL	GUE/NGL				PSOE - Partido Socialista Obrero Español (Spanish Socialist Workers Party)	S&D	S&D	S&D	S&D	S&D
PdCI - Partito dei Comunisti Italiani (Party of Italian Communists)	GUE/NGL	GUE/NGL				PP - Alianza - Partido Popular (People's Party)	EPP	EPP	EPP	EPP	EPP
PDS - Partito Democratico della Sinistra (Democratic Party of the Left)	S&D	S&D				IU-IV - Izquierda Unida (United Left)	GUE/NGL	GUE/NGL	GUE/NGL		
Bonino_Pannella - Partito Radicale - Lista Bonino-Pannella (List Bonino)	N/A	ALDE/RE				CIU - Convergencia i Unitat (Convergence and Unity)	ALDE/RE	ALDE/RE			
Dem - I Democratici (Democracy)	ALDE/RE					Batasuna - Euzkai Herriaren (United People)	N/A				
FdI - Federazione dei Liberali - Partito Repubblicano Italiano (Italian Republican Party)	ALDE/RE					BNG - Bloque Nacionalista Galego (Bloque Nacionalista Galego)	Greens/EFA				
DS-SDI-La Margherita-MRE - Democratici di Sinistra - Socialisti Democratici Italiani - La Margherita - Movimento Repubblicani Europei (European Republicans Movement)		S&D				PNV-EA - Partido Nacionalista Vasco (Basque Nationalist Party)		ALDE/RE	ALDE/RE		
PPI - Partito Popolare Italiano (Italian People's Party)	EPP					EAP - Europa de los Pueblos (Esquema Republicana de Catalunya) (Europe of the People - The Greens)		Greens/EFA			
CCD - Centro Cristiano Democratico (Christian Democratic Center)	EPP					Galeusca - Europa de los Pueblos (Europe of the People)		ALDE/RE			
FI - Forza Italia (Go Italy)	EPP	EPP	EPP	EPP	EPP	UPD - Unión Progreso y Democracia (Union, Progress and Democracy)			N/A	ALDE/RE	
AN - Alleanza Nazionale (Alleanza Nazionale)	EPP	UEN				IP - Coalición Izquierda Plural (Coalition Plural Left)				GUE/NGL	
LN - Lega Nord (North League)	N/A	IND	EFD	N/A	ID	PE - Coalición Primavera Europea (Coalition European Spring)				Greens/EFA	
FdV - Federazione dei Verdi (Federation of the Greens)		Greens/EFA				Podemos (We Can)				GUE/NGL	
IdV - Italia dei Valori - Lista Di Pietro (List Di Pietro - Italy of Values)		ALDE/RE	ALDE/RE			Ci+ - Ciudadanos, Partido de la Ciudadanía (Citizens - Party of Citizens)				ALDE/RE	ALDE/RE
UD.EUR - Unione Democratici Europei (European Democratic Union)		EPP				LPD - Coalición Los Pueblos Deciden (Coalition the people Decide)				GUE/NGL	
UDC - Unione dei Democratici Cristiani e dei Democratici di Centro (Union of Christians and Centre Democrats)		EPP	EPP			Vox (Vox-Voice)					ECR
PD - Partito Democratico (Democratic Party)			S&D	S&D	S&D						
SVP - Südtiroler Volkspartei (South Tyrol Peoples Party)			EPP	EPP	EPP	Coal.UPECE (UP + IU + Catalunya en Comú + Barcelona en Comú) - Coalición Unidas Podemos Cambiar Europa (Coalition United We can Change Europe)					GUE/NGL
M5S - Movimento 5 Stelle (Five Star Movement)			EFD		N/A	Coal.AR (ERC + Bildu + BNG) - Coalición Ahora Repúblicas (Coalition Now the Republic)					Greens/EFA
L'Altra Europa - L'Altra Europa con Tsipras (The Other Europe with Tsipras)				GUE/NGL		Coal.ES (EAP+PNV + CC + CsG + Atarabia Taldea + EUP) + Democrates Valencians - Coalición por una Europa Solidaria (Coalition for a Solidary Europe)					ALDE/RE
FdI - Fratelli d'Italia (Brothers of Italy)					ECR	Coal (PdCat + ICat) - Coal.LLUIRES PEREUROPA (LLUNTS) (Coalition Together for Europe)					N/A

Figure no. 1 – List of national parties considered for analysis, framed in the EP political group

Note: some political groups made minor changes to their designations during the time-frame of the analysis. For the sake of coherence and readability, the authors assumed their last name.

Source: the authors

Additionally, relying on data of the *Manifesto Research Group* included in the *Euromanifesto Project*, the rile index, classifying parties on left-right ideological axis, was also determined. According to the index, the negative value -100 means total alignment at left, and +100 means total alignment at right, therefore a zero value means a central position. The index is then aggregated by country to analyze RILE convergence across countries over the legislatures in the European Parliament, considering both all parties and only mainstream parties. To analyse convergence, the method of "sigma convergence," originally proposed to study economic growth convergence across countries (Barro and Sala-i-Martin, 1992), has been adopted in political science to analyse whether policy positions or party platforms grow more similar (or more divergent) over time and across parties and countries (Knill, 2005). The

idea is to measure changes in the overall dispersion via the standard deviation (referred by the sigma Greek letter in statistical analysis) of some indicator. This paper uses the RILE index, the left-right scale from -100 to +100 taken from the Euromanifesto dataset, to measure party positioning in left-right mentions in party manifestos.

If the RILE sigma increases, it indicates divergence in the index across countries over the years. Conversely, if the RILE sigma decreases it indicates convergence in the index. The RILE sigma convergence is therefore well-suited to show homogenization or polarization of party positions across the political spectrum within the countries over the years. This triangulation of data provides the sources for testing the identified hypothesis and address the research question.

6. FINDINGS AND DISCUSSION

Greece

According to the RILE index analysis, all Greek parties are at positive (right) levels in the 1999 EP elections, with the mainstream New Democracy (ND) and PASOK ranking in the highest position (Figure no. 2). From this moment until 2009, all parties decreased and moved leftwards. Despite a slight decrease, ND maintained positive values (going from about +50 to less than +20). PASOK experienced a significant turn towards the left, going from positive to negative values (from about +20 to -10). Syriza had the most accentuated decrease (from approximately +20 to about -30). Even the far-right party LAOS evidence a turn leftward. Prior to the Eurozone crisis, this period coincided with the first compliance issues with SGP criteria in some Southern countries and early warnings from the European Commission. From 2009 to the EP 2014 elections, a move rightwards is identifiable, both by the center-right ND, and the leftists Syriza and PASOK¹, although the latter maintained in negative scores in the RILE index). The ELIA-DIPA, a new social-democrat party, showed a slight rightist trend compared to PASOK in 2009. Interestingly, despite the bailout and its impact on domestic politics and economics, from the 2014 to the 2019 EP elections no uniform trend is notorious. The center-right ND turned to the left, achieving its lowest positive value (about +5), similar to the score of the communists KKE, which turned to right instead, achieving the same value as in 1999. Syriza maintained the same position in comparison to 2014. The LSCA (Golden Dawn) positioned high at the right spectrum moving even rightwards from 2014 to 2019.

Therefore, while at late 1990s, Greek parties were all positioned at the right/center-right side of the political spectrum, they generally turned left until 2009, with mainstream center-left and radical left coming more to the left in the ideological axis. From 2009 to 2014, all parties turned right, even the radical left. From 2014 to 2019, there are erratic trends. While radical left parties maintained or moved rightward, mainstream center-right went leftwards, and far right incremented their rightist stance. Considering the convergence of parties measured by the sigma index, it is noticeable that, although in 1999, general convergence was at the highest levels (Figure no. 3), when analysing mainstream ones' it is at the lowest levels (Figure no. 4). While in the 2004 elections, general convergence decreased, it increased for mainstream parties. In 2009, it increased and decreased slightly respectively for all parties and mainstream. While in 2014 and 2019 all parties diverged significantly, mainstream parties sharply moved towards convergence. Therefore, *H1* can only be partially confirmed for the Greek case, as given the fact that general convergence was at the highest-level coinciding with the highest position of all parties at the right ideological spectrum and the rightist classification of center-left/right parties,

these presented the highest levels of divergence in the period of analysis. On the opposite, *h2* is not confirmed, given that parties had different ideological evolutions and significant ideological divergence, evidencing their polarization.

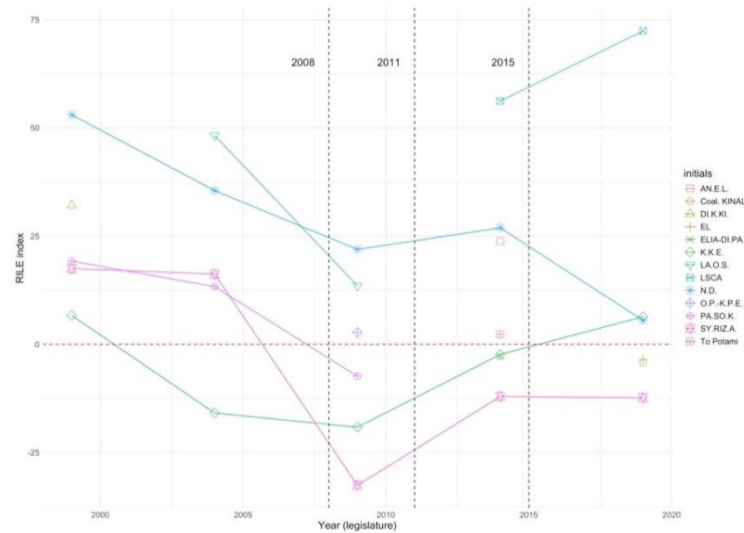


Figure no. 2 – RILE index for Greece

Source: the authors

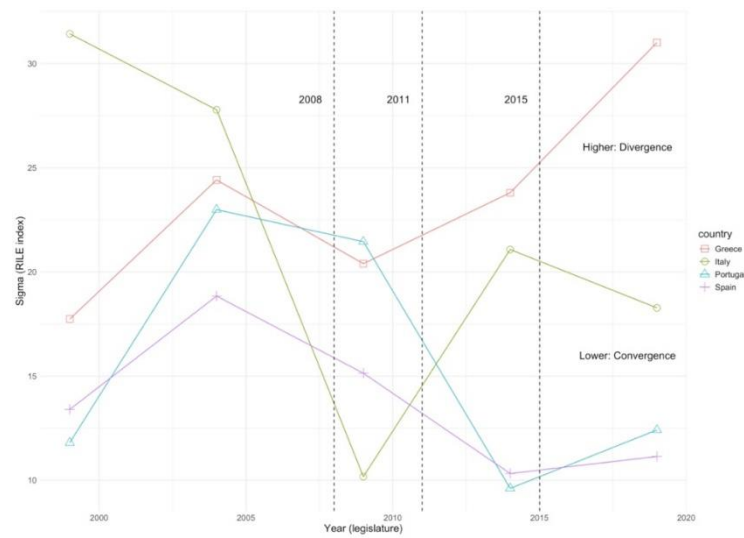


Figure no. 3 – Sigma index for all parties, based on the RILE classification

Source: the authors

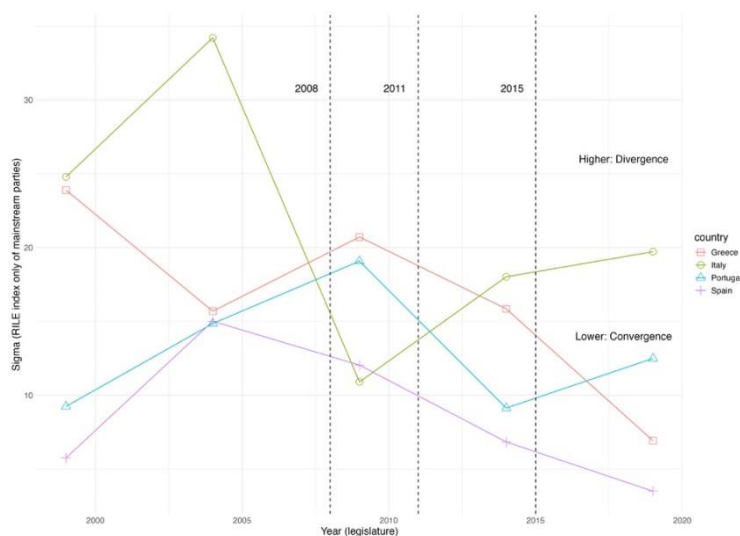


Figure no. 4 – Sigma index for mainstream parties, based on the RILE classification

Source: the authors

Italy

In the case of Italy, parties' ideological path is more difficult to analyse, given their short representation in the EP within the research timeframe. In the 1999 elections, only communist parties situated at the left of the political axis (Figure no. 5). PDS assumed a central position and all remaining parties were located towards the right. From 1999 to 2004, communist parties moved slightly rightwards, though maintaining negative (left) scores, and the green party FdV assumed a more leftist stance than communist parties. Forza Italia (FI) mildly turned left, although keeping positive scores, and the North League (LN) moved from the right to a center position. From 2004 to 2009, right and center-right parties become closer to the left of the ideological axis, with both FI and LN scoring negatively, although the latter was included in nationalist right-wing EP groups². In 2009, communist parties fail to secure representation in the EP, whereas FdV significantly moved towards the right. From 2009 onwards, almost all parties experienced a notorious left turn, which is particularly pronounced in the case of the LN. The exception is FI that reinforces its approach to the right in 2014 (scoring +15, in contrast to the -8/-9 registered in 2009), and also in 2019, and the social democrat PD, moving slightly rightwards from 2014 to 2019, although maintaining located in the left side.

The general trend is, thus, for center-left and right parties to be situated at the center and right of the political spectrum in 1999, moving – slightly and more markedly, depending on the parties under analysis – to the left, respectively, in 2004 and 2009. In an opposite move, leftist parties moved rightwards. After 2009, except for the FI, all parties illustrate a sharp inflection to the left, with negative scores in 2019. According to the convergence index, divergence between all parties was high during the 1990s (Figure no. 3), and a bitter lower between mainstream ones (Figure no. 4). General convergence levels increased expressively in 2004 and 2009, while between mainstream parties it decreased to 2004, but hugely increased to 2009. In 2014, divergence increased for all and mainstream, and in 2019, convergence raised for all parties and lowered for mainstream. Hence, as 1999 registers a

higher level of divergence between mainstream left/right parties, which score ideological distance, although at the centre and right positions, *h1* cannot be confirmed. However, *h2* is partially confirmed, as overall the levels of convergence between parties increased from 1999 to 2019, along with a general inflection leftwards, although in a volatile manner.

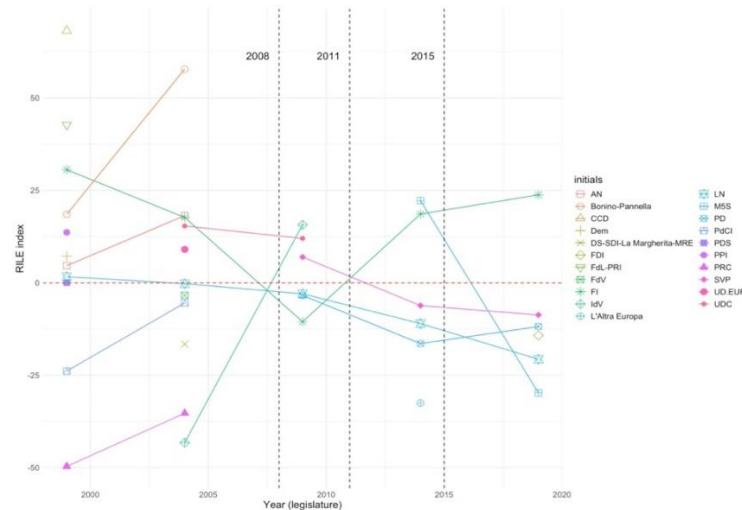


Figure no. 5 – RILE index for Italy

Source: the authors

Portugal

The relative stability of the Portuguese party system until 2019 allows more linear results, compared to the previous cases. In 1999, the left parties, such as the center-left PS and the communist party PCP, presented negative scores (Figure no. 6). The center-right PSD scored positively and the Christian democratic PP was slightly at the left, but overall, in a center position. From the 1999 to the 2004 EP elections, left parties moved rightwards, with PS ranking higher in the right spectrum than PSD, while PCP maintained its left position. Interestingly, the center-right, running in a PSD-PP coalition, moved slightly to the left, although preserving its location at the center. In 2004, a new leftist party (BE) runs for the first time in EP elections, scoring higher in the left than PCP. In 2009, a pronounced left turn of all left parties is observed, with a great inflection of PS, which score negatively and close to the more leftist PCP. PSD is positioned more at the center, smoothing its rightist stance. PP is the only party significantly turning right.

In the midst of the bailout, 2014 elections are marked by a minor attenuation of left stances of all left parties, although the center-left PS remained in the left of the political spectrum. Right and center-right parties are more erratic and difficult to assess. In 2014, PSD and PP formed an electoral coalition, and their program maintained the PSD position in 2009. In the 2019 election, all parties inflected leftwards, even if this was more pronounced in left parties and PP, than in PSD. As a result, PSD assumed a central position, whereas PP maintained itself at the right. In sum, from 1999 to 2009 elections a general leftward move is noticeable, followed by an inflection to the right in 2014, and a new leftward move in 2019.

Portugal's sigma convergence index shows significant levels of convergence for all parties (Figure no. 3) in 1999, which are higher in case of mainstream parties (Figure no. 4), with these

ones approaching the ideological center. Divergence and the gap between mainstream left and right parties increased significantly in 2004 and 2009 elections. From 2009 to 2019, the opposite trend is observed, with convergence reaching levels of 1999, between mainstream parties, and higher than that between all parties. Therefore, *h1* is only partially confirmed, as convergence occurred, but at the ideological center; and *h2* is confirmed, given that convergence increased markedly for levels higher than 1999, accompanied by an overall move leftwards and the placement of all parties (except PP) in the left.

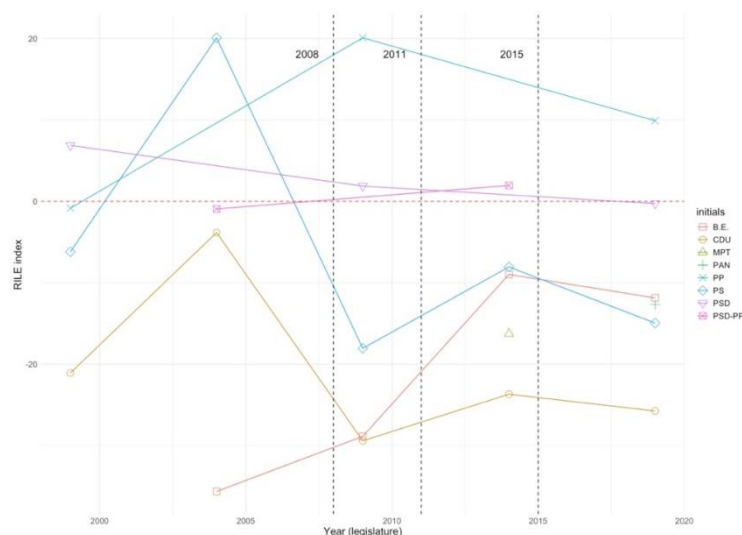


Figure no. 6 – RILE index for Portugal

Source: the authors

Spain

In Spain, the volatility of the party system impairs a linear analysis, but some meaningful trends are identifiable. Within the traditional mainstream parties, the center-left PSOE-PSC is placed slightly at left, but very close to a central position, while PP is at the right position (Figure no. 7). All other regionalist parties or coalitions, inserted in left groups in the EP, are placed at the left. In the 2004 elections, while the mainstream PP goes rightward, the mainstream PSOE-PSC mildly moves to the left. Other regionalist parties or coalitions – part of left or liberal EP groups – are placed at the left, some increasing their leftist positions. For the 2009 elections, a general leftward inflection of most parties and coalitions is noticeable, with the exception of the IU-ICV, which moves slightly rightwards, although preserving a solid position at left. The mainstream center-left PSOE-PSC makes a significant move towards the left, and the mainstream center-right PP markedly decreases its rightist position. Although the latter preserves its position in the right, it becomes closer to the center. From 2009 to 2014, parties continue to move left in the ideological axis, although with different intensities. As a result, PP becomes closer to the center. In the 2019 elections, the left side is dominant with PSOE-PSC revealing a minor reinforcement of its leftist stance, and all new parties and coalitions placing left. Even PP moves to the left of the left-right divide. The exception is the new Vox party, which stands solidly at the right.

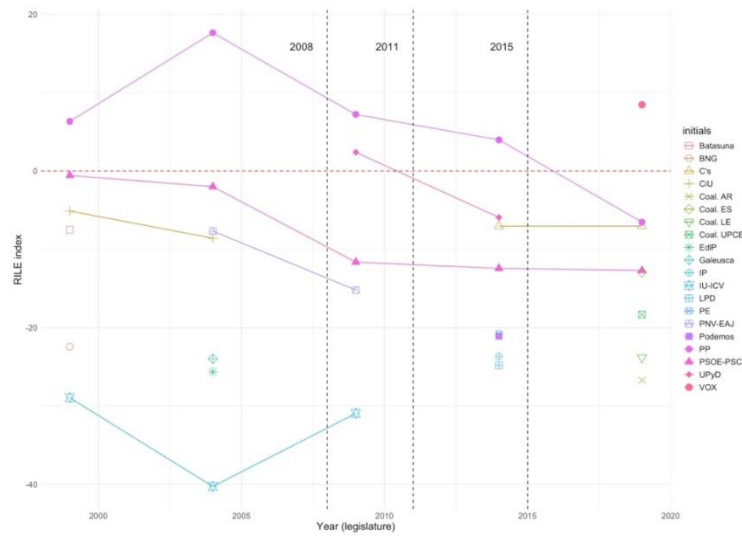


Figure no. 7 – RILE index for Spain

Source: the authors

As for convergence, the analysis reveals high levels between all parties in the late 1990s, with higher levels between mainstream ones, both decreasing in 2004, to increase again in 2009 (Figures no. 3 and no. 4). However, despite most parties were located at the left side of the political spectrum, except for the center-right PP, mainstream left parties positioned at the center, with convergence occurring mostly at the center. Thus, *h1* can only be partially confirmed. On the opposite, *h2* is confirmed, as for the 2014 and 2019 elections a continuous leftward move is identifiable – even the centre-right PP placing at the left – and convergence markedly increased either between all and mainstream parties, reaching its peak.

Party convergence over the EMU

Considering supranational preferences on the EMU – *h3* and *h4* –, at the initial phase of the analysis' period, a considerable absence of references related with the selected codes is notorious. From the late 1990s to the 2004 elections: economic orthodoxy measures are absent in all party manifestos in Greece (Figure no. 8); in Italy, only two mildly positive mentions were found in the UD.EUR (EPP family) and FI 2004 Euromanifestos (Figure no. 9); in Portugal, only the PS 2004 manifesto includes a slightly positive reference (Figure no. 10); and, in Spain, minor positive mentions were identified in the cases of PP, Coal.AR (Greens) and PNV-EAJ (Liberals) (Figure no. 11). Regarding Keynesian policy demands, including transnational solidarity in EMU, references are almost absent in all case-studies: in Greece, only highly positive mentions from KKE, in 1999, and neutral mention from Syriza, in 2004, were identified (Figure no. 12); in Italy only a mostly neutral and a very positive reference from the communist PDCI were found (Figure no. 13); in Portugal, solely the left parties (PS and PCP) expressed slightly positive references (Figure no. 14); and, in Spain only three leftist parties – two regional and one national – referred positively to Keynesian policy demands (Figure no. 15). Thus, *h3* is not confirmed, as most parties do not express such policy preferences, mainly the mainstream ones.

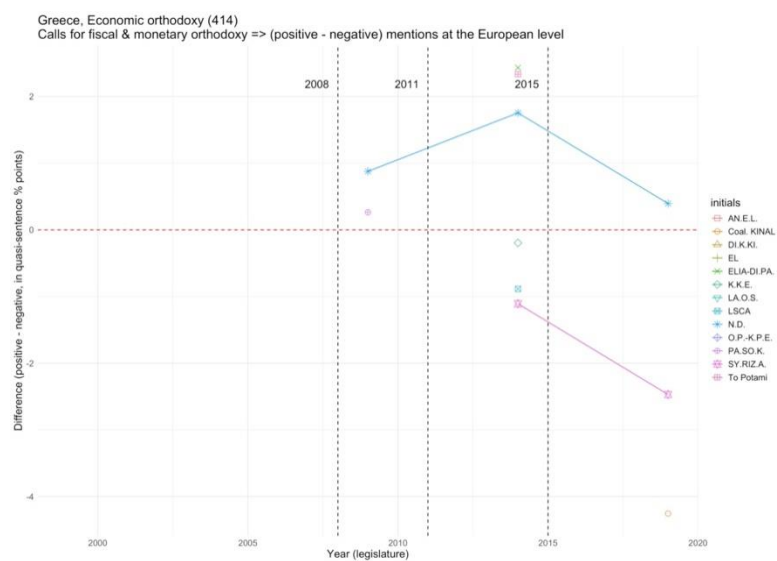


Figure no. 8 – Economic orthodoxy preferences for Greece

Source: the authors

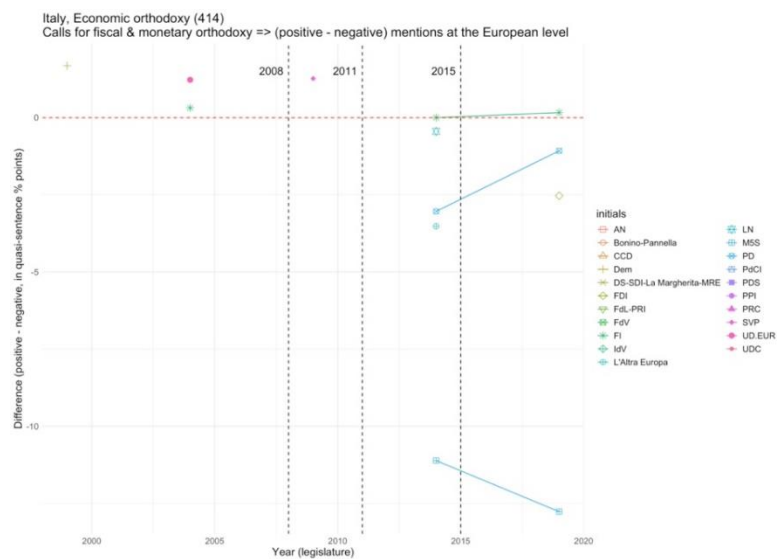


Figure no. 9 – Economic orthodoxy preferences for Italy

Source: the authors

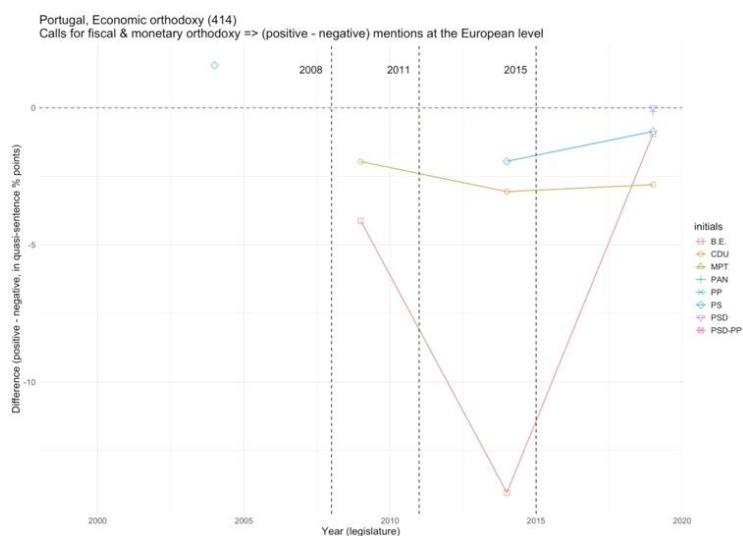


Figure no. 10 – Economic orthodoxy preferences for Portugal

Source: the authors

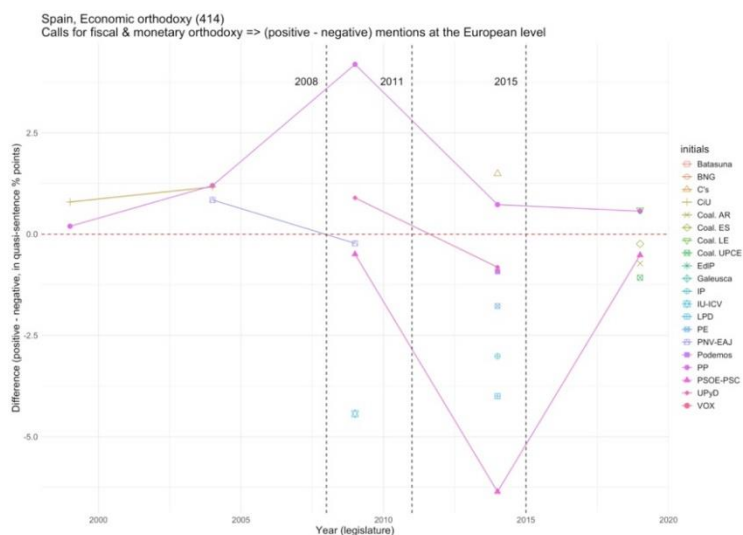


Figure no. 11 – Economic orthodoxy preferences for Spain

Source: the authors

In the (post-) Eurozone crisis period, in the Greek case were identified positive mentions about preferences on economic and fiscal orthodoxy from the center-right ND, and the social-democrats To Potami and Elia-DI.PA, and negative preferences from the radical left Syriza and KKE, and the far-right LSCA (Golden Dawn) (Figure no. 8). Regarding Keynesian demands, very slight positive mentions from Syriza, and the social-

democrats To Potami and Elia-DI.PA, and a strong preference from the conservative ANEL were noted (Figure no. 12). More pronounced positive references to transnational solidarity were made by Syriza, and other left and center-left parties (Figure no. 12). In Italy, the party system is aligned in rejecting orthodox measures at the supranational level, with either far-right, left and radical-left, and conservative parties clearly denying such policies. FI is the only party neutral to slightly favorable regarding this preference (Figure no. 9). As for Keynesian demand, few mildly positive preferences from center-right (FI), conservatives and social-democrats (FDI and PD) emerged from the analysis (Figure no. 13). The same parties together with the left L'Altra Europa and the M5S demonstrate a preference for transnational solidarity (Figure no. 13). In Portugal, a consensual denial of economic orthodoxy at center-left and left is notorious, whereas the center-right PSD assumes a neutral position (Figure no. 10). As for Keynesian preferences, all parties have positive mentions, but the center-left PS and radical left BE are the most outspoken in that regard (Figure no. 14). Transnational solidarity is only preferred by PS and communist CDU. Finally, in Spain, after 2010, a rejection of orthodox economy is conveyed by most parties, except the center-right PP, the liberals Ciudadanos and Coal.ES (Figure no. 11). For Keynesian policy, although Podemos expresses negative references, PSOE, radical left IP, Coal.UPCE, and liberals Ciudadanos and Coal.ES demonstrate a positive preference (Figure no. 15). Transnational solidarity is addressed positively by the most representative parties, with a prominent role played by the PSOE-PSC and an interesting position of parties skeptical on Keynesian policies (Figure no. 15). Based on this, *h4* is confirmed, as after the Eurozone crisis, an almost consensus over transnational solidarity measures for the EMU and a very prominent and general defense of Keynesian demand policies is observed, in detriment of the total absence or very low preference for orthodox policies.

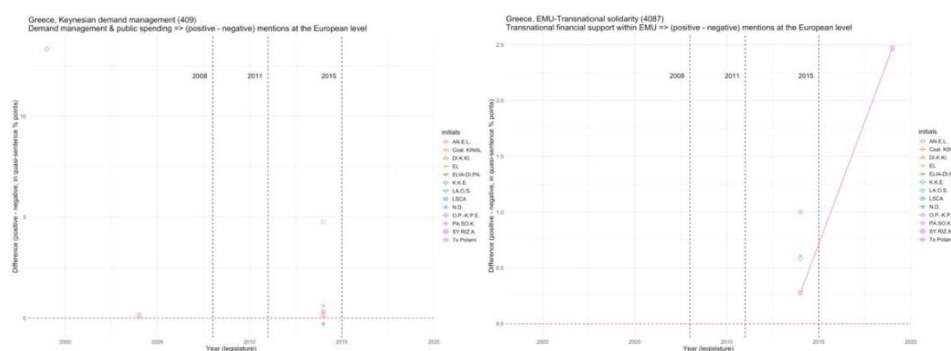


Figure no. 12 – Keynesian demand management and EMU transnational solidarity preferences for Greece

Source: the authors

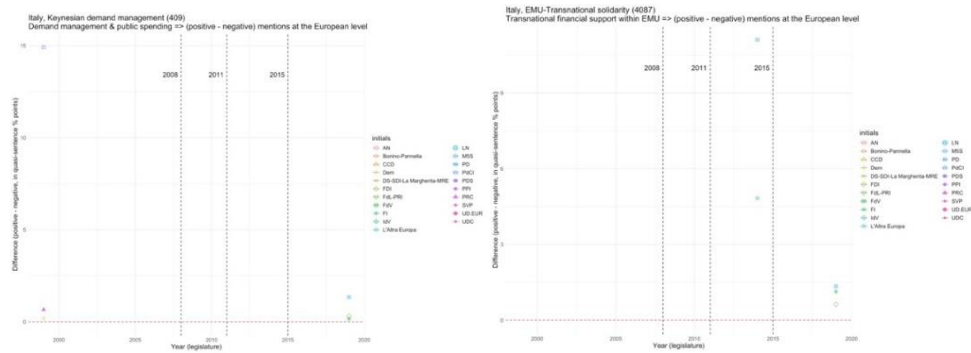


Figure no. 13 – Keynesian demand management and EMU transnational solidarity preferences for Italy

Source: the authors

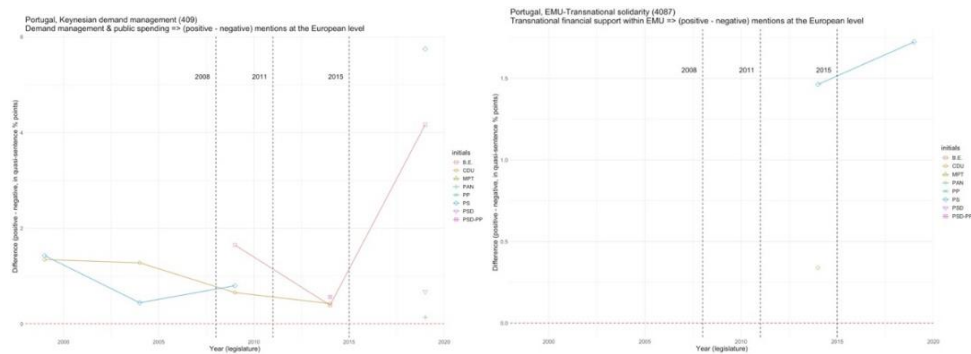


Figure no. 14 – Keynesian demand management and EMU transnational solidarity preferences for Portugal

Source: the authors

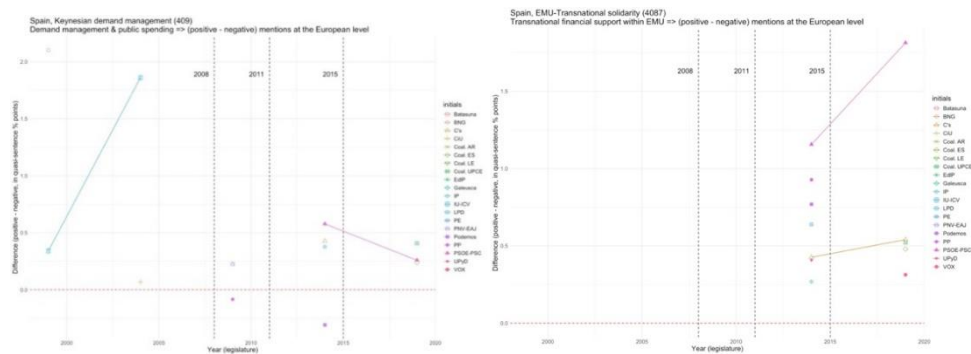


Figure no. 15 – Keynesian demand management and EMU transnational solidarity preferences for Spain

Source: the authors

7. CONCLUSION

Based on a theoretical framework combining Europeanisation of political parties' studies with a critical political economy review of the EMU's institutional architecture, this chapter contented that the EMU induced a no alternative economic policy in four case-studies in Southern Europe, and further delved into the possible ideological convergence of national parties following the Eurozone debt crisis. The analysis' results demonstrate an ideological convergence trend following the Eurozone debt crisis, in all case-studies, except Greece (*h2*). When analysing supranational economic and monetary preferences, it is also observable a drift to a general political consensus over Keynesian policies and transnational solidarity on the EMU following the Eurozone debt crisis (*h4*). Nevertheless, hypothesis relying on the theoretically predicted economic consensus over a neoliberal political economy of the EU in the early years of the common currency (*h1* and *h3*) were not confirmed, as neither uniform trends of ideological positioning at the right, nor of ideological convergence were identified in the analysed parties. i.e., Despite mainstream parties' political commitment to orthodox economic supranational policies implicit in their agreement for the EMU institutionalization, they fail to explicitly express those preferences in their manifestos.

From these results, five conclusions stand out. Firstly, despite the institutional and executive policy commitments with EMU political economy in the 1990s, mainstream parties did not have a common rhetoric for economic orthodoxy, thus not being fully coherent with their supranational commitments. Secondly, despite the validity of the theoretical argument of the no alternative policy for Southern Europe, it was not preventively assumed in parties' programs. It was only after the Eurozone crisis that this 'no alternative' constrain was incorporated in manifestos, resulting in a general leftward trend in party systems, and to a uniformized policy preference for the future of the EMU. Thirdly, the Eurozone crisis diminished the ideological impact on parties' preferences, leading center-left, radical and left parties to converge with center-right, right and far right parties (with few exceptions) on their programmatic preferences regarding the EMU. Fourthly, a mismatch between executive policy and programmatic preferences that EMU brings to party systems is notorious. Whereas some of these parties were committed, either as incumbent parties or supporting parliamentary agreements, with the implementation of severe austerity policies, their programmatic rhetoric diverged significantly from their executive management practices. This generates confusion among the electorate, which may help explaining the sudden success of radical, Eurosceptic and challenger parties, that although offering the same policy options as mainstream parties, are perceived as more credible and coherent. This mismatch occurs also at the supranational level. Whereas in the EP 2009-2014 legislature, the importance of ideology in economic competition diminished in favour of the pro- and anti-EU dimension, with the mainstream EP political groups voting for regulations reforming the EMU by incrementing its orthodoxy (Otjes and Van Der Veer, 2016), this research reveals that parties' Euromanifestos demonstrate signs of consensus over a Keynesian/OCA inspired EMU, in contradiction with the policy they agreed to in the EP. This mismatch contributes to eroding two core party functions – to represent and to govern. These functions are, seemingly, increasingly apart, with political actors downplaying the representation function and enhancing their governing role (Laffan, 2014), as a result of the no alternative policy. Lastly, although the standardization of some Eurozone crisis effects in the four case-studies is possible, there are differences between member states, stressing the importance of national mediating factors on the political

parties' Europeanisation process. Particularly in Greece and, less expressively, in Italy, where high volatility in party systems occurred during the crisis, ideological convergence and uniformized policy preferences for the EMU do not emerge as much as a linear effect of the Eurozone crisis as in Spain and Portugal.

Although this research carries some shortcomings on data analysis and calls for future research based on data disaggregation and qualitative research to clarify national and party specificities that may bias the analysis³, the above-identified conclusions match previous studies on parties' Europeanisation and on the EU's politicization in national systems, mainly stressing and ideological decline and the contribution of the Eurozone crisis to the formation of transnational party cleavages, e.g., creditors *versus* debtors. The research goes beyond existing studies by shedding light on parties' programmatic effects of EMU, and by driving attention to broader and more structural consequences of the Eurozone governance on political cohesion in the EU and the future of European integration. If the creation of the common currency was more than an economic project, intending also to contribute to reinforce EU political cohesion after the dismantling of the Soviet Union, by avoiding in particular the possible turn of Germany eastwards (Chang, 2009), long-term consequences of the EMU may rather lead in the opposite direction – the collapse of political cohesion in the EU.

Considering the EU's polycrisis, additional research is necessary to assess if the trends identified in this study are structural or merely conjunctural. Despite some relief in Southern European countries coming from a combination of austerity measures, the stabilization of international markets and low interest rates, these countries still present problematic sovereign debt ratios and low levels of competitiveness, further exposed and aggravated by the persistence of the Covid-19 pandemics, the Russian invasion of Ukraine, the war in the Middle East and the unpredictability of relations with the United States (Da Gonçalves Gonçalves *et al.*, 2021; European Parliament, 2022). At this point support to tackle the stagflation – a combination of inflation rate and economic stagnation – caused by these crises was provided via the EU's Recovery and Resilience Facility. At the moment of writing this chapter, the EU is struggling with the need to increase its defense capabilities as a response to the United States threat of withdrawing military support from Ukraine. One of the challenges is how to increase budgetary expenses with military assets, without jeopardizing national financial stability, a dilemma that may once again leave no alternative for peripheral countries in the context of the SGP criteria.

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Notes

¹ As PASOK failed to secure any seats in the EP, it was not considered in the remaining analysis.

² Except in two legislatures where they did not take part in any EP group.

³ E.g., party classification withing the ideological left-right axis is based on general databases classification, like the Manifesto Project, which considers both parties positions on material/socio-economic issues, and cultural issues, which in case of liberal and communist parties may pervert results. Additionally, a more fine-grained thematic analysis of European manifestos, disaggregating broad coding categories of the Euromanifesto Research Project would provide a more detailed insight on policy preferences for the EMU, and more solid confrontation with the two models of political economy for the Eurozone.



Economic and Monetary Union: What Kind of Convergence?

Igor Cvečić^{*}, Marko Tomljanović^{**}

Abstract: This paper explores the complexities of convergence within the European Union, focusing on both nominal and real convergence in the context of the Economic and Monetary Union (EMU). The authors revisit the theoretical underpinnings of monetary integration, drawing from Optimal Currency Area (OCA) theory and its evolution, while analysing the benefits and costs of membership in a monetary union. Special attention is given to the convergence paths of EU Member States not yet part of the Eurozone, evaluating their alignment with Maastricht criteria, structural preparedness, and real convergence trends. Through a combination of theoretical insights and empirical assessments, the study presents a comparative analysis of inflation rates, exchange rate volatility, long-term interest rates, and fiscal indicators in non-EMU countries. It highlights growing disparities in economic performance and inflation post-2020, intensified by recent macroeconomic shocks. The research underscores the importance of not just satisfying nominal entry criteria but achieving sustainable real convergence – reflected in GDP per capita, labour market flexibility, and structural similarity with Euro-zone economies. The findings suggest that while Denmark, Sweden, Czechia and Bulgaria appear institutionally and economically aligned for euro adoption, countries like Hungary, Poland and Romania lag in meeting core convergence metrics. A more holistic and policy-driven approach to integration could be essential, promoting structural cohesion and solidarity mechanisms to mitigate regional disparities and ensure the long-term viability of the EMU.

Keywords: economic and monetary union; nominal convergence; real convergence; optimal currency area theory; sustainable integration.

JEL classification: F15; F45; O23.

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1. INTRODUCTION

Research of the *catching up* process of Eurozone candidate countries is essential to understand the future of the Economic and Monetary Union and its economic strategy, especially because it is difficult to assess convergence and divergence processes among different economies. The contemporary literature about convergence and monetary integration is quite extensive and diverse, tackling general questions and specific situations, such as the assessment of potential integration of a country into monetary unions and the comprehensive analysis of potential scenarios of real and structural convergence of less advanced economies.

In this paper we address several aspects, including the basics of monetary integrations: What are the benefits and costs, what are the preconditions for joining such a project, how potential impacts of integration can be determined? Furthermore, the context of nominal vs. real convergence for candidate EU countries for the introduction of the euro is presented, with some empirical representations suggesting the current perspectives of non-EMU countries. As the Maastricht Treaty envisages an obligation to join eventually (except maybe for Denmark), we treat all non-EMU Member States of the EU as candidates for the euro. Besides the nominal convergence criteria which formally determines which countries can finally join the Euro-zone, which we analysed partially from a different perspective, it is essential to estimate other relevant criteria and aspects. This gives more ground to comprehensive assessments and preparations for a proper integration into an economic and not only monetary union, as suggested by many economists and proven by real events. Therefore, we present in a concise manner some crucial aspects of real convergence and the Optimal Currency Area theory criteria. The Discussion section elaborates crucial findings and combines with other authors' estimates and conclusions, in order to point out the complexity of the issue and to highlight positive tendencies and necessary adjustments for countries gradually integrating into the Euro-zone.

In our research we have done an extensive literature review, combining traditional theoretical foundations with more recent research of several aspects related primarily to nominal and real convergence aspects. In the empirical parts, we combined data mostly from Eurostat and the ECB, the World Bank and UNCTAD to present convergence in several dimensions. Our main goal of the research was to comprehensively cover major nominal and real convergence controversies and evaluate current trends of convergence, using specific assessments. Furthermore, we tried to point out necessary adjustments and repercussions of these complex economic and political dimensions. In this way we contribute to the discussion on the purpose and sustainability of the Economic and Monetary Union, trying to determine improvement possibilities as well. We find this to be extremely important as persistent disparities in living standards fuel migration pressures, political fragmentation and public distrust in the European integration project. Thus, understanding different aspects of convergence processes and promoting it in all parts of the EU consequently reduces risks for peripheral countries and regions to remain "in the backlog", while the core regions and countries increasingly prosper and progress.

2. THEORETICAL CONTEXT OF MONETARY INTEGRATIONS AND THE CONVERGENCE PROCESS

In today's highly globalized world, independent nations can "link" their economies to a greater or lesser extent in order to accomplish the benefits that come with the removal of trade obstacles and the size effects ([International Monetary Fund. External Relations Dept, 1984](#)), such as greater internal efficiency and greater resilience to external events ([WTO, 2021](#)). The net effect of borders depends on the size of the integrated countries and on pre-existing levels of income ([Spolaore, 2016](#)). Economies with different levels of economic prosperity which remove border obstacles to trade and investment have to be careful in assessing the effects of integration, including the monetary aspect. The size effect needs to outweigh the fact that the neighbour might be poorer. For example, in case of France and Germany merging, according to [Spolaore and Wacziarg \(2002\)](#), they would have benefited from induced growth because they have similar income levels, but also because their large market size plays an important role in a unified market.

Many would argue that one of the (if not the) greatest achievement of the European economic integration is the Economic and Monetary Union – bringing stability, shared identity and unity. Despite some imperfections and occasional crisis, it could be seen as a valuable long-term investment for Member States and the overall integration process ([Issing, 2005](#); [De Grauwe, 2006](#); [Pisani-Ferry, 2021](#)).

The EMU basically removes specific obstacles for the free movement of goods, services, capital and labour, the essence of the European Internal Market. The idea of additional removal of obstacles to economic integration is based on convergence processes between member countries ([Commission of the European Communities and Directorate-General for Economic and Financial Affairs, 1990](#)). They need to adhere to specific legal, political and economic criteria in order to efficiently participate in this Union, which is not just a monetary union (represented by a single currency – the euro). More openness and more interconnectedness play a role in setting up more advanced stages of economic and political integration ([Arribas *et al.*, 2020](#)). Although the original Rome Treaty did not formally ask for a monetary integration among European Economic Community (EEC) countries, but rather focused on free trade and liberalized mobility of capital and labour, the single (and then internal) market created new impetus for further integration in the late 1980-ies and early 1990-ies ([Commission of the European Communities and Directorate-General for Economic and Financial Affairs, 1990](#); [Bayoumi and Eichengreen, 1996](#)). Considering converging political and economic trends, the monetary integration among EU Member States was not a surprise, but rather a logical move toward stronger integration and stronger monetary stability, which was built-up during the period of the European Monetary System. The EMS helped EEC Member States and their currencies to rely less on the US dollar, reduce exchange rate volatility and harmonize/coordinate policies, not only in the monetary sphere ([Commission of the European Communities and Directorate-General for Economic and Financial Affairs, 1990](#)). Nevertheless, the foundation of the EMU is the monetary union. So, what is a 'monetary union'?

A monetary union is usually defined as a currency area within which the exchange rates of the Member States' currencies are irrevocably fixed ([Kandžija and Cvečić, 2011](#)). Members lose control, and supervision, over their exchange rates, interest rates and money supply, i.e. they lose monetary sovereignty ([Kandžija and Cvečić, 2011](#)). In the context of the EMU,

Wieser *et al.* (2024) warn that those countries staying outside the Euro-zone could be subject to: persistent exchange-rate volatility, higher interest-rate spreads, weaker monetary-policy transmission, and fragmented capital markets. So, what are than the benefits of a monetary union? Theory and practice indicate to different benefits, but such initiatives usually cause specific costs, as well. Table no. 1 summarizes some of the most often mentioned benefits and costs of monetary unions.

Table no. 1 – Comparison of benefits and costs of monetary unions

Benefits:	Costs:
<ul style="list-style-type: none"> ▪ Mostly at the micro level (cancellation of direct transaction costs of currency conversion; payment costs; indirect benefits due to higher price comparability) ▪ Reducing uncertainty over credible exchange rate fixing ▪ Higher certainty regarding future prices due to permanently fixed exchange rates (influences investment, production, consumption decisions ...) ▪ Expressing commodity prices on the Global Market in a domestic currency ▪ Absence of currency risk for external debt ▪ International reserves - facilitated financing of the current account deficit ▪ A common currency contributes to the integration of financial systems, which deepens them and increases their liquidity ▪ Facilitated risk diversification 	<ul style="list-style-type: none"> ▪ Losing monetary policy as an instrument of economic policy ▪ Exchange rate fixed, interest rates exogenous ▪ Loss of inflation tax and the possibility of devaluation ▪ Transitional instability ▪ Extinction of <i>seignorage</i>

Source: Beetsma and Giuliodori (2010), Fornaro (2022)

More comprehensive analyses of impacts of monetary unions were discussed within the Optimal Currency Area (OCA) Theory, developed through several decades – traditionally by Mundell (1961), McKinnon (1963) and Kenen (1969), and later by Krugman (1993), Frankel and Rose (1998), Bayoumi and Eichengreen (1992) and many others, especially during and after the establishment of the EMU. More recent versions of the theory are mostly concentrated on the endogeneity, specialization, and business cycles synchronization issues, while even shifting towards a more policy oriented theory (Creel, 2018; Stoykova, 2018).

While the OCA theory takes into account specific real economic conditions and trends (mobility of production factors, labour mobility and labour market integration, price and wage flexibility, similarity in inflation rates, trade openness and connectedness, fiscal solidarity and federalisation, financial integration, symmetry of economic shocks...), the formal creation of the EMU included primarily a set of five monetary and fiscal criteria, defined by the Maastricht Treaty as *nominal convergence criteria* (Kandžija and Cvečić, 2011). There had been many discussions about the relevance and actuality of these criteria, as well as about reforms to the convergence and economic governance rules (Iancu, 2009; Diaz del Hoyo *et al.*, 2017; Creel, 2018; Beker Pucar, 2020; Szegedi and Teleki, 2024), but for countries accessing the Eurozone the nominal convergence process is still the same as defined in 1992.

The concept of *real convergence* has had significant support through economic discourse for several decades. The crucial point is to follow the diminishing gaps in prosperity among different economies. Sustainable real convergence is the process where the Gross domestic product *per capita* levels of lower-income economies “catch-up” with those of higher-income

economies on a durable basis (European Central Bank, 2015). Real convergence implies income levels convergence between countries, but besides the GDP *per capita*, it can be measured also by assessing the openness of the economy (trade openness index), the share of bilateral trade with other members in total foreign trade, and the structure of the economy (i.e. the share of main sectors in the GDP – agriculture, industry, services) (Dulgheriu, 2015). According to the ‘iron-law’ conditional convergence is close to 2% a year, which means that countries where real *per capita* GDP is below its potential level, reduce the gap on average by 2% striving to converge to their long-run path to the higher GDP level (Barro, 2015; Bação *et al.*, 2019).

Usually, theories on economic growth capture two concepts of real convergence: beta (β -convergence) and sigma (σ -convergence). Beta convergence entails that lower-income countries grow faster than higher-income entities, as there is negative partial correlation between growth in income over time and its initial level. Sigma convergence refers to a reduction in the dispersion of income levels across different economies (Young *et al.*, 2008). Neoclassical concepts assume that the level of technology determines the effectiveness of the production process, while different growth rates among countries occur because countries have different physical capital stocks (Solow, 1956; Swan, 1956; Barro and Sala-i-Martin, 1992; European Central Bank, 2015). The catching-up process happens because poorer countries usually have a higher expected rate of return on investment, while persistent differences among countries remain often because of disparate preferences and other institutional features – such as corruption (Gashi and Avdulaj, 2024). On the other hand, endogenous growth models (Uzawa, 1963; Lucas, 1988; Mankiw *et al.*, 1992; European Central Bank, 2015) include human capital (and their knowledge) as a factor of production. This allows the assumption that persistent differences among economies exist because human capital is less mobile and flexible than physical. Additionally, Romer (1986) suggests that lower-income economies need a high rate of technological growth (through investments in research and development) in order to boost convergence, while Barro and Sala-i-Martin (1997) suggest that public policies on property rights, taxation and infrastructure can boost attractive environments for production and research of “technical leaders”.

More recent versions of the OCA Theory usually include combinations of multiple criteria, such as the case of the alignment of business cycles and trade openness or connectedness (Frankel and Rose, 1998; Jager and Hafner, 2013). When economies connect closely by trade, this influences the spill-overs of economic activity (Bayoumi and Eichengreen, 1996; Bräuning and Sheremirov, 2021). But, more important is the similarity of production („production diversification” criterion) and consumption („homogeneity of preferences” criterion) structures between integrated countries, as well as the similarity of trade, i.e. intra-industry trade (Krugman and Venables, 1996; Frankel and Rose, 1998; Fidrmuc, 2001; Steinert and Althammer, 2025). Such specific trade of similar and complementary commodities is more important as a criterion than the total volume of trade (especially if countries exchange different goods and services based on specialisation forces).

The cost-benefit ratio of monetary integration depends on the ability of participating countries to absorb asymmetric shocks, and the joint response to foreign exchange market disturbances. Asymmetric macroeconomic shocks unequally affect countries, regions and sectors. In the case of symmetric shocks, the single monetary policy should be able to preserve price stability without affecting the distribution of economic activity (Peersman, 2007).

However, in case of significant asymmetries, other modes should be considered and implemented. Usually, they include (Patterson and Amati, 1998; Jager and Hafner, 2013):

- Market mechanisms such as wage and price flexibility, mobility of labour, and mobility of capital
- Institutional mechanisms such as fiscal transfers ('fiscal federalism') or specific action by public authorities.

In a more drastic move, significant asymmetric shocks could prompt exchange rate changes. That could shift aggregate demand curves toward the starting position for affected countries/regions, but would also mean that they diverge from the rest of the monetary union (Patterson and Amati, 1998; Lane, 2000). As a change in the exchange rate would require that asymmetrically affected countries replace the shared currency with another, while complete mobility of unemployed people would not be feasible, at least not in a short period, the EMU Member States would have to consider wage and price policies, or rely on more fiscal transfers. Without appropriate structural policies and adjustment mechanisms, all shocks become asymmetric, and potentially problematic (Buti and Sapir, 2002; Mundell, 2002; Theodoropoulos, 2005; Krugman, 2013).

The transfer criterion deals with fiscal solidarity. It refers to the situation where a high degree of centralization of the budget in political unions basically enables automatic transfers toward regions/states affected by asymmetric shocks (Commission of the European Communities, 1977; Pacheco, 2000; Belke and Baumgärtner, 2005; Burriel *et al.*, 2020). However, the EU budget is only about 1% of the Union's GDP. That does not represent a significant mechanism for (re)boosting convergence. However, the Eurozone Member States managed to agree on additional solidarity instruments after 2010 (especially the European Stability Mechanism, since October 2012), as a response to the Eurozone (debt) crisis, which saw countries like Greece, Portugal, Ireland, Cyprus and Spain get substantial financial assistance from these instruments during their toughest years (Dabrowski, 2015). The absence of such solidarity resources could have caused some countries leaving the Eurozone, or even a collapse of the single currency. However, during that period Eurozone and EU Member States chose solidarity. Perhaps the exception might be the United Kingdom, where the majority of voters on the 2016 BREXIT referendum chose to leave the EU, while the rest of the EU decided to close ranks, including considerations about a closer political union. Accordingly, the future of the EMU vis-à-vis its costs and benefits will depend on the continuation of the political and economic integration process in Europe.

3. ANALYTICAL FRAMEWORKS FOR CONVERGENCE ASSESSMENT

In order to assess the convergence processes in the European Economic and Monetary Union, our analytical frameworks focus on several convergence aspects. Several indicators related to nominal criteria (set by the Maastricht Treaty) and real convergence variables associated with the OCA Theory were used to assess the convergence dynamics of particular EU Member States still not using the euro.

3.1 Nominal convergence

Key nominal convergence criteria include monetary and fiscal criteria. The price stability criterion and the interest rate criterion focus on monetary policy aspects, while the

exchange rate criterion includes the minimum period of two years of participation to the Exchange Rate mechanism II (ERM-2). Fiscal criteria refer to two government finances aspects: Public debt ratio and government deficit ratio (Kesner-Škreb, 2006; Cvečić and Tomljanović, 2022). These criteria are summarized in Table no. 2.

Table no. 2 – Maastricht criteria of nominal convergence (summary)

Monetary		
The price stability criterion or inflation criterion implies maintaining a high level of price stability, i.e. “ <i>the inflation rate of a given Member State must not exceed 1.5 percentage points of the average inflation rate (measured with the Harmonized Index of Consumer Prices) for the three EU countries with the lowest inflation in the year preceding the review of the EMU candidate country</i> ”.	The interest rate criterion monitors the movements of long-term interest rates on government bonds, and according to this criterion the “ <i>nominal long-term interest rate (on government bonds or similar securities) may not exceed the corresponding interest rate by more than two percentage points</i> ”, whereas the corresponding rate is calculated as an average rate of the three EU Member States with the lowest inflation [Durability of convergence].	The exchange rate stability criterion implies the country’s participation in the ERM II, i.e. maintaining stable exchange rate levels (without “severe tensions”; i.e. devaluation) for at least two consecutive years before joining the EMU.
Fiscal		
The public finances criterion analyses the trends of public debt and budget surplus/deficit; according to this criterion, “the share of <i>gross general government debt in the GDP</i> may not exceed 60% at the end of the previous financial year” [Sustainable public finances]...	...and also “the share of the <i>general government budget deficit in the GDP</i> may not exceed 3% at the end of the previous financial year.” [Sound public finances]	

Source: Authors’ work based on Cvečić and Tomljanović (2022); pp. 219-220; and European Council (2024)

Other variables are usually included in the nominal convergence assessment. The ECB actually analyses several other variables and categories related to the balance of payments, structure of the financial system, unit labour costs, etc. In the case of the Economic Community of West African States (ECOWAS), primary and secondary criteria are used for the convergence assessment, which include similar criteria as in the case of the EMU, but also: Central bank fiscal deficit financing and Gross external reserves (Oyadeyi, 2024).

One of the main nominal criteria assesses the exchange rates of currencies involved in the convergence process. Regarding that, we first present Table no. 3, which includes exchange rates of EU currencies for Member States still not making part of the EMU.

Figure no. 1 represents the normalized values (Z-scores) of each currency in order to compare trends and adjust for their volatility. This gives a clearer picture about relative changes and the volatility of particular currencies. As the Bulgarian lev has a constant rate (1.9558 BGN for 1 €) through the whole time, as they implemented the currency board system since 1997, there is no exchange rate change during the assessed period. However, other currencies have experienced volatility. Furthermore, higher standard deviation of the exchange rates was quite clear in the case of the Hungarian forint (34.9), as the value of the currency varied from 308.71

for 1 euro in 2014, to 395.30 HUF in 2025. Besides that, the Czech koruna had the highest standard deviation value (1.118), followed by the Swedish krona (0.797).

Table no. 3 – Exchange rates against the euro, 2014–24 (1 EUR = ... national currency)

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Bulgarian lev (BGN)	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558	1.9558
Czech koruna (CZK)	27.536	27.279	27.034	26.326	25.647	25.670	26.455	25.640	24.566	24.004	25.120
Danish krone (DKK)	7.4548	7.4587	7.4452	7.4386	7.4532	7.4661	7.4542	7.4370	7.4396	7.4509	7.4589
Hungarian forint (HUF)	308.71	310.00	311.44	309.19	318.89	325.30	351.25	358.52	391.29	381.85	395.30
Polish zloty (PLN)	4.1843	4.1841	4.3632	4.2570	4.2615	4.2976	4.4430	4.5652	4.6861	4.5420	4.3058
Romanian leu (RON)	4.4437	4.4454	4.4904	4.5688	4.6540	4.7453	4.8383	4.9215	4.9313	4.9467	4.9746
Swedish krona (SEK)	9.0985	9.3535	9.4689	9.6351	10.2583	10.5891	10.4848	10.1465	10.6296	11.4788	11.4325

Source: Eurostat (2025a)

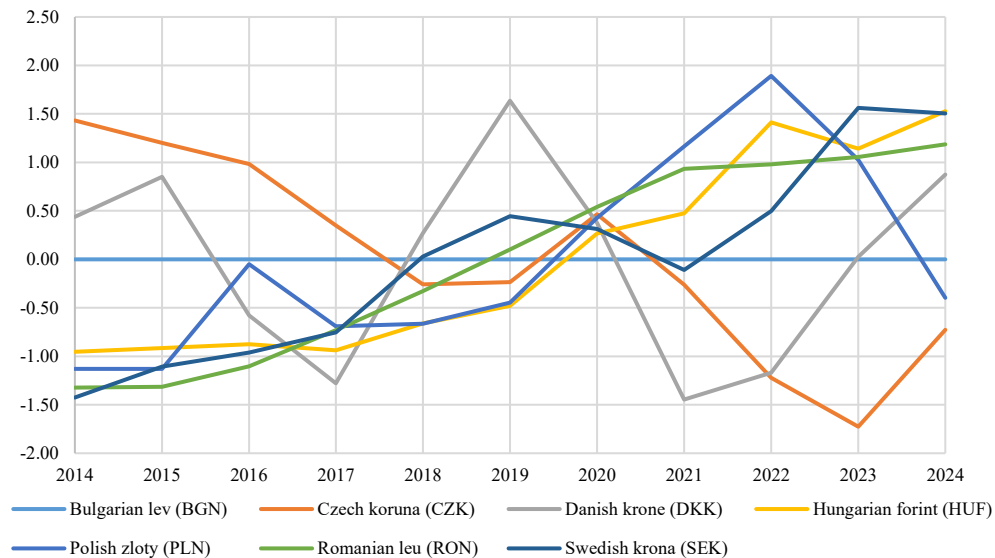


Figure no. 1 – Normalized values (Z-scores) of non-EMU currencies (2014-2024)

Source: Authors' work, based on Eurostat (2025a)

Nevertheless, Figure no. 1 suggests more comparable volatility trends among these seven currencies, diminishing the nominal differences in the values of non-EMU currencies. Higher volatility was recorded after 2020, but general trends include a clear appreciation for the Czech koruna, and depreciation of the Romanian leu, Swedish krona and Hungarian forint. Z-scores for the Danish krone look quite volatile, but the standard deviation of the currency exchange rate is just 0.0094. Formally, only Bulgaria and Denmark are part of the ERM-2

system, making them the only viable candidates for a possible quick introduction of the euro. Namely, candidate currencies need to be part of the ERM-2 for at least two years without severe tensions to the exchange rates (fluctuations between $\pm 15\%$) (Iancu, 2009).

The next graphics (Figure no. 2) tackles with one of the nominal convergence criterion, which is also associated with the OCA theory – price stability. By using the data for annualised average rates for the Harmonised Indices of Consumer Prices (HICP), we calculated the deviations in the average annual inflation rates between particular non-EMU countries and the average rate for the Eurozone. The HICP is used by the ECB for monitoring inflation in the Eurozone, as well as for the assessment of inflation convergence as required under the Treaty. As Figure no. 2 shows, during the period 2013 – 2021 the rates were mostly in line with the Eurozone average. Nevertheless, in the period 2021 – 2024, inflation rates diverged noticeably, especially in the case of Hungary and Czechia, and a bit less in the case of Poland, Romania and Bulgaria. Inflation rates in Denmark and Sweden did not diverge.

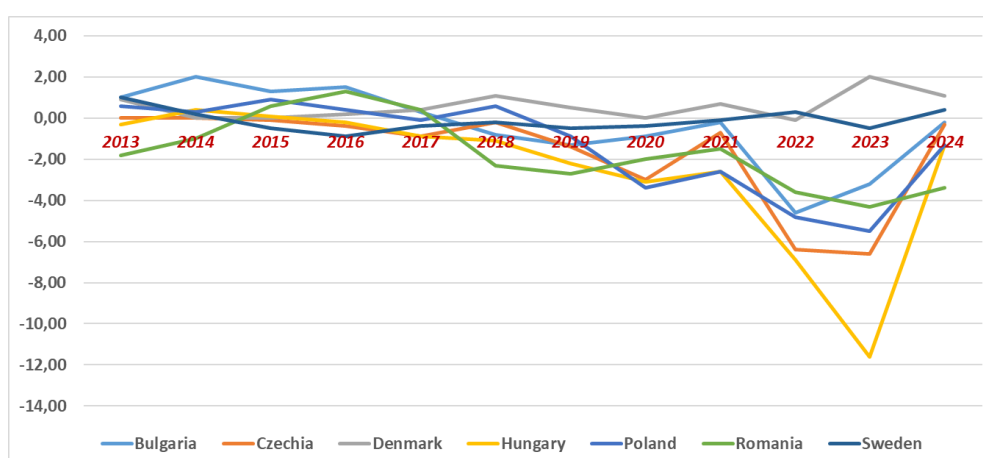


Figure no. 2 – Deviations in the average annual inflation rate in particular non-EMU countries from the average inflation rate in the Eurozone (percentage points)

Source: Authors' work, based on Eurostat (2025b)

Figure no. 3 depicts the deviations of the annual long-term interest rates of non-EMU Member States from the average Eurozone interest rates during the period 2015 – 2024. Danish and Swedish rates were in line with the Eurozone average rates during the whole period, while the Czech and Bulgarian rates were mostly in line: Czech rates diverge slightly since 2018, and more significantly in the period 2020 – 2023, but the Bulgarian rates diverge slightly since 2023. The Romanian interest rates diverged for most of the period, but the trend turned since 2023, while the Polish and Hungarian rates significantly diverged since 2020. For most countries analysed in Figure no. 3, rates deviated especially in 2022. A broader spectrum of trends shows that interest rates converged particularly strongly in the 1990-ies, as a transition of the main Eurozone countries to the single currency, and they remained completely harmonized during the first decade of the euro (Tokarski, 2019).

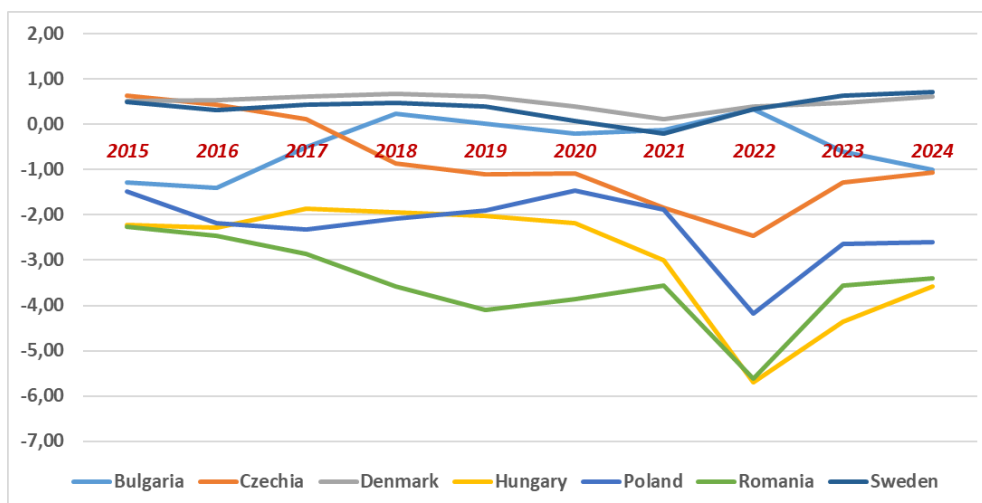


Figure no. 3 – Deviations in the annual long-term interest rates in particular non-EMU countries from the average interest rate in the Eurozone (percentage points)

Source: Authors' work, based on Eurostat (2025c)

Finally, this section ends with a short overview of the fiscal convergence criteria for non-EMU Member States of the Union (Figure no. 4), which are also requirements of the Stability and Growth pact, showing fiscal stability necessary for a functioning economic (and not only monetary) integration. We chose a specific way of comparing both criteria (public debt and government deficit) in three specific years – 2015, 2019 and 2024. Several assumptions and conclusions can be drawn:

- All observed economies had a positive trend when comparing 2015 and 2019, except Romania (which started from an optimal position, but deteriorated its budget deficit, and started to increase its debt after 2019).
- All observed economies deteriorated their fiscal position, when comparing 2019 and 2024, except Denmark.
- The Eurozone average suggests that it does not meet both fiscal (and SGP) criteria in neither of the three analysed years, which makes it more complicated to determine the convergence of candidate countries which are required to meet public debt and government deficit criteria before the introduction of the single currency (which is not in line with the reality of the Eurozone).
- Regardless of the suggested trends, Denmark, Sweden, Czechia and Bulgaria meet the nominal criteria in all three years.
- In the case of Poland and Romania, they deteriorated their fiscal convergence, especially in 2024, but a reversed trend could bring them back within the required settings.
- The only country not falling in the required area (in all three years) is Hungary: Although the trend between 2015 and 2019 was promising, the figures for 2024 are moving them away from the stipulated fiscal targets.

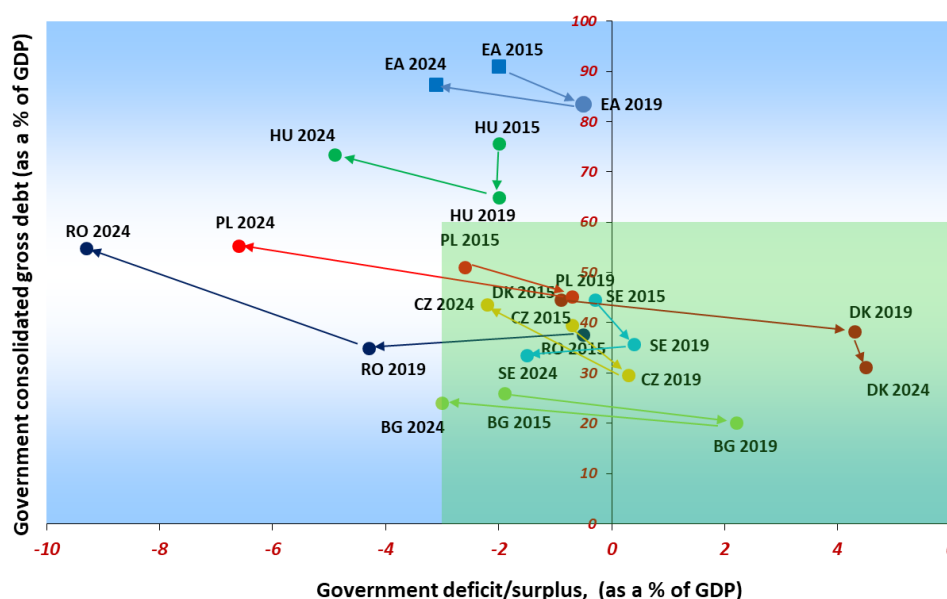


Figure no. 4 – Fiscal criteria of nominal convergence in particular non-EMU countries and the Eurozone (2015, 2019 and 2024)

Notes: The greenish quadrant on the lower right side (below 60% of GDP for the debt criteria, and below -3% of GDP for the deficit criteria) represents the area where both fiscal criteria are satisfied.

Source: Authors' work, based on Eurostat (2025d)

Summarizing nominal convergence, the ECB's Convergence Report (2024) suggests a different perspective, especially because none of the seven non-EMU countries, except Denmark, satisfied all five nominal criteria for the introduction of the euro. It has to be taken into account that the nominal criteria, especially for inflation and long-term interest rates were strongly influenced by the 2022-2023 period of exceptionally high inflation rates in most countries. In fact, in 2022 the average inflation rate was 8.4% in the Eurozone and 9.2% the EU. The following year, the average rates were 5.4% in the Eurozone and 6.4% in the EU. Therefore, the assessed countries did not differ greatly from the average. Our specific assessment suggests that convergence is happening, although the period after 2020 and the disturbances caused by the pandemic, international conflicts and other crises, slowed down the process and caused some divergence. Best candidates for the integration into the EMU are therefore Denmark, Sweden, Bulgaria and Czechia, while the convergence process of Romania, Poland and Hungary needs more time and effort.

3.2 Real convergence and OCA criteria

In this section we present selected indicators related to the concept of real convergence and the OCA Theory. Usually, the real convergence is measured by changes in the GDP *per capita*, and other indicators based on possible assessments of the "catching-up" processes between different economies. Real convergence expresses the approximation of the levels of economic welfare, generally proxied by *per capita* GDP (Martín *et al.*, 2001). Therefore, we

present the data for the seven non-EMU Member States of the Union for the most recent decade (Figure no. 5).

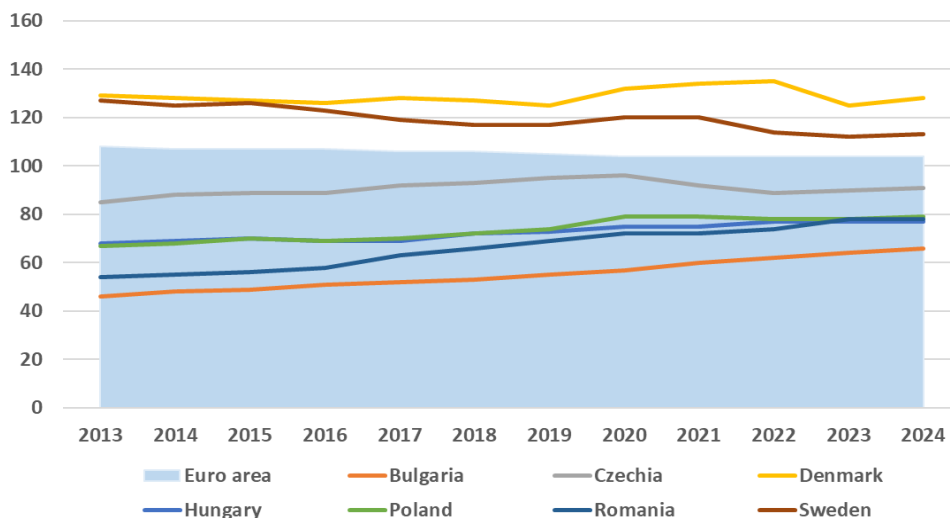


Figure no. 5 – GDP per capita in PPS for selected EU Member States and the Eurozone (2013–2024); EU27 = 100

Note: Volume indices of real expenditure per capita (in PPS_EU27_2020 = 100)

Source: Authors' work, based on Eurostat (2025e)

Figure no. 5 compares the data for the Eurozone and the seven non-EMU countries with the EU27 average, which equals 100. The Eurozone average was 8% higher than the EU average in 2013, but just 4% in the period after 2020. This means that the EU average and Eurozone average are converging. Denmark and Sweden are well above the Eurozone and EU average: Denmark 25-35% higher than the EU average and Sweden dropping from 27% to 13% in the observed period. The remaining five countries from Central and Eastern Europe have all experienced a clear convergence trend, although Czechia and Poland have experienced a slowdown after 2020. Czechia's GDP *per capita* is the closest to the EU average (91% in 2024), while Bulgaria is just at 66%, but improved by 20 percentage points in the observed decade. Hungary, Romania and Poland are quite even (77-79% of the Eurozone average), with Romania improving by 24 percentage points in the same 11-year period. Figure no. 6 compares initial levels of real GDP *per capita* with subsequent changes relative to the Eurozone average for all EU Member States.

It is evident from Figure no. 6 that all new Member States started from 20 to 75 percentage points below the Eurozone average in 1999, but improved their real GDP *per capita* level in the next 24 years by approximately 10-50 percentage points. The figure clusters two groups of countries: "old" Member States in the lower right quadrant, and "new" Member States in the upper left quadrant. Countries not yet members of the Eurozone are represented by red dots, mostly in the new Member States cluster. Denmark and Sweden are obvious candidates for the EMU from the real convergence perspective, while the closest to them among the other non-EMU countries is Czechia, followed by Hungary. Bulgaria, the probable next joiner in 2026, is the farthest positioned, but with a quite strong convergence dynamic.

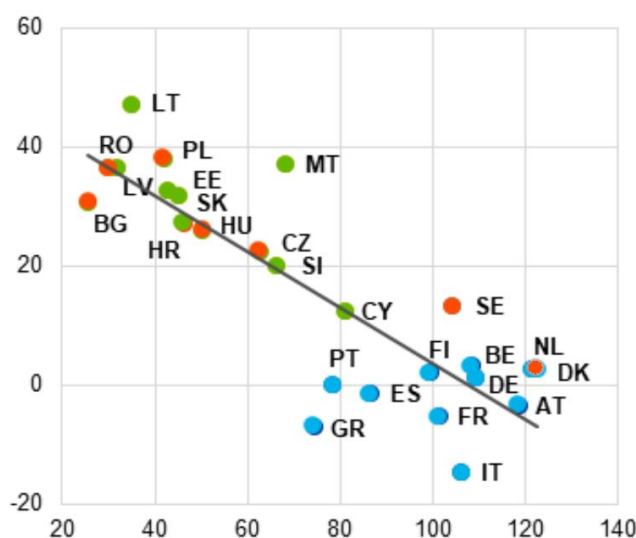


Figure no. 6 – Real GDP per capita – Initial level in 1999 compared with subsequent change relative to the Eurozone average (%)

Note: x-axis – level in 1999 (Index - Eurozone = 100); y-axis – change in level in percentage points (1999-2023); red dots indicate non-EMU countries; green dots indicate countries that joined the Eurozone after 2002; light blue dots indicate countries that joined the Eurozone before 2003. Ireland and Luxembourg are excluded.

Source: *European Central Bank (2024)*; pp. 47

Other relevant indicators which can point out to the real convergence of non-EMU Member States include the share of trade in goods with the Eurozone, and the share of investment positions with the Eurozone. Czechia is a good candidate in case of those indicators, while Bulgaria and Sweden are in a weaker position. An indicator of financial integration is the share of euro-denominated loans to non-financial corporations (as a percentage of total loans), which is the highest in Czechia, Hungary and Romania (45-50%), while in Sweden the share is just 6-7% (*European Central Bank, 2024*). *Eurostat (2025f)* shows that the EU average share of trade with the rest of the EU in 2024 was 61.7%. Among the non-EMU Member States, Bulgaria has the lowest share (57.3%), while Romania, Czechia and Hungary have the highest shares (ca. 72%). Somewhere in between, but still above the EU average, there are Sweden, Denmark and Poland (66-67%).

In the context of measuring real convergence, *Hošoff et al. (2022)* propose gross fixed capital formation at the level of EU states, as well as the governance quality indicators and the index of productive capacities. Governance quality is a crucial prerequisite for the viability and functionality of any (supra)national establishment and spans from the respect of human rights, the rule of law, political pluralism, legitimacy and transparency, access to knowledge and information, efficient public services, equity and sustainability, etc. So, *Hošoff et al. (2022)* combine multiple indicators in order to assess the overall level of governance quality of particular EU Member States (infringements, rule of law, financial irregularities, public procurement). The conclusion was that Hungary and Bulgaria, especially, and Romania, a bit

less, still need to invest more effort to converge with the rest, while Denmark and Sweden actually lead the way for the whole EU. Czechia and Poland score average levels.

The Index of productive capacities (PCI) is a composite index developed by the UNCTAD, which combines 42 indicators from different international sources. The PCI measures the levels of productive capacities along three pillars (productive resources; entrepreneurial capabilities; production linkages) and eight categories (natural capital, human capital, energy, institutions, private sector, structural change, transport, and information and communication technologies). Altogether they determine the capacity of a country to produce goods and services and enable it to grow and develop (UNCTAD, 2023). Figure no. 7 follows convergence trends of non-EMU Member States of the Union during a period of more than two decades.

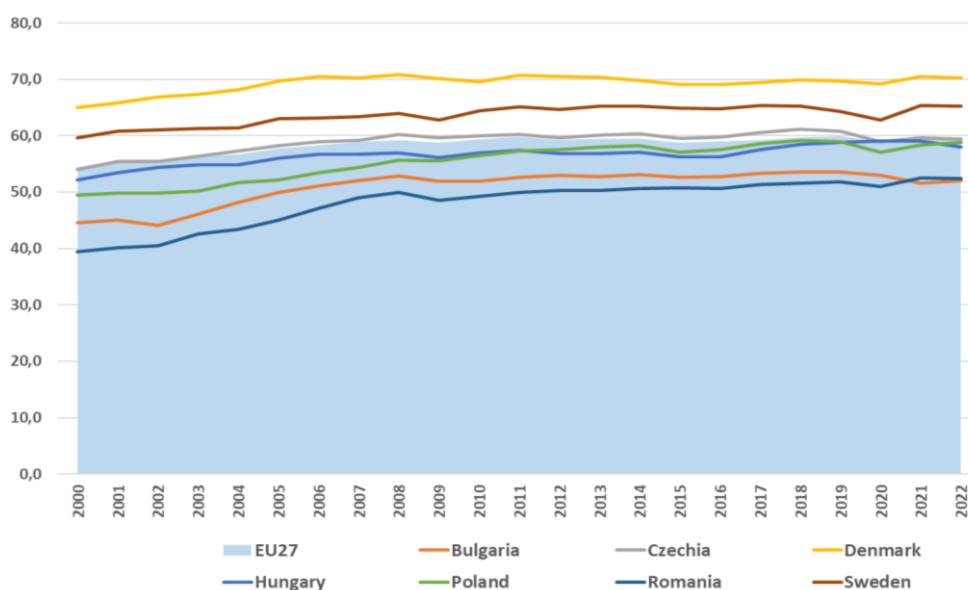


Figure no. 7 – Productive Capacities Index for non-EMU Member States of the EU (2000-2022)

Source: UNCTAD (2023)

Figure no. 7 compares the PCI indexes of seven EU Member States still not using the euro and the EU average score. Czechia, Hungary and Poland have significantly harmonized trends for PCI scores with the EU during the whole period (especially Czechia). Romania and Bulgaria still lag behind, although Romania's convergence trend is more clear, while Denmark and Sweden (together with the Netherlands and Germany) are continually keeping a lead with highest PCI scores.

Gross fixed capital formation (GFCF) represents the ratio of investment to GDP and it is measured as a percentage of GDP, or as the percentage change from the previous period. The GFCF is defined as acquisitions of produced assets (including purchases of used assets) reduced by disposals of fixed tangible or intangible assets. It excludes non-produced assets such as land and natural resources (OECD, 2024; World Bank, 2025). As gross fixed capital and its formation are an important part of the process of increasing the GDP potential, it could

certainly bolster the assessment of real convergence (Hošoff *et al.*, 2022), therefore we present trends of national GCFC's deviations from the Eurozone average in the period of 2015-2023 for the assessed non-EMU countries.

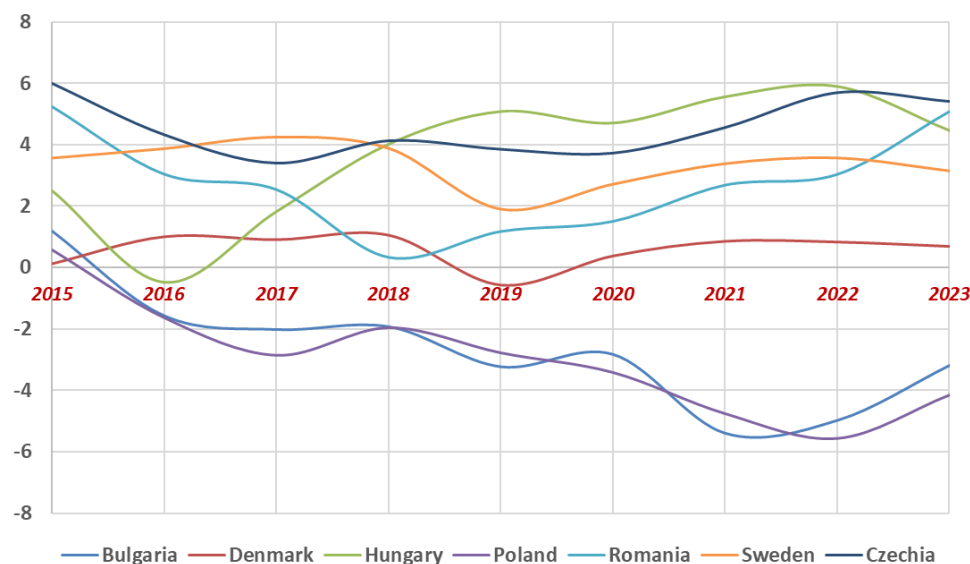


Figure no. 8 – Deviations of Gross fixed capital formation (as % of GDP) for non-EMU Member States of the EU from the Euro-zone GFCF average (2015-2023) (percentage points)

Source: Authors' work, based on [World Bank \(2025\)](#)

Figure no. 8 presents the trend lines of deviation values of Gross fixed capital formation, as a percentage of GDP for non-EMU Member States of the EU, from the Euro-zone average values in the most recent nine available years. Denmark has the most harmonized trend with the Euro-zone during the whole period, while Sweden had a similar trend, but with 2.3 – 3.4 percentage points higher indices. Poland and Bulgaria had the most diverging trends, until 2022 and 2021 respectively, suggesting convergence could restart in the next years. On the other hand, Czechia, Hungary and Romania experienced positive trends, suggesting convergence, especially stable in the case of Czechia. Hungary had a setback in 2016, while Romania's convergence slowed-down until 2018 but recovered afterwards.

We finish this section with one of the main OCA Theory criterion – the importance of synchronized business cycles. Many sources tried to assess the level of synchronization among Euro-zone countries. Cyclical convergence relates to the characteristics of the business cycles and it is fully achieved when business cycles of integrated economies are concordant and of the same amplitude (Creel, 2018). According to several research (Frankel and Rose, 1998; Gogas, 2013; Alesina *et al.*, 2017), business cycles among EU/Euro-zone countries became more synchronized, especially after the introduction of the euro. Although, Beck (2021) suggests that, despite a deeper EMU integration, GDP cycles across EU Member States have grown less synchronized, especially after 2008. Core-periphery GDP growth correlations fell, and the EU-factor's variance share dips, while a shift in economic composition (with services having weaker inter-sectoral ties) transmits fewer common shocks.

As an alternative to the traditional correlation coefficient of output gaps, business cycle coherence can be analysed through a combination of synchronicity and similarity measures (Mink *et al.*, 2012; de Haan *et al.*, 2024). Synchronicity points out to the signs of output gaps, while similarity identifies the differences in amplitudes of business cycles. For instance, correlation analysis suggests that the output gaps of countries in Central and Eastern Europe and the Euro-zone are quite similar, which would be beneficial for acceding countries. de Haan *et al.* (2024) estimate that the business cycles of some countries (i.e. Romania and Hungary) are not well synchronized with the Euro-zone. Walko (2022) presents correlations of output gaps and correlations of annual changes in real GDP with the Euro-zone aggregate for the period 2001-2020. Figure no. 9 excerpts data for non-EMU countries.

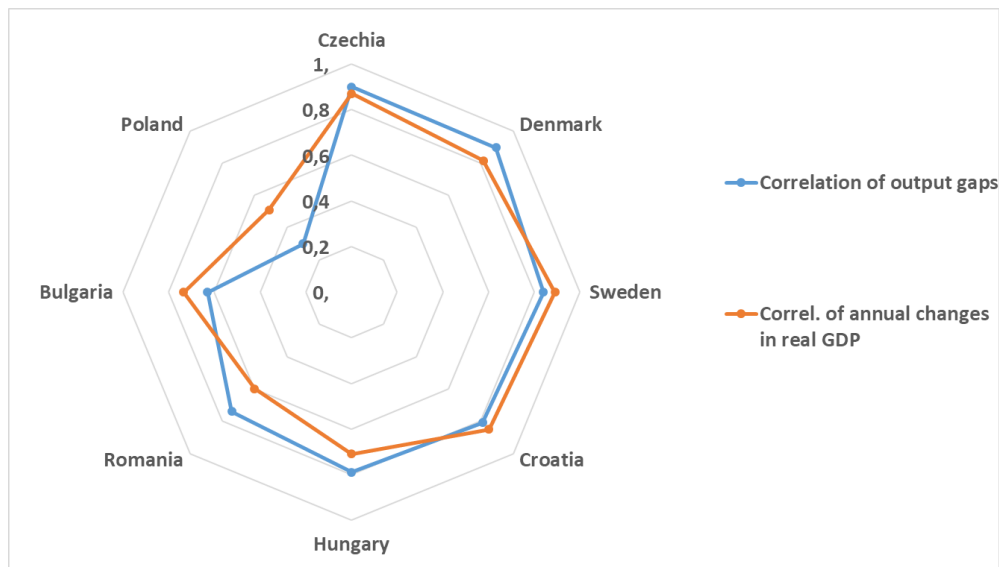


Figure no. 9 – Correlation of output gaps (a) and correlation of annual changes in real GDP (b) with the Euro-zone aggregate, for the period 2001-2020 for non-EMU countries

Source: Authors' work, based on Walko (2022)

Figure no. 9 shows that higher and significant correlation values were estimated for Czechia, Denmark and Sweden for both estimated variables (0.8 – 0.9). The data for Croatia was included as a comparison, as in the assessed period this country was still outside the Euro-zone. However, the correlation values are significant (0.8 – 0.85), especially for the annual changes in real GDP. The correlation values for Hungary, Romania and Bulgaria are more modest (between 0.6 and 0.8), while Poland scores low correlation values (0.3 and 0.5, approximately). Poland is actually the EU Member State with the least correlated business cycles with the Euro-zone. Interestingly, Euro-zone countries with more modest business cycle synchronisation are Ireland, Malta, Greece, Lithuania and Latvia, much less synchronized than Czechia, Denmark and Sweden (Walko, 2022). Comparing them with all Euro-zone countries, these three EMU candidates are more synchronized than most countries already using the euro. On the other hand, Poland has still to converge quite a lot, while for

Romania, Hungary and Bulgaria it is necessary to assess more extensively their convergence context, as business cycle correlations are not giving a clear answer.

The analysis of real convergence shows that Sweden and Denmark, as already established and advanced economies, achieve most criteria for integration. However, they both are postponing their decision to initiate a possible transition to the common currency. Other five non-EMU Member States from Central and Eastern Europe show different perspectives. Regardless of the obvious catching-up processes toward more economically advanced Member States, Poland has not managed to achieve proper real convergence. Giving up from their national currency (złoty) at this stage could prompt asymmetric shocks and a decline in competitive advantage (Mucha-Leszko and Kąkol, 2021). Although Romanian public is optimistic about the future introduction of the euro, the country lags behind in productivity, GDP per capita and economic structure, besides having increasing problems with fiscal imbalances and inflation (Schipor and Duhnea, 2022).

4. DISCUSSION AND CONCLUSION

The launch of the monetary integration among EU Member States intensified the process of economic integration and enabled convergence. Although the level of GDP *per capita* gradually converged, several shocks accentuated existing imbalances and unresolved issues in the macroeconomic (especially fiscal) area (Coutinho and Turrini, 2020; Hošoff *et al.*, 2022; Bordinon *et al.*, 2024). The Euro-crisis (2009-2013) led to economic divergence, especially in “peripheral” Member States, while the more recent “COVID-crisis” was more a symmetrical type of shock, so the convergence resumed, especially because of faster responses and more solidarity among Member States. However, inequality rose in both cases (Miron *et al.*, 2022; Bordinon *et al.*, 2024).

Rosati (2017) points out that the Eurozone countries do differ structurally, but the divergence may be smaller than suggested, primarily because asymmetric shocks in specific Member States reflect specific fiscal policies and impacts of financial and debt crises. According to Ficek (2024), fiscal elements need to be reinforced before a deeper integration. His analysis suggests that the monetary and fiscally most integrated EU countries are Ireland, Luxembourg and Malta, while the best candidates for Euro-zone integration are Denmark, Bulgaria, Sweden and a bit less – Czechia. Besides Greece, Italy and Spain, which use the euro for more than two decades, the least monetary and fiscally integrated countries are Romania, Hungary and Poland. Their accession to the Euro-zone should not be accelerated and forced (in order to avoid Greek-type of crisis scenario). This is why the “smart” use of cohesion and structural funds is essential to boost economic and social cohesion in the EU, as they aim to reduce disparities in the Union (Kandžija and Cvečić, 2011; Alcidi, 2019; Andor, 2019). Nevertheless, institutional heterogeneity in the Union (for example in the context of labour market) must be taken into account as one-size-fits-all reforms may not induce convergence in specific clusters of Member States (Obadić *et al.*, 2023).

Several crises during the recent two decades in Europe have shown that large capital flows to lower-income countries can only contribute to sustainable real convergence and generate productivity growth if resources are efficiently allocated in the economy. Although sustainable convergence is mainly a national responsibility, specific efforts should be complemented by structural reforms at the EU level as well (i.e. deepening the Single Market, Banking Union, Capital Markets Union, the European Semester, targeted InvestEU and EIB

lending, etc.) (European Central Bank, 2015). This notion goes in line with several research which suggest that the real convergence process slows down in periods of crises (Bordignon *et al.*, 2024) and as a response to policies which are implemented in particular countries, also influenced by societal antagonism to changes and less ambitious institutional and structural reforms. However, aligning specific policies, for example budget deficits across countries or post-pandemic green and digital transitions, can reduce business cycle synchronization, a crucial optimal currency prerequisite. Nevertheless, this may be the outcome of pro-cyclical fiscal behaviour or a lack of discipline (Correia and Martins, 2019; Chedi, 2024). Basically, to enable sustainable convergence, three main prerequisites must be achieved (European Central Bank, 2015; Diaz del Hoyo *et al.*, 2017):

- macroeconomic stability should be maintained
- affected economies must increase their degree of economic flexibility
- conditions for total factor productivity growth must be improved (increased proportion of highly skilled workers; improved quality of capital through the adoption of innovation and technology; institutional frameworks which support innovation).

Hošoff *et al.* (2022) imply that, although there is absolute convergence in GDP *per capita* among the EU27 countries, the effects are differentiated, especially with a widening gap in living standards and diverging trends on the regional (sub-national) level. Bulboaca (2023) determined that the real economic convergence at the national level was at least three times stronger than at the regional level. Although the greatest increase in regional differences in GDP *per capita* levels occurred in Ireland, significant divergence was also identified in Poland, Romania, Hungary and Bulgaria. Unfulfilled real convergence in the EMU, especially in the pre-crisis period (before 2009), was mainly a combination of: (a) not supportive institutional conditions for business innovation and productivity growth in some Member States; (b) structural rigidities and a lack of effective competition; (c) low real interest rates which exacerbated credits and fuelled demand beyond real future expected incomes (European Central Bank, 2015). This is what certainly happened in Southern EU countries (such as Greece and Portugal), which have systematically underperformed relatively to the Eurozone average and apparently have been caught in a *lower income trap* (Alcidi, 2019; García Solanes *et al.*, 2025). Therefore, EU and the lagging countries (and regions) should invest more efforts into combining EU financial transfers (Cohesion and Structural Funds, Recovery and Resilience Facility...) and better governance, further market integration (Single Market – especially financial and services market integration, CMU...), fiscal and macroeconomic coordination, as well as more targeted investments in human and physical capital (especially in order to boost competitiveness and total factor productivity). Addressing divergence pressures on multiple fronts could induce growth and convergence, especially in “peripheral” areas, while safeguarding overall stability and functionality of a deeply integrated Economic and Monetary Union.

Perhaps the main conclusion of the research is that an efficient integration into the EMU requires not only the capacity to fulfil nominal convergence criteria, but also to follow closely the progress related to the concept of real convergence, including more diligent analysis of the criteria put forward by the Optimal Currency Area theories. The absence of that could result in a peripheral and non-flexible economy unable to eliminate (asymmetric) shocks affecting it. Focusing just on short-term goals of nominal criteria fulfilment may complicate a sustainable real convergence progress (as evidenced by Greece). Therefore, it is crucial to reach a stable economic and financial situation in candidate countries, as well as to help them

develop resilience to various shocks, as the concept put forward by many economists is that an optimal currency area needs to foster integration and convergence among Member States (Creel, 2018). Since 1999, the EU as a whole has shown sigma and beta convergence driven mostly by the rapid catch-up of Central and Eastern Member States. On the other hand, the original 12 Eurozone countries have seen virtually no real *per capita* convergence after the euro was introduced (European Central Bank, 2015).

García Solanes *et al.* (2025) find that the primary factors that explain the differences between convergence processes and stationary states are labour productivity, physical and human capital, investment and trade openness. This, suggest Jager and Hafner (2013), may influence EMU's vulnerability to asymmetric shocks due to differences in economic structures and potentially high degrees of industrial specialisation (regardless of increased shares of intra-EU trade). That is why Beck (2021) points out to the importance of necessary service-sector integration and a rebuilding of EU-wide sectoral linkages to restore business cycle synchronicity (as the European economy now depends much more on the services sector rather than manufacturing industries). Licchetta and Mattozzi (2023) focus on necessary investments and reforms in order to neutralize structural economic weaknesses and improve productivity growth, which they highlight as main drivers of income convergence. Another aspect is the capacity of risk-sharing through financial markets, as a well capitalised banking sector and a functional capital market should lead to economic resilience (Berti and Meyermans, 2017).

The logical notion would be that the European Economic and Monetary Union needs more resilience in order to foster convergence and allow particular economies to cushion negative impacts of asymmetric shocks and to lower risk premia (Wieser *et al.*, 2024). Furthermore, they suggest that countries adopting the euro from Central and Eastern Europe have seen swifter disinflation, lower long-term borrowing costs and reduced sovereign-bond yield spreads vis-à-vis Germany than non-EMU countries from the same region, primarily because the integration into the Euro-zone induces fiscal discipline and deeper financial integration. This is what Todorov (2023) argues while suggesting that shocks in Bulgaria and the Euro-zone are similar, as an outcome of a binding monetary regime (*currency board*) which partially transmitted the ECB policy effects to Bulgaria, while for other uncertainties the discretion policies were motivated by clear rules, coupled with flexible and dynamic instruments necessary to stabilize the economy. Although, the absence of public support, especially in the case of contested fiscal positions and un-correlated business cycles could translate into significant economic costs comparable to the loss of monetary policy independence (Schipor, 2020). Therefore, policy responses have to be well coordinated and agile in the face of external and unanticipated events, as suggested by Haynes and Alemna (2023). Fiscal discipline, efficient product and labour markets, innovation and smart governance are engines of continuous catch-up processes, as convergence doesn't happen automatically. It is rather a continuous economic and policy adjustment process, as well as a multidimensional process, encompassing nominal, real, social, cyclical, and a convergence towards resilient economic structures.

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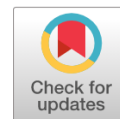
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Evaluating the Eurozone's Impact on Portugal Amidst Modern Uncertainties

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Abstract: This paper investigates the impact of euro area membership on the Portuguese economy, focusing on whether the benefits of integration have outweighed the costs amidst ongoing economic uncertainties. Earlier research employed a VAR model with a discrete change in 1999 to capture the impact of adopting the euro. Instead, this paper uses a Smooth Transition Vector Autoregressive (STVAR) model. The STVAR model allows for the possibility that the adoption of the euro had a gradual effect on the Portuguese economy. This assumption better aligns with the historical process that culminated in the euro's adoption, which involved several stages of gradual progress. As expected, we find a positive impact of adopting the euro on inflation stability and interest rates. However, in contrast to previous research, the results presented in this paper indicate that euro area membership has also positively affected Portuguese real per capita GDP.

Keywords: counterfactual analysis; Euro; European Monetary Union; Portugal; STVAR.

JEL classification: E31; E37; E52; F45; O52.

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1. INTRODUCTION

In periods of significant economic instability and heightened uncertainty, societies tend to reflect on their past and often question their current economic arrangements. Such reflection has become increasingly pertinent in the context of the European project, particularly regarding the eurozone. Criticism of the eurozone has intensified in light of recent challenges, especially during the International Financial Crisis of 2008-2009 and the European Sovereign Debt Crisis of 2010-2012. The main issue of contention was the austerity measures imposed to try to reduce the high levels of debt accumulated in countries such as Greece and Portugal. In these countries, the austerity measures had a strong negative impact on macroeconomic indicators, namely on growth and employment, at least in the short-term. Developments in recent years – namely those associated with the COVID-19 pandemic, ongoing geopolitical tensions that have triggered energy and inflation crises, and the electoral results in several European Union (EU) countries – have again prompted questions about the future of the EU and its most significant creation, the euro. These events have forced member states, including Portugal, to confront the limits and consequences of their membership of the euro area, particularly given the constraints such membership places on national policy autonomy – for a discussion of the Portuguese macroeconomic policy framework, see [Alexandre and Bação \(2022\)](#). When a country's performance is perceived as suboptimal and public dissatisfaction increases, the EU and the euro are readily available as convenient scapegoats.

Critics argue that euro area membership has restricted Portugal's ability to respond to economic shocks by curbing its monetary and fiscal policy tools. In the eurozone, the European Central Bank (ECB) maintains control over monetary policy, meaning that countries such as Portugal are unable to independently adjust interest rates. As a member of the eurozone, Portugal also loses the ability to use currency devaluation as a mechanism for addressing economic imbalances. Consequently, adjustments to gain "competitiveness" through exchange rates are significantly constrained. Additionally, the Stability and Growth Pact imposes strict fiscal rules, placing limits on both budget deficits and public debt levels, and thus narrowing the national fiscal policy options. Furthermore, the common external tariffs of the EU restrict the flexibility of national trade policies, rendering unilateral protectionist measures unfeasible.

On the other hand, some point to the benefits of economic integration that come with shared monetary governance. One of the primary benefits is the maintenance of low and stable inflation rates, which provides a favorable economic environment. Additionally, the elimination of currency exchange costs within the eurozone has significantly reduced transaction costs, further promoting efficiency in cross-border trade. Monetary integration has also enhanced investor confidence, facilitating increased investment within the region. Economic and monetary integration also fosters trade among member countries, which in turn boosts economic activity by simplifying transactions and strengthening economic ties.

[Mundell \(1961\)](#) may be interpreted (e.g., [Bayoumi and Eichengreen \(1994\)](#)) as identifying two features of a country that are important for determining the costs and benefits of entering a monetary union: the nature of shocks and the ease of response. First-generation optimum currency area theory emphasized labour mobility ([Mundell, 1961](#)), openness to trade ([McKinnon, 1963](#)) and output diversification ([Kenen, 1969](#)) as characteristics that would help a country reduce the costs of participating in a monetary union (see the discussion in [Silva and](#)

Tenreyro (2010)). Naturally, there was skepticism about whether the future eurozone members would fulfil the requirements for ensuring that the costs did not outweigh the benefits.

One prominent skeptic was Martin Feldstein. For example, in Feldstein (1997), Feldstein wrote that “What is clear to me is that the decision will not depend on the economic advantages and disadvantages of a single currency.” (p. 23) and that “My own judgement is that the net economic effect of a European Monetary Union would be negative. The standard of living of the typical European would be lower in the medium term and long term if EMU goes ahead [...]” (p. 24). The results reported in Bayoumi and Eichengreen (1994) and in similar papers about business cycle synchronization among EU countries suggested low correlation of shocks – i.e., important differences in the nature of shocks across EU countries – except for those in the “core” (Germany and its closest neighbours). The theoretical model presented in Alesina and Barro (2002) provided some support for participation in a monetary union – especially for a country that “has a history of high inflation and is close in a variety of ways to a large and monetarily stable country” (p. 435), and where the value that the government attaches to “an independent money as a symbol of sovereignty” is weakening (p. 435) –, but it did not specifically address the issue of participation in the eurozone.

A more positive view of the forthcoming European monetary union was presented in Frankel and Rose (1998). This second-generation view of optimum currency area theory emphasizes the endogeneity of international trade patterns and business cycles. More precisely, the economic behaviour of a country that enters a monetary union is likely to change as a consequence of doing so, and it is likely to change in a way that better suits the country to membership of the monetary union. Therefore, evaluating the desirability of joining a monetary union on the basis of historical data may be misleading. Frankel and Rose (1998) argue that their empirical results provide evidence in support of this hypothesis.

The idea that country characteristics change over time is also central to the approach we take in this paper, with the goal of contributing to the debate on the costs and benefits of euro area membership for Portugal. The main element of our contribution is a counterfactual simulation of the Portuguese economy if it had not joined the eurozone. To produce this counterfactual, we use a Smooth Transition Vector Autoregressive (STVAR) model. Earlier studies, such as Aguiar-Conraria *et al.* (2012) and Bação *et al.* (2013), modelled euro area membership as a discrete change in the economic structure beginning in 1999Q1, when the eurozone officially started. The key limitation of this approach is that it assumes that the impacts of joining the eurozone occurred abruptly at a specific point in time, ignoring the gradual changes and adjustments that accompanied the integration process. In contrast, the STVAR model does not impose that constraint. In an STVAR model, the adjustment may be abrupt, but it may also occur gradually. The actual type of adjustment will depend on the values of the STVAR parameters, which will be estimated from the data. In fact, the estimate might even point to an abrupt change, but at a date different from 1999Q1. Therefore, the STVAR comprises the VAR model with one structural break as a special case.

This change in modeling framework is particularly relevant given the complexity of the European integration process. The adoption of the euro was the culmination of a series of policy decisions beginning with the liberalization of capital movements, the pursuit of the European Single Market, and compliance with the Maastricht Treaty’s convergence criteria. These earlier stages of Economic and Monetary Union (EMU) paved the way for the introduction of the single currency. This suggests that the economic behaviour of participating countries, including Portugal, began to evolve well before the formal adoption of the euro in

1999. A gradual modelling approach is therefore more appropriate to capture the realities of this process.

Specifically, we focus on the behaviour of real per capita GDP, inflation, short- and long-term interest rates, and the real effective exchange rate in Portugal. We compare the outcomes observed under eurozone membership with a counterfactual scenario in which Portugal did not join the eurozone, simulating the economy's behaviour under the assumption that pre-euro membership conditions had persisted. Our results indicate that eurozone membership may have produced significant benefits for Portugal, including increased GDP and successful disinflation. These findings stand in contrast to earlier conclusions, which suggested that euro membership imposed a cost on Portugal in terms of GDP growth, while offering a benefit in the form of lower inflation.

The remainder of the paper is structured as follows. [Section 2](#) discusses this paper's relationship to the existing literature on the economic impact of eurozone membership. [Section 3](#) presents the empirical framework, data, and methodology employed in this study. [Section 4](#) provides the results of the STVAR model, including simulations of the counterfactual scenario. Finally, [Section 5](#) offers concluding remarks.

2. RELATION TO PREVIOUS WORK

Before Portugal joined the eurozone, the Portuguese Government commissioned a study ([Pinto Barbosa *et al.*, 1998](#)) on the impact of the euro on the Portuguese economy. Unlike our study, [Pinto Barbosa *et al.* \(1998\)](#) computed an ex-ante estimate of the effect of eurozone membership. To this end, they used the model developed by [Gaspar and Pereira \(1995\)](#) to simulate the evolution of the Portuguese economy from 1999 onwards under different assumptions. In their model, the impact on GDP occurs through changes in the interest rate. Therefore, the different scenarios differed based on the assumed level of the interest rate, with the lowest interest rate (i.e., the lowest risk premium) corresponding to the scenario of eurozone participation (the baseline scenario). In the scenario deemed most reflective of not joining the eurozone, the interest rate was only slightly higher (50 basis points) than in the baseline scenario. Comparing these two scenarios, joining the eurozone was estimated to increase real per capita GDP by about 1% after 10 years. However, the justification for such a small difference in interest rates between the two scenarios was that, in the alternative scenario, the same “stability-oriented economic policy,” aimed at meeting EU standards, would continue to be followed. Thus, the comparison of the study's two main scenarios focuses on the impact of irrevocably fixing the exchange by entering the eurozone, and excludes what [Pinto Barbosa *et al.* \(1998\)](#) call “regime effects,” associated with adopting macroeconomic policies enabling participation in the eurozone. If the alternative to joining the eurozone was to abandon these policies, leading to a 400 basis point rise in the interest rate above the baseline scenario, the study estimated that the benefit of joining the eurozone could increase to 7% of real per capita GDP.

Did these expectations materialize? Reflecting on the first 10 years of the euro, Martin Feldstein asserted that “The first decade of the EMU has been a clear success” ([Feldstein, 2009](#)), before warning of the challenges posed by the international financial crisis. Eventually, the international financial crisis did take a toll on the European project. Doubts regarding Portugal's participation in the eurozone mounted, especially during the sovereign debt crisis—see, e.g., [Andrade and Duarte \(2015\)](#), who focus on the difference between real and

nominal convergence, and [Bação et al. \(2019\)](#), who discuss the evolution of expectations in Portugal. Obviously, it is impossible to know with certainty what would have happened had Portugal not joined the eurozone. However, one can use models to estimate the impact of the decision to adopt the euro, conditional on the model's assumptions. [Aguiar-Conraria et al. \(2012\)](#) did that using a VAR model with a structural break. [Aguiar-Conraria et al. \(2012\)](#) divided their analysis into two periods: pre- and post-1999Q1, the latter being the date when Portugal formally joined the euro area. According to their results, the average annual GDP growth rate would have been 0.6 percentage points higher in the counterfactual scenario, indicating that joining the eurozone had a cost in terms of GDP. On the other hand, the amplitude of the Portuguese business cycle would have been larger if the country had not adopted the euro; thus, joining the euro had a stabilizing effect.

Building on this approach, [Bação et al. \(2013\)](#) employed a similar VAR model framework, but incorporated additional macroeconomic variables such as the current account balance, public debt, and unemployment to provide a more comprehensive assessment of euro area membership. Naturally, their study confirmed the earlier conclusion that euro area membership led to decreased GDP while also reducing the inflation rate.

These studies based on the VAR approach, however, share an important limitation: they model eurozone membership as an abrupt, one-time shift in economic conditions starting in 1999Q1. They overlook the fact that joining the eurozone was not merely a matter of adopting a new unit of account and delegating monetary policy to the ECB. Rather, it was the culmination of a process that involved significant policy reforms and gradual convergence with broader European economic standards over many years. [Pinto Barbosa et al. \(1998\)](#) assumed that this process would not be reversed in the future, but critics of eurozone membership do not complain only about the cost of having a fixed exchange rate vis-à-vis eurozone countries. Indeed, critics of eurozone membership argue that it imposes limitations on national economic policies, particularly regarding constraints on the budget deficit and public debt, that are detrimental to the well-being of Portuguese citizens.

Rather than imposing a discrete structural break, the STVAR model used in this paper allows for a gradual transition between regimes, which better aligns with the reality of Portugal's economic integration. This approach provides a more flexible structure, which can detect whether the change was abrupt or gradual and whether it occurred at the expected time – in this case, 1999Q1. Note that [Akhmadieva and Smith \(2019\)](#) studied whether the euro caused structural breaks in macroeconomic relations in member countries. They conclude that the “date of the formation of euro is not identified as the most likely date for a structural break in the GDP equations and the GDP growth rate equation shows no structural break for many countries” (p. 246). This conclusion supports our use of the STVAR model. Note also that the STVAR model has already been used in the context of analyzing the impact of EU membership by [Greenaway et al. \(2000\)](#). In that case, the STVAR was used to identify the effects of EU enlargement and deepening in the pre-1990 period.

Alternative approaches have been used in other papers. For instance, [Söderström \(2010\)](#) estimated a DSGE model for Sweden and then simulated the model from 1999Q1 onward assuming that the interest rate matched the ECB's interest rate rather than Sweden's actual interest rate. This simulation produced a counterfactual in which Sweden had joined the eurozone as a founding member. [Pesaran et al. \(2007\)](#) used a more sophisticated version of a VAR model to construct the counterfactual for both Sweden and the UK. The model used was a Global VAR (GVAR) model, which, instead of modelling each country in isolation,

accounts for the evolution and relative importance of partner countries. A more recent approach uses the “synthetic control” approach proposed by [Abadie and Gardeazabal \(2003\)](#). When applying this approach to estimate the impact of eurozone membership on a country, the counterfactual is obtained as a weighted average of countries not affected by the adoption of the euro. The weights are chosen so that the behaviour of the weighted average before joining the eurozone resembles the behaviour of the country before adopting the euro. The synthetic control methodology was used by [Campos *et al.* \(2019\)](#) to estimate the impact of EU integration, and, more relevant to our purposes, by [Puzzello and Gomis-Porqueras \(2018\)](#) to estimate the impact of adopting the euro. [Puzzello and Gomis-Porqueras \(2018\)](#) did not include Portugal in their sample, but [Gabriel and Pessoa \(2024\)](#) extended their analysis to include all the founding members of the eurozone, as well as Greece, which, in 2001, was the first country to join the euro area after its founding. [Gabriel and Pessoa \(2024\)](#) conclude that Portugal was one of the “mild losers” of the euro, along with France, Germany and Italy.

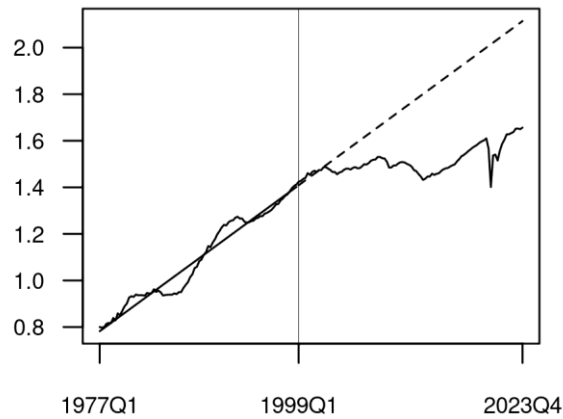


Figure no. 1 – Portuguese real per capita GDP (log)

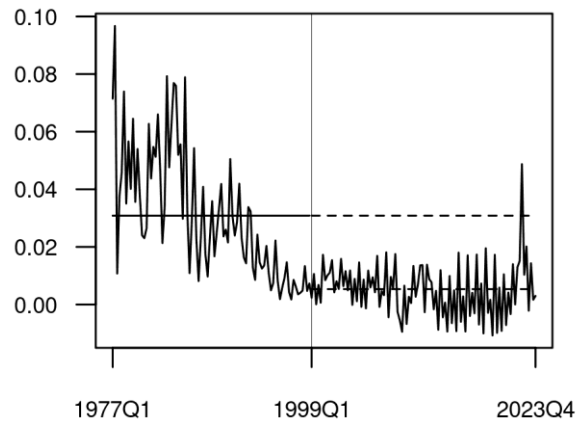


Figure no. 2 – Portuguese quarterly inflation

Overall, the previous literature is not supportive of a significant positive impact of eurozone membership on GDP. In a simplified way, we may say that setting the break date to 1999Q1 amounts to looking at the evolution of the Portuguese economy in the pre-euro years and extrapolating that evolution to the post-1999Q1 period. The situation is illustrated in [Figure no. 1](#) for real per capita GDP and in [Figure no. 2](#) for quarterly inflation. Between 1977Q1 and 1998Q4, real per capita GDP grew at an average annual growth rate of 2.9%, while after adopting the euro, between 1999Q1 and 2023Q4, the growth rate was only 1%. As for inflation, the average annual inflation rate before adopting the euro was 13%, while during the euro period it was only 2%. In the next section, we describe the STVAR approach that we employ in this paper to provide a quantitative estimate of the impact of eurozone membership on the Portuguese economy. As we emphasized above, this approach does not require us to impose 1999Q1 as the date of the structural break. The timing and nature of the transition will be estimated by the STVAR model.

3. THE EMPIRICAL APPROACH

The first subsection presents the STVAR model, while the second subsection presents the data used in the empirical analysis.

3.1 The STVAR Model

[Aguilar-Conraria et al. \(2012\)](#); [Bação et al. \(2013\)](#) assume that joining the Eurozone is adequately modelled by a one-time change in the parameters (in 1999Q1) in the context of a VAR model. Formally, this may be written as follows:

$$Y_t = D_t(A_0 + A_1Y_{t-1} + A_2X_t) + (1 - D_t)(B_0 + B_1Y_{t-1} + B_2X_t) + \epsilon_t \quad (1)$$

In equation (1), Y is a vector of endogenous variables, X is a vector of exogenous variables, and D is a dummy variable equal to 1 until 1998Q4 and equal to 0 since 1999Q1. The formulation of the model implies that at the break date (1999Q1) suddenly the coefficients that drive the system change, with the B_t coefficients substituting the A_t coefficients.

The STVAR model may be written as:

$$Y_t = S_t(A_0 + A_1Y_{t-1} + A_2X_t) + (1 - S_t)(B_0 + B_1Y_{t-1} + B_2X_t) + \epsilon_t \quad (2)$$

where S is the smooth transition variable defined as:

$$S_t = \frac{1}{1 + e^{a(t-t_0)}} \quad (3)$$

Note that S_t is always between 0 and 1. Therefore, the outcome Y_t is a weighted average between the outcome under the first set of parameters ($A_0 + A_1Y_{t-1} + A_2X_t + \epsilon_t$) and the outcome under the second set of parameters ($B_0 + B_1Y_{t-1} + B_2X_t + \epsilon_t$). The standard VAR model is a special case of the STVAR model, which occurs when $S_t = 1$ for all periods before 1999Q1 and $S_t = 0$ afterwards.

Using the STVAR allows for the change in the behaviour of Y_t to occur gradually over time, rather than abruptly. The STVAR may yield a result that indicates that the change has

been abrupt, but does not impose that behaviour. If the change has in fact been abrupt, the STVAR will detect that, even if it did not occur in 1999Q1.

In the STVAR model, two additional parameters, a and t_0 , must be estimated. The parameter a determines the speed of the regime change, while t_0 represents the estimated date of that change in the following sense:

- If $a > 0$ and $t < t_0$, then $S_t > 0.5$; the weight of the first regime is larger.
- If $a > 0$ and $t > t_0$, then $S_t < 0.5$; the weight of the second regime is larger.

Therefore, the first regime is dominant before the date corresponding to t_0 , while the second regime is dominant after that date. Using the STVAR allows for the possibility that the regime change occurs suddenly in 1999Q1, but also for the possibility that the change occurred at some other date, or that the change occurred gradually over time. [Figure no. 3](#) illustrates various possibilities with increasing speeds of transition. The bottom right panel is close to an abrupt change case.

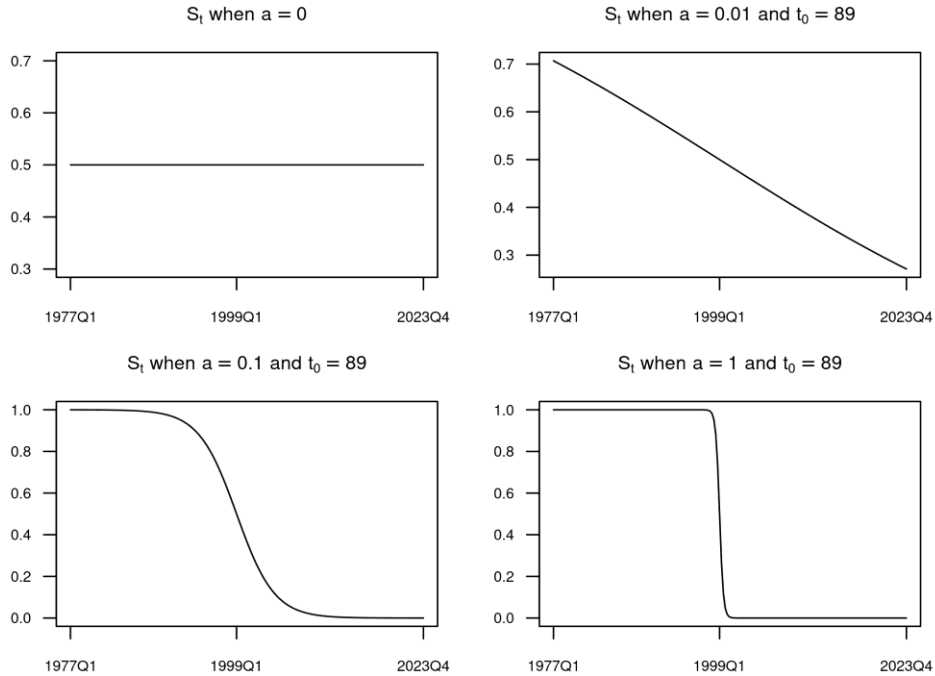


Figure no. 3 – The smooth transition variable with different parameter values

Since our goal is to obtain a point estimate of the evolution of GDP in Portugal, we will not be concerned with the standard deviation of the estimates. One advantage of this fact is that it allows us to estimate the STVAR model by iterating on estimates of a linear model, where the explanatory variables are the original explanatory variables (Y_{t-1} and X_t) multiplied by S_t , and those same variables multiplied by $1 - S_t$. The iteration is performed over a grid of values for a and t_0 . The grid for a is 0.01, 0.1, 0.2, ..., 10, and the grid for t_0 is 1.5, 2.5, ..., 186.5. Having estimated the STVAR, and thus having estimated t_0 , we compute the counterfactual by

simulating the model with the coefficients corresponding to the date just before the regime change, i.e., just before S_t switches from being larger than 0.5 to being smaller than 0.5. Therefore, the “break date” corresponds to the first observation for which $S_t < 0.5$, while the last observation in the first regime (call it “base date”) is the last observation for which $S_t > 0.5$. Given that our grid contains only half-integers, this is observation $t_B = t_0 - 0.5$; likewise, the break date is observation $t_0 + 0.5$. Consequently, the simulation from the base date onward is computed under the assumption that $S_t = S_{t_B}$ for all $t \geq t_B$.

3.2 Data

The data spans from 1977Q1 to 2023Q4, covering the period before and after Portugal’s entry into the euro area. The endogenous variables (Y_t) in our model include the following:

- Portuguese real per capita GDP (log): the quarterly time series sourced from the Banco de Portugal database was divided by the population series obtained from AMECO (which was linearly interpolated to obtain a quarterly time series).
- Portuguese Consumer Price Index (CPI) inflation: the quarterly consumer price index was retrieved from the International Monetary Fund’s International Financial Statistics database (IMF-IFS). This was used to compute the quarterly inflation rate as the log difference.
- Portuguese short-term Interest Rate: for the period up until 1998Q4, we used the Banco de Portugal’s discount rate from the IMF-IFS, while from 1999Q1 onwards, we utilized the ECB’s main refinancing operations rate.
- Portuguese long-term Interest Rate: we used the government bond yield from IMF-IFS until 1985Q4; for the period afterwards the data comes from Eurostat.
- Portuguese real Effective Exchange Rate (log): the data were retrieved from the IMF-IFS. However, we extended the data to the period 1977Q1-1978Q4 using the nominal exchange rate and the consumer price index, as well as their lags.

The exogenous variables (X_t) used in our model are drawn from the broader euro area data and include:

- euro area real per capita GDP (log): real GDP was sourced from the Area-Wide Model (AWM) Database until 1994Q4 and from the ECB thereafter. We linked the two series using the growth rates. The resulting series was divided by the population series obtained from AMECO (as above, linearly interpolated to obtain a quarterly time series).
- euro area GDP deflator Inflation: data for the harmonized consumer price index were also sourced from the AWM Database (until 1996Q4) and the ECB (since 1997Q1). We computed the quarterly inflation rate as the log difference of the resulting series.
- euro area short-term interest rate: we used a German short-term interest rate to represent the euro area short-term interest rate before the creation of the euro. The time series corresponds to the Bundesbank’s discount rate until 1998Q4 and to the ECB’s main refinancing operations rate since 1999Q1.
- German long-term interest rate: as above, but now for the whole period, we used a German long-term interest rate to represent the euro area long-term interest rate. The time series corresponds to the government bond yield from the IMF-IFS until 1979Q4 and from Eurostat since 1980Q1.

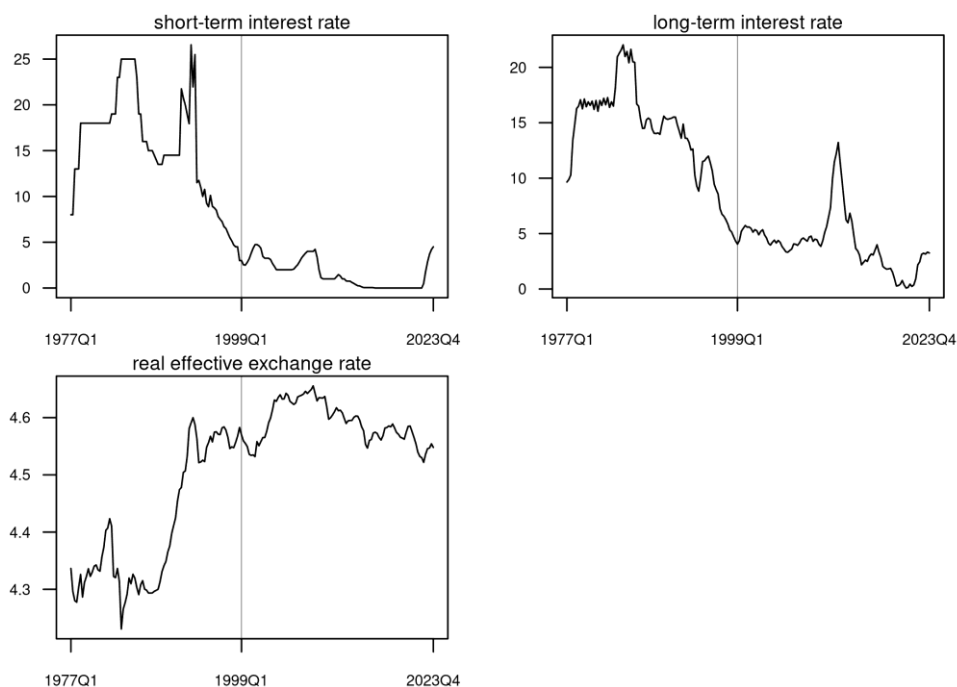


Figure no. 4 – Additional time series for Portugal

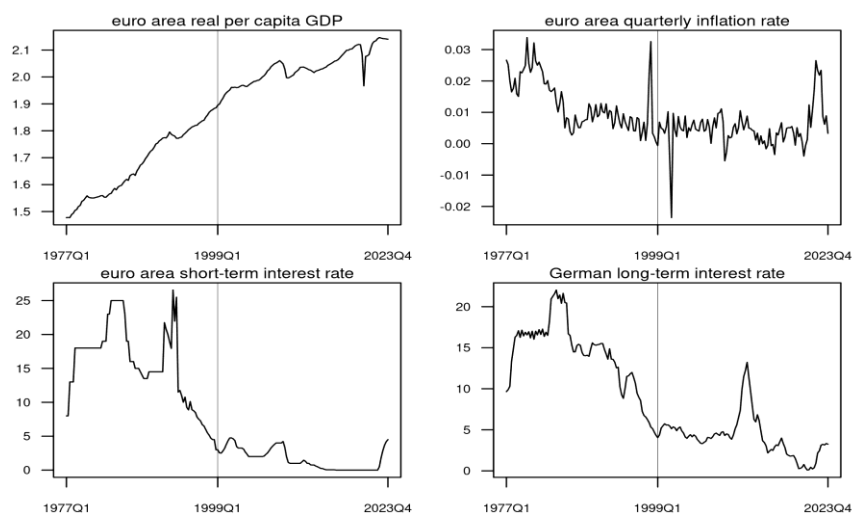


Figure no. 5 – Exogenous time series

Figure no. 4 shows the evolution of the Portuguese short term interest rate, long term interest rate and real effective exchange rate (real per capita GDP was already shown in Figure no. 1, and quarterly inflation was in Figure no. 2). Figure no. 5 shows the evolution of the exogenous variables.

4. RESULTS

We began by estimating the model described in the previous section. As discussed in the next subsection, the model was not robust. Therefore, we proceeded to estimate a second version of the model. The second version of the model, described in second subsection below, provides our estimate of the impact of the euro on the Portuguese economy.

4.1 The basic STVAR model

When we estimate the basic STVAR model presented in the previous section, the estimated a is 5.7 and the estimated t_0 is 65.5, which implies that the regime change occurred in 1993Q2. These estimates also imply that the change was fairly abrupt; see Figure no. 6. We will return to this issue below.

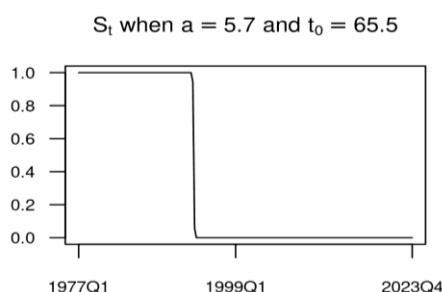


Figure no. 6 – The smooth transition variable in the basic model

Figure no. 7 shows the counterfactual for GDP obtained using the basic model. The figure suggests that after an initial period of approximately ten years, during which simulated GDP was slightly below actual GDP, the paths of simulated and actual GDP become very similar. This finding contradicts previous literature. But what about the endogenous variables of the model? Figure no. 8 shows the actual and simulated paths for inflation, the exchange rate, and interest rates. Some of the simulated paths appear somewhat unusual. The model estimates that the long-term interest rate would have remained at a high level, similar to its level before the break date. However, the simulated paths for inflation, the exchange rate, and interest rates are explosive. Therefore, the model appears to produce inconsistent results.

One possible explanation is that the estimation of the model is affected by the turbulence in the early 1990s within the Exchange Rate Mechanism of the European Monetary System, which forced the withdrawal of the British pound from the mechanism. To account for this possibility and assess the robustness of these results, we added a dummy variable for 1993Q2 to the model. The resulting model is discussed in the next subsection.

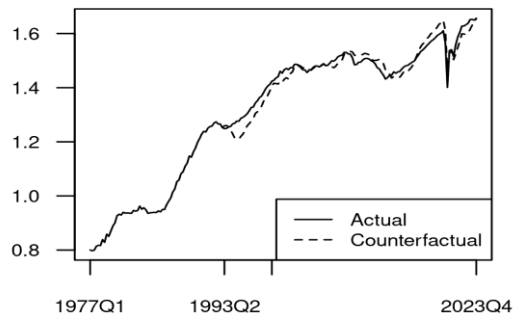


Figure no. 7 – Actual and counterfactual (log) GDP in the basic model

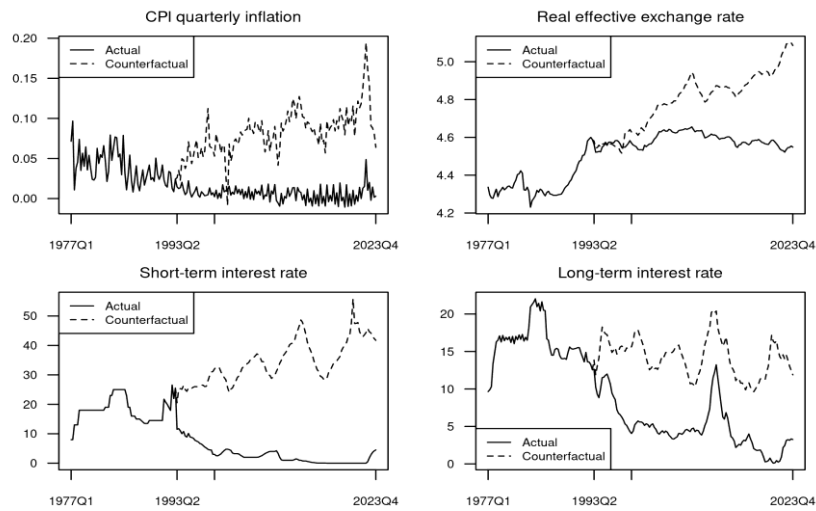


Figure no. 8 – Simulated paths in the basic model

4.2 The model with a dummy for 1993Q2

When a dummy variable for 1993Q2 is included in the model, the change in the coefficients of the model occurs gradually rather than abruptly (see [Figure no. 9](#)). The estimates of the smooth transition parameters are now 0.1 for a and 49.5 for t_0 , which implies that the break date is 1989Q2.

According to the evolution portrayed in [Figure no. 10](#), euro area membership has had a positive impact on Portuguese real per capita GDP. Compared to a counterfactual scenario in which Portugal did not join the euro area, our results indicate that GDP growth has been consistently higher under euro area membership. By the end of the study period (2023), real per capita GDP was estimated to be approximately 17% higher than in the counterfactual scenario. [Figure no. 11](#) depicts how the difference between actual and counterfactual real per capita GDP evolved over time. It shows that most of the gain occurred before the start of the euro: by 1999Q1, actual GDP was already about 10% larger than counterfactual GDP.

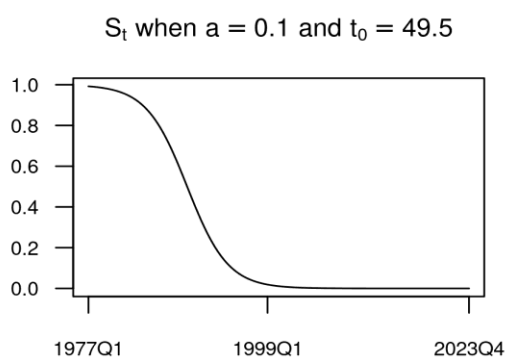


Figure no. 9 – The smooth transition variable in the model with the 1993Q2 dummy

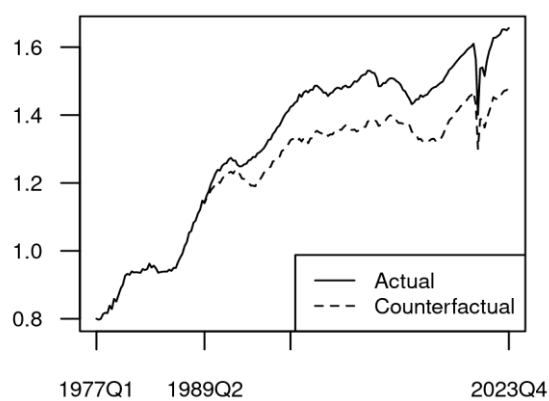


Figure no. 10 – Actual and counterfactual (log) GDP in the model with the 1993Q2 dummy

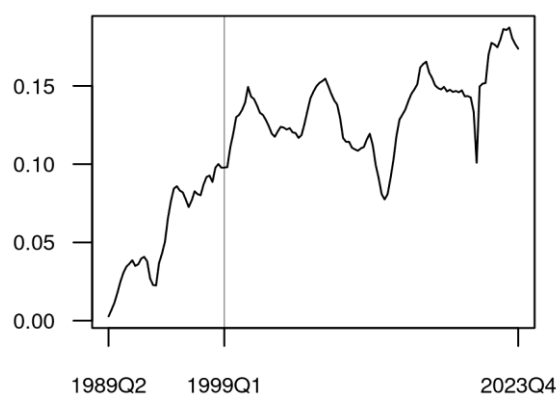


Figure no. 11 – Difference between actual and counterfactual GDP

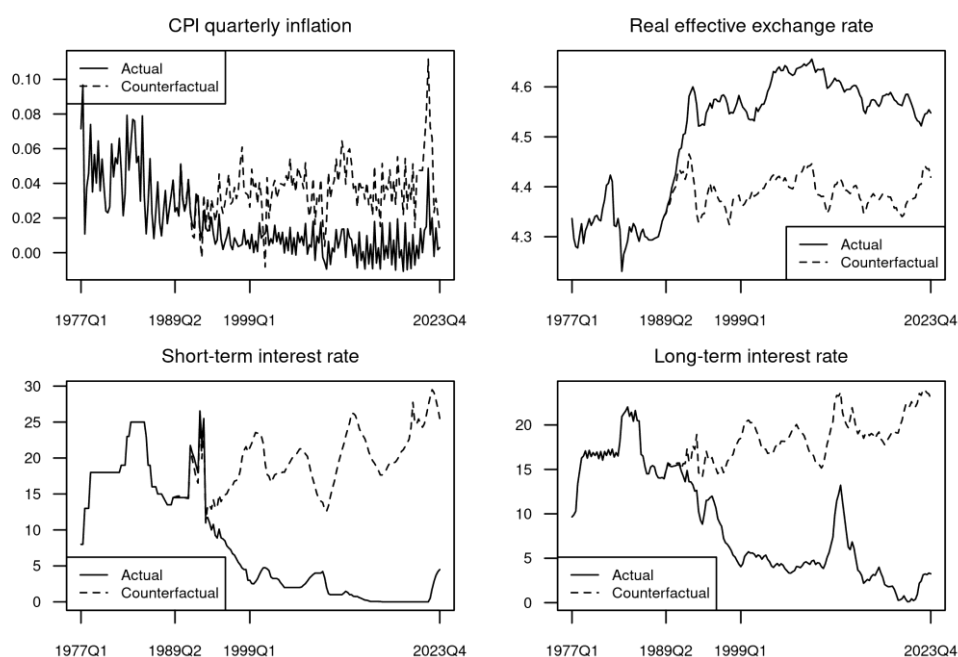


Figure no. 12 – Simulated paths in the model with the 1993Q2 dummy

Figure no. 12 shows the difference between actual and counterfactual values for the other endogenous variables of the model. One clear benefit of the nominal convergence process required for eurozone membership was the successful disinflation observed in Portugal. Unsurprisingly, the counterfactual simulations indicate that Portugal would have faced higher inflation without euro area membership. Another clear benefit of euro area membership is the decline in both short- and long-term interest rates in Portugal. Again unsurprisingly, the STVAR results show that both short- and long-term interest rates were lower and less volatile in the post-euro period compared to the counterfactual scenario. The results concerning the real effective exchange rate indicate that, had Portugal not joined the eurozone, the real effective exchange rate would not have appreciated as much as it did.

The results reported in this subsection differ noticeably from those in the previous subsection. The conclusions of the previous version of the model were not robust; introducing a dummy for 1993Q2 altered the conclusions as described. But is this second version of the model itself robust? We performed two robustness tests. First, we added a dummy for each quarter from 1992Q2 to 1993Q3, the period associated with the European Monetary System crisis of the early 1990s, during which the band and parity of the Portuguese Escudo changed several times. The second robustness test involved adding a dummy for the Covid crisis (2020Q2), which caused an unusual recession, combining an extremely large magnitude with an extremely short duration. In both cases, the conclusions remained unchanged.

5. CONCLUDING REMARKS

This study contributes to the ongoing debate about the costs and benefits of euro area membership for Portugal by presenting an estimate of the macroeconomic impact of integration into the eurozone. Using a Smooth Transition Vector Autoregressive (STVAR) model, we compared actual economic indicators with a counterfactual scenario in which Portugal did not join the euro area. More specifically, we projected the path of macroeconomic indicators under the assumption that the nominal convergence process required to join the eurozone stopped halfway.

Our findings suggest that eurozone membership has yielded several benefits, including increased real per capita GDP, successful disinflation, and lower interest rates. By the end of the study period in 2023, real per capita GDP was estimated to be approximately 17% higher than in the counterfactual scenario, with much of this gain occurring before the official adoption of the euro in 1999.

Our estimates differ from those reported in previous studies. The primary factor behind this is that the use of the STVAR model allows us to consider that part of the benefits of joining the eurozone were achieved in the years preceding the creation of the euro, during the nominal convergence process. Naturally, the results present in this paper offer one interpretation of the historical data, not necessarily the definitive one. Nevertheless, we are convinced the STVAR's ability to account for the transition period is an advantage relative to the VAR models used in earlier studies.

The benefits and costs of eurozone membership are increasingly being weighed against a backdrop of rising uncertainty, driven by factors such as geopolitical tensions, rapid technological advancements, and the growing influence of populist parties across Europe. The economic stability provided by eurozone membership has been beneficial in shielding member countries from currency volatility and in providing a unified framework to respond to challenges, as seen during recent crises, such as those associated with Covid and inflationary pressures. Meanwhile, the rise of populist parties, often critical of European integration, reflects public concerns over the limitations that eurozone membership imposes on national sovereignty. The one-size-fits-all approach of the eurozone is unlikely to please everyone, yet the costs appear to be worth bearing. Part of the benefit of being in the eurozone is precisely the fact that it provides a framework for stability, limiting the potential for reckless policies.

Happy birthday to the euro!

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The Euro and Saving-Investment Imbalances over 25 Years: The Importance of Common Currency and Common Markets

Margarita Katsimi*, Ron Smith**, Gylfi Zoega***

Abstract: The 1992 Maastricht Treaty, laid the foundations for the current European Union with its single market in goods, services, capital and labour and established the framework for the creation of the single currency. We study countries that differ in the extent to which they share a common currency or common markets in labour, capital or goods through membership of the single market. These differences between countries allow us to judge the importance of membership of each of these institutions. We examine the impact of the euro on the labour, capital and goods markets and ask if membership of the euro is reflected in the parameters of some standard econometric relationships in particular the Feldstein-Horioka and purchasing power parity equations.

Keywords: Feldstein-Horioka; capital mobility; eurozone.

JEL classification: F32; F33; F36; F45.

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1. INTRODUCTION

The 1992 Treaty of the European Union, or the Maastricht Treaty, laid the foundations for the current European Union with its single market in goods, services, capital and labour. In addition it established the framework for creating a single currency. Part of this framework was the Maastricht criteria which put restrictions on inflation and interest rate differentials, deficits, and exchange rate stability. Monetary unification was combined with the establishment of fiscal rules set in the Stability and Growth Pact. However, some European countries do not belong to the eurozone. These differences between countries allow us to judge the importance of membership of each of these institutions. In particular, we ask if membership is reflected in the parameters of some standard econometric relationships.

The economic history of the past 25 years is a testament of the profound impact of the treaty on economic development in Europe. Intra-EU trade has increased according to several studies. The European Commission has found that the increase in EU integration measured in trade in goods and services continues unabated and prices continue to converge across the countries¹. Developments in the labour- and in capital markets have also been pronounced but created more controversy².

While the integration of labour markets and capital markets has generated economic gains, it has also caused political as well as economic turmoil. Intra-Europe trade in goods and services, in contrast, has been less disruptive³. The influx of immigrants in the UK was one of the main reasons why that country decided to leave the European Union in 2016, and immigration remains a contentious issue in many other European countries. It is one of the reasons for the popularity of right-wing, as well as left-wing, anti-immigration populist political parties. In the capital market, massive capital flows in the first decade of the century caused an economic boom in the southern sphere of the eurozone and the sudden stop of these triggered the eurozone fiscal crisis. The economic history of the single market (SM) and the euro can be told either around the gradual gains in efficiency or around the turmoil caused by large movements of labour and capital that have sometimes put the future of the single market and the euro in doubt.

We start with the labour market, then go on to the capital market and finally the goods market as reflected in relative prices in the various countries. Although we discuss the markets separately, they are interconnected since short term capital flows and sudden stops have monetary effects which influence price levels. Labour market movements between countries are reflected in remittances, which also have monetary effects.

2. LABOUR MARKETS

The impact felt in labour markets has been profound, strengthened by the enlargement of the EU towards the east. The movement of workers from lower to higher productivity countries has benefited the recipient countries by adding to their labour force and the sending countries through remittances and the human capital investment by their nationals. The gain to the migrants themselves takes the form of better career prospects and higher income, which often enables them to accumulate enough savings to be able to return to their country of origin with a better lifestyle⁴.

[Dorn and Zweimuller \(2021\)](#) document the pattern of migration within the EU, especially the sizable migration from east to west in the last twenty years caused by the income

disparity between Western Europe and the new eastern member states. They show that the fraction of foreign nationals in the domestic labour market is highest in the highest income-per-capita European countries and lowest in the lower income countries while the proportion of a country's citizens living in other EU countries is largest for the lower income countries. Thus, Romania and Bulgaria have a staggering 18.4% and 12.7%, respectively, of their citizens living abroad⁵. [Aksoy and Zoega \(2020\)](#) show how immigration mitigates the effects of the collapse of fertility in OECD countries with high human capital. [Dorn and Zweimuller \(2021\)](#) find evidence for some but limited convergence in wage rates across countries and static gains from migration.

In spite of the significant welfare gains from migration, migration has become a very contentious issue that threatens to cause major political disruptions. [Dustmann and Preston \(2019a\)](#) document the economic benefits of labour mobility in terms of world welfare and contrast this with the politics of receiving countries resistant to immigration. Their explanation for the discontent is the desire by a significant share of the home population to maintain cultural and ethnic homogeneity. [Card et al. \(2012\)](#) found that concerns about cultural homogeneity are more associated with attitudes towards immigration than are concerns about economic issues. The better educated tend to be more accepting of immigrants because they have more positive views about cultural heterogeneity and because they feel less threatened by the influx of immigrants into the labour market. [Dustmann and Preston \(2007\)](#) found a role for cultural prejudice in forming attitudes toward immigration and ethnically different immigrant populations from the natives. [Hainmueller and Hopkins \(2014\)](#) come to a similar conclusion. This goes to explaining why opposition to immigration is strongest in countries where a large share of immigrants come from outside the EU. This applies to the three largest countries in the single market, Germany, France, Italy, as well as to the Nordic countries Sweden and Finland and also to the Netherlands (measured in terms of the difference between the share of non-EU and EU nationalities in a country's population). Each of these countries have a large anti-immigration political party while in some others, such as Denmark, the mainstream parties have managed to stave off the populist threat by adopting stricter policies towards immigration. The same applies to Sweden, but this only occurred after the emergence of the vibrant anti-immigration Sweden Democrats party, which is currently the second largest party in the Riksdag. In the large EU countries, political developments in France and Germany in the summer of 2024 reflect stronger resistance to immigration by the citizens of these countries.

The regional dispersion of refugee immigration can trigger a rise in the popularity of anti-immigration parties. [Kenny and Miller \(2022\)](#) find that for the UK from 2000 to 2015, an increase in the number of asylum seekers dispersed around the country is associated with an increase in the popularity of far-right political parties (but not mainstream right-wing parties) at the local level. The effect is made weaker by ethnic diversity so that the regions with the most diverse ethnic groups are more receptive to asylum seekers. This explains why the regions of the UK with the largest share of immigrants, such as London, voted overwhelmingly to remain in the EU while other regions with fewer immigrants voted to leave. Similarly, studying the effect of refugee immigration in Denmark, [Dustmann et al. \(2019b\)](#) find that immigration increased support from all parties on the right of the political spectrum, but the gains were concentrated in rural areas.

The UK's decision to allow unhindered migration from the new member states in Eastern Europe in the 2000s made it possible for large numbers of Polish workers to move to the UK

following Poland's membership of the European Union (EU) in 2004. As [Dorn and Zweimuller \(2021\)](#) document, migrants from a given country are likely to move to a destination country where many of their compatriots have already settled. The decision by the UK to allow immigration immediately after the East's accession while others, such as Germany, did not, made the UK a popular destination of migrants which then induced more migrants attracted by the initial waves. There is scant evidence for an adverse effect of the wave of immigration on the local population. [Dustmann *et al.* \(2013\)](#) find that immigration in the UK had a positive effect on the average wage of native workers although there were some wage declines below the twentieth percentile of the wage distribution^{6,7}. [Alfano *et al.* \(2016\)](#) argue that a desire to stop immigration from the other single market countries and taking control of the borders became the single most important argument in favour of leaving in the Brexit referendum. The EU's refusal to accept temporary curbs on immigration into the UK before the Brexit referendum in 2016 appears in retrospect to have been the final nail in the coffin of the UK's membership of the European Union.

In order to get an idea about the importance of anti-immigration attitude in the electoral process in the EU compared to non-EU countries, we look at parties' electoral manifestos. Specifically, we use data from the Manifesto Project (MP) that performs a quantitative content analysis of parties' election programmes⁸. MP provides data on parties' positive and negative statements on a variety of issues including immigration. The sample includes 67 countries and parties' preferences regarding immigration are available for 2014-2022⁹. We focus on the variables 'negative statements on immigration' (*per601_2*) and 'positive statements on immigration' (*per602_2*). In the following table we show the average percent of negative (positive) statements on immigration as a ratio of all statements on immigration for EU and non-EU countries by considering all political parties and all electoral periods that took place in our sample period: 63 elections in non-EU countries and 51 elections in EU countries. We first construct for each country the ratio of each party's negative (positive) statements over its total statements on immigration. Then we average across all political parties in each electoral period. However, a simple average could be misleading since parties with extreme preference tend to be supported by a small share of voters. Therefore, we weigh each party's statements with its vote share. Finally, we average across electoral periods and countries.

Table no. 1 – Negative and positive statements on Immigration

	EU	Non-EU
Negative (weighted statements)	36.7	14.0
Positive (weighted statements)	27.7	26.2
Only negative (vote share)	40.9	21.0
Only positive (vote share)	37.6	29.3

We can see in the first two lines of [Table no. 1](#) that immigration as an issue seems to be more important in the electoral platforms in the EU than in the non-EU countries since the sum of negative and positive statements on immigration in the EU (64.4) is higher than in the non-EU countries (40.2). This is expected since labour mobility is an important pillar of European integration and therefore more relevant for the political agenda in the EU. What is perhaps less

expected is that negative statements on immigration (36.7) exceed positive statements (27.7) in the EU while the opposite is the case in the non-EU countries (13.96 vs 26.24).

Although positive statements do not differ a lot in the two groups of countries, political parties in the EU include negative statements on immigration in their platforms much more than non-EU political parties. Thus, anti-immigration as a political position seems to be more relevant for the EU countries reflecting perhaps a tendency to blame labour mobility for various economic and social problems.

Next, we look at parties that show a strong preference against or in favour of immigration in the sense that they have either only negative statements on immigration or only positive. As shown in the lower part of [Table no. 1](#) in all elections in the 2014-2022 period in the EU there were 104 parties with a clear positive preference for immigration and 83 parties with a clear negative preference. In the non-EU countries, fewer parties had a clear stance on immigration in their electoral platforms: 60 parties were pro-immigration and 34 against. Parties with a positive attitude towards immigration gained on average 29.3% of votes in the respective elections in the non-EU countries and 37.6% in the EU countries. At the same time parties with a clear anti-immigration position had on average a much higher vote share in the EU countries (40.9%) than in the non-EU countries (21.03%).

It should be noted that anti-immigration statements could mainly refer to immigrants from outside EU and reflect dissatisfaction with EU policies in this area and not so much to intra-EU labour mobility. Nevertheless, the fact that over 40% of voters in the EU support anti-immigration parties cannot be ignored as an alarming development for the process of European integration.

3. CAPITAL MARKETS

As with labour migration, capital mobility has been shown to benefit economic growth in Europe. [Zoega and Phelps \(2019\)](#) studied convergence of output per capita in a sample of 37 European countries over the period 1999-2014. They found that the post-communist economies are converging more rapidly than other countries in the sample and more so the closer they are integrated into the European Union. Thus, EU membership increased the speed of convergence as did euro membership. They attribute the convergence to foreign direct investment, technology diffusion and an inflow of EU structural funds.¹⁰

While large migration flows have caused political upheaval in many European countries, excessive capital flows have caused massive economic disruptions in recent decades. Thus, developments in capital markets have also posed a threat to the stability of the euro and the single market. Large capital flows preceded the Great Recession in 2008 and caused a boom-bust cycle both in countries within the eurozone as well as outside it. One way to map the pattern of (net) capital flows is by estimating the relationship between saving and investment for different countries and groups of countries. This draws on the literature started by the seminal paper of [Feldstein and Horioka \(1980\)](#), who studied the relationship between saving and investment.

In a world with perfect capital mobility, saving and investment should be uncorrelated across countries and over time within a county. The FH equation is the following:

$$\left(\frac{I}{Y}\right)_{jt} = a_t + b_t \left(\frac{S}{Y}\right)_{jt} + u_{jt} \quad (1)$$

where I denotes gross capital formation, S is saving, Y denotes GDP, j is a country index, t a time index and u is an error term. The coefficients a and b have a time subscript to allow them to change between regimes, such as the single market period and the eurozone years. [Feldstein and Horioka \(1980\)](#) found that the estimated coefficient of the saving rate was 0.887 in a cross section of industrialized countries for the period 1960 to 1974 and attributed their finding to barriers to capital mobility.

The relationship has somewhat different interpretations when estimating in a cross-section of countries, on the one hand, and over time, on the other hand. In a cross section, if capital was perfectly mobile across countries, we would find the coefficient b to be close to zero because a fall in savings in one country would not affect domestic interest rates or investment. Thus, the relationship can be understood to measure capital mobility when measured in a cross section of countries. This was the interpretation given by [Feldstein and Horioka \(1980\)](#). When measured over time, in contrast, the FH equation can be looked at as a measure of intertemporal solvency for each country. A country that persistently invests more than it saves will accumulate foreign debt and depending on its rate of growth of output, run into balance of payment problems.

Several explanations have been proposed for the non-zero estimated coefficient in the FH paper. Persistent current account deficits and the corresponding net capital inflows generate a deteriorating net investment position, which eventually will raise the rate of interest demanded by foreign creditors making further borrowing difficult ([Coakley et al., 1996](#)). Here capital markets force countries to align saving with investment in the long run. In a similar vein, [Tobin \(1983\)](#) and [Summers \(1988\)](#) argued that governments may dislike deficits for financial stability reasons and surpluses because they indicate room for expansionary policies. [Bai and Zhang \(2010\)](#) show that financial frictions can explain the FH puzzle.

The history of the eurozone offers some explanations for changes in the FH coefficient over time. The different national currencies that the euro replaced differed in interest rates, which reflected differences in monetary policy as well as differences in the expected depreciation of the currency and country risk. Interest rate differentials could then be expected to generate differences in saving and investment across the countries. Without real interest rates being equal, a fall in saving in one country could raise the real interest rate and make investment fall in that country.

The Maastricht Treaty put restrictions on inflation and interest rate differentials and deficits, and increased exchange rate stability. The intuition behind the convergence of interest rates as a Maastricht pre-requisite for participation in the euro area was that in order for countries to fulfil this criterion they should follow policies to facilitate the adoption of a common monetary policy and also to eliminate the country risk. As soon as currencies were accepted in the ERM, country risk fell due to investors' expectations that euro area participation is not consistent with default. This expectation was based on, what later turned out to be, time inconsistent fiscal rules, which in combination with no currency risk allowed interest rates to converge.

Following [Frankel \(1992\)](#), real interest rate differentials can be written as:

$$(i - \pi^e) - (i^* - \pi^{e*}) = (i - i^* - fd) + (fd - \Delta s^e) + (\Delta s^e - (\pi^e - \pi^{e*})) \quad (2)$$

where i and i^* denote domestic and foreign nominal interest rates, π^e and π^{e*} are the domestic and foreign expected inflation, fd is the forward discount on the domestic currency and Δs^e

is the expected depreciation of the domestic currency¹¹. The first term on the right-hand side of the equation is the covered interest differential capturing country-specific factors such as capital controls or default risk. The second and third term represent the exchange rate risk premium and the expected real depreciation. The elimination of the three right-hand side terms, which eurozone membership would bring, generates real interest parity and as a result weakens the relationship between saving and investment across countries.

The introduction of the single market involved the removal of capital controls with obvious implications for the country risk. The introduction of the euro eliminated the exchange rate risk and reduced the expected real depreciation. For the same reason that regional authorities have no reason to worry about current account imbalances, the euro member states could also feel more relaxed, or so they thought, about trade deficits. Because the correlation between saving and investment should for these reasons be as low between countries as between regions within a country, the establishment of the single market in 1994 and the eurozone in 1999 may have coincided with a structural break in the coefficient of saving in the Feldstein-Horioka (1980) equation¹².

3.1 The FH coefficient over time

We are not the first to study the change in the FH coefficient in the eurozone. [Blanchard and Giavazzi \(2002\)](#) found that the FH puzzle had disappeared in the euro zone. [Kumar and Bhaskara Rao \(2011\)](#) also found supportive evidence for a negative effect of European monetary integration on the FH coefficient in a sample of 13 OECD countries and [Choudhry et al. \(2014\)](#) in a sample of 252 countries. Also, [Choudhry et al. \(2014\)](#) find that capital mobility declined following the financial crisis. [Johnson and Lamdin \(2014\)](#) confirm that the financial crisis raised the FH coefficient for the eurozone and the non-euro EU countries. [Katsimi and Zoega \(2016\)](#) study the effect of the beginning of the European single market in 1993 and the introduction of the euro in 1999 on the FH coefficient where countries outside the single market serve as a control group and those within as a treatment group. They find that the FH coefficient fell with the introduction of the single market and the euro and rose with the financial crisis.

[Figure no. 1](#) shows the FH coefficient estimated in a cross section of OECD countries for every year between 1980 and 2023. The countries include members of the EU, the countries in the European Economic Area (EEA) that do not belong to the EU and several countries outside the EEA¹³. The figure shows that the FH coefficient fell after the creation of the single market and then some more after the introduction of the euro until the financial crisis hit in 2008. It then rose and peaked in 2019 before falling in the COVID-19 years and subsequently rising in 2023.

In [Figure no. 2](#) we distinguish between developments in the eurozone, the single market countries that do not use the euro, and countries outside the single market. Each observation is estimated with as a ten-year rolling panel estimated with fixed effects. We include the founding members of the single market and the founding members of the euro and then countries that never belonged to the single market (see list of countries in note below [Figure no. 2](#)).

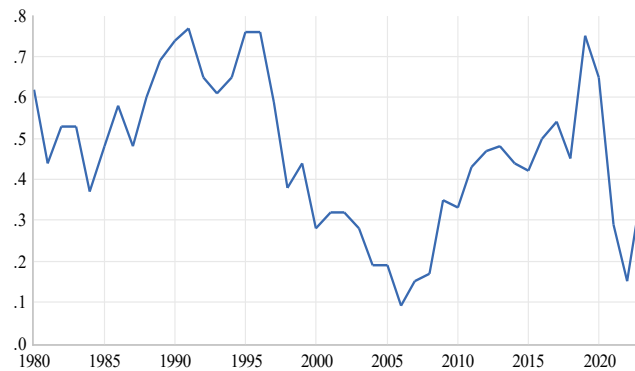


Figure no. 1 – FH coefficient estimated from annual cross sections of OECD countries

Note: The number for each year is the FH coefficient estimated in a cross section of OECD countries for that year.

The ten-year rolling sample, the FH coefficient for the eurozone fell after the launch of the single market and the euro and then rose during the crisis until 2014. It then fell in 2015 but maintained a higher value than before the crisis. The fluctuations of the FH coefficient for the single-market countries that are outside the euro are more pronounced. The coefficient was negative in the early 2000s and then rose after the 2008 crisis only to fall again in 2014 and 2015 to zero, rise again in 2018 and 2019 and return to zero during COVID. In contrast, the FH coefficient for the countries outside the single market fluctuated much less during this period. It did fall somewhat before the financial crisis and it did rise in the crisis, but the magnitude of these changes are much smaller than for the European countries.

It is noteworthy that the last values of the FH coefficient for the eurozone are much higher than for the countries outside the single market. It seems that the single market and monetary integration only had a transient effect on the FH coefficient in the early 2000s.

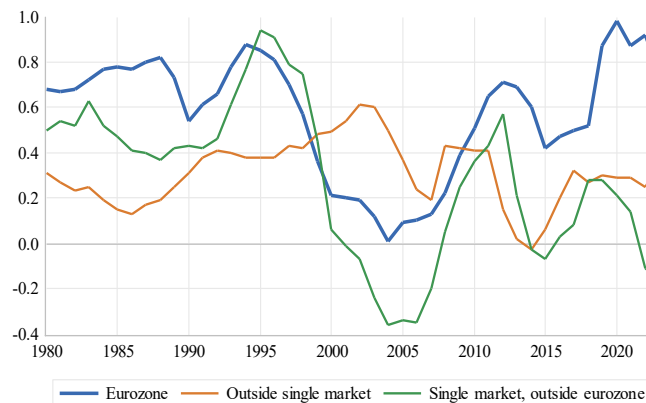


Figure no. 2 – FH coefficient estimated from a ten-year rolling panel of OECD countries

Note: The number for each year is the FH coefficient estimated from a ten-year (backward-looking) rolling panel with a fixed-effects estimator for each of the three country groups. The eurozone group includes Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. The non-single market group includes Australia, Canada, Chile, Israel, Japan, Korea, New Zealand and the US. The non-euro group within the single market includes Iceland, Norway, Sweden, Switzerland and the UK.

Finally, [Figure no. 3](#) shows the FH coefficient for a panel of Eastern European countries also estimated with a ten-year rolling sample. The first observation is estimated for the years 1995-2004. The coefficient rises after the financial crisis, then falls in 2014 and 2015 only to rise again, peak in 2021 and fall thereafter. This is similar to the pattern of the other single market countries in [Figure no. 2](#).

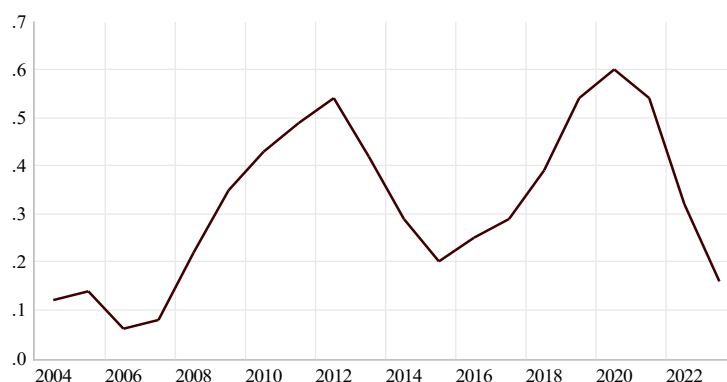


Figure no. 3 – FH coefficient for Eastern Europe from a ten-year rolling panel

Note: The number for each year is the FH coefficient estimated from a ten-year (backward-looking) rolling panel with a fixed-effects estimator for Bosnia, Bulgaria, Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

3.2 Panel regressions

To further investigate the shifts in the FH coefficient, we estimate the equation using a panel of countries. We observe savings and investment for 36 OECD countries going back to 1960 and ending in 2022¹⁴. We choose members of each group of countries that have been consistently members of the group¹⁵. See [Table no. A1](#).

[Table no. 2](#) shows the results of (unbalanced) panel estimations of the FH equation for all OECD countries as well as subgroups of countries¹⁶. We allow for five time dummies to test for structural breaks: One dummy variable marks the first years of the single market before the advent of the euro in 1993-98. Another marks the early years of the euro before the financial crisis, 1999-2007. The third stands for the crisis in the eurozone from 2008-14. The next covers the recovery years 2015-19 and the final dummy variable marks the COVID-19 period 2020-22. The time dummies are also interacted with the saving rate to test for structural breaks in the coefficient b in Equation (1). A Wald test for the single market and the eurozone countries rejects the hypothesis of a constant intercept term as well as a constant coefficient of the saving rate across time (1% level of significance).

For the whole sample of 36 OECD countries we get a coefficient of 0.559 for the saving rate in [Table no. 2](#). For the period as a whole, countries in the single market but outside the eurozone have a coefficient lower than countries using the euro (0.321) compared to 0.665 in [Table no. 2](#). Comparing the single market to the countries outside it, countries in the single market have a higher coefficient, 0.568, than those outside it, 0.415. It follows that a common currency is not a prerequisite for capital mobility.

In the second column of [Table no. 2](#), the creation of the single market and the introduction of the euro affect b for the single-market countries. The coefficient of the saving rate falls significantly from 0.57 to 0.47 in 1993-98 and further to -0.06 in 1999-2007. About half of the fall in b due to euro area creation is offset by the crisis after 2008 when it rises to 0.25. One can see in columns (4) and (5) that the effect of the introduction of the euro was greater than that of the single market, and greater in the eurozone than in other single market countries. The FH coefficient fell from 0.67 to -0.02 in the euro countries in 1999-2007 and from 0.32 to -0.03 in the non-euro countries. The financial crisis made the coefficient rise to 0.24 for the non-euro countries and to 0.41 for the euro countries. The crisis appears to have had a greater effect in the euro countries.

Eurozone creation coincided with a decrease in the value of b in the whole sample of 36 OECD countries, but this effect is much weaker for the non-single market countries as could be expected. It is much stronger for the eurozone than the non-euro single market countries. Column (3) of [Table no. 2](#) shows that the adoption of the euro also coincides with a decrease of the coefficient of the saving ratio for countries outside the single market from 0.42 to 0.24, which is, however, much higher than the same coefficient for single market countries. As described above, this effect is much greater within the eurozone. Finally, the financial crisis leads to a rise in the saving ratio coefficient throughout the EU, but it does not affect non-single market countries.

At the bottom of the two tables, we perform a differences-in-differences (DiD) analyses as in [Katsimi and Zoega \(2016\)](#) to show the pattern in the data more clearly. This can be explained by the equation below where superscript i denotes a group of European countries (the treatment group), the control group, NSM, is the group of countries outside the single market and t measures the time period; 60-92, 93-98, 99-07 or 08-14, 15-19 and 20-22. The first period includes as before the years before the creation of the single market, the second the early years of the single market before the introduction of the euro, then the euro before the financial crisis, then the years of the financial crisis, the recovery and finally the COVID-19 recession. The DiD equation is the following:

$$\delta_{dd} = (b_t^i - b_{t-1}^i) - (b_t^{NSM} - b_{t-1}^{NSM}) = (b_t^i - b_t^{NSM}) - (b_{t-1}^i - b_{t-1}^{NSM}) \quad (3)$$

Here i denotes the single market, the eurozone, the non-euro single market countries and the northern and the southern part of the eurozone. The equation calculates the difference in the change of the FH coefficient b for any of these groups (treatment), on the one hand, and the countries outside the single market (control), on the other hand. This is equivalent to the difference between time periods of the between-group difference. Thus, we test whether the coefficient of savings in Equation (1) decreased more in the eurozone – or the northern part of the euro zone, the southern part or the single-market countries that do not have the euro – than in the control group, which has the non-single-market countries.

The results in the bottom lines of the two tables show that the effect of the single market caused the largest fall in in the southern part of the euro zone and in the non-euro part of the single market. The introduction of the euro has, as expected, the biggest effect in the eurozone, especially in the northern countries. Finally, the financial crisis starting in 2008 raised the value of b similarly in the eurozone and non-eurozone single market countries.

What is most noteworthy about the results in [Table no. 2](#) and [Table no. A2](#) is that the introduction of the euro lowered the FH coefficient in the single market and especially in the eurozone – a sign of increased capital mobility – and increased it by more in the years after the financial crisis – a sign of decreased capital mobility. The subsequent lowering of the coefficient during the COVID-19 recession is likely to be transitory. At the end of the sample period, before COVID-19, the FH coefficient is higher inside the European single market than outside it and higher in the eurozone than in the club of non-euro members of the single market.

By triggering the capital flows that set the stage for the financial crisis of 2008 and the subsequent euro crisis, the euro facilitated economic crisis and recessions in many member states, such as Ireland, Greece and Spain. This crisis in Greece highlighted the time inconsistency of eurozone fiscal rules and thus their inability to foster fiscal discipline. A reform of the Stability and Growth Pact in the 2011-2013 period contributed to the decline of eurozone deficits up to 2019 but their subsequent rise due to the fiscal measures implemented to tackle the pandemic provoked another significant reform of the fiscal framework in 2024 allowing for a more tailor-made fiscal adjustment. The crisis itself then appears to have raised the FH coefficient and set in motion changes that lowered capital mobility or, alternatively, made countries intertemporally solvent again. Frankel's (1992) theoretical framework presented in Equation (2) allows us to understand these developments. The financial crisis after 2008 was a clear case of a rise in the 'country risk' reflected by the significant rise in default risks. There is also the expectation of a euro exit creating currency risk in some of the countries.

Table no. 2 – Estimation of FH equation using panel data

OLS with FE							
	(All) GCF	(Single M.) GCF	(Non-SM) GCF	(SM, no euro) GCF	(eurozone) GCF	(euro, north) GCF	(euro, south) GCF
GDS	0.559*** (7.88)	0.568*** (6.64)	0.415*** (4.29)	0.321* (2.22)	0.665*** (6.08)	0.589*** (4.12)	0.720** (3.84)
d9398	0.380 (0.19)	-1.042 (-0.60)	0.390 (0.16)	-3.398 (-1.20)	0.245 (0.08)	-3.431 (-1.46)	7.444 (2.21)
d9907	8.145*** (3.45)	9.994** (2.58)	3.108 (1.44)	4.675 (0.76)	14.216*** (4.06)	9.036** (3.09)	8.270 (1.12)
d814	2.341 (1.41)	0.436 (0.20)	5.119* (1.82)	-3.410 (-1.28)	1.880 (0.75)	-4.120 (-0.45)	2.443 (0.59)
d1519	-0.297 (-0.10)	-5.390* (-1.96)	6.986* (2.12)	-2.050 (-0.97)	-7.495 (-1.80)	-3.866 (-0.34)	-5.102 (-0.86)
d2022	4.158* (1.84)	3.953 (1.34)	4.883* (1.89)	4.371 (1.02)	3.320 (1.09)	13.372** (3.08)	3.279 (0.55)
GDS xd9398	-0.085 (-1.03)	-0.099 (-1.25)	0.012 (0.16)	-0.046 (-0.36)	-0.138 (-0.96)	0.009 (0.07)	-0.455* (-3.03)
GDSxd9907	-0.410*** (-3.91)	-0.527*** (-3.35)	-0.178* (-1.86)	-0.350 (-1.55)	-0.687*** (-4.94)	-0.504*** (-5.50)	-0.324 (-0.91)
GDSxd814	-0.242*** (-3.58)	-0.218** (-2.30)	-0.253** (-2.32)	-0.086 (-0.69)	-0.252** (-2.74)	-0.015 (-0.05)	-0.236 (-1.35)
GDSxd1519	-0.136 (-1.25)	0.036 (0.33)	-0.351** (-2.82)	-0.086 (-0.86)	0.149 (0.78)	0.025 (0.06)	0.006 (0.02)
GDSxd2022	-0.289*** (-3.25)	-0.305** (-2.67)	-0.262** (-2.67)	-0.293 (-2.05)	-0.269** (-2.41)	-0.599*** (-4.03)	-0.303 (-1.18)
_cons	12.681*** (7.78)	12.456*** (6.02)	14.901*** (7.00)	19.217*** (5.63)	10.021*** (3.44)	11.625** (2.78)	9.142 (2.01)

OLS with FE							
	(All) GCF	(Single M.) GCF	(Non-SM) GCF	(SM, no euro) GCF	(eurozone) GCF	(euro, north) GCF	(euro, south) GCF
Difference 60-92 and 93-98	-0.085	-0.099	0.012	-0.046	-0.138	0.009	-0.455
Difference 93-98 and 99-07	-0.325	-0.428	-0.19	-0.304	-0.549	-0.513	0.131
Difference 99-07 and 08-14	0.168	0.309	-0.075	0.264	0.435	0.489	0.088
Difference 08-14 and 15-19	0.106	0.254	-0.098	0	0.401	0.04	0.242
Difference 15-19 and 20-22	-0.153	-0.341	0.089	-0.207	-0.418	-0.624	-0.309
Dif 93-98/60-92		-0.111		-0.058	-0.15	-0.003	-0.467
Dif 99-07/93-98		-0.238		-0.114	-0.359	-0.323	0.321
Dif 08-14/99-07		0.384		0.339	0.51	0.564	0.163
Dif 15-19/08-14		0.352		0.098	0.499	0.138	0.34
Dif 20-22/15-19		-0.43		-0.296	-0.507	-0.713	-0.398
Number of Countries	36	17	12	5	11	7	4
Wald Test intercepts	3.91(0.01)	5.34(0.01)	1.92(0.18)	4.53(0.08)	35.64(0.00)	11.31(0.01)	23.53(0.01)
Wald Test slope	4.00(0.01)	4.89(0.00)	4.35(0.02)	2.10(0.24)	52.10(0.00)	6.61(0.02)	68.99(0.00)
<i>N</i>	1521	746	538	244	454	259	195
<i>R</i> ²	0.332	0.521	0.271	0.473	0.595	0.454	0.737

4. GOODS MARKETS

Even in a single market with a common currency, one would not expect prices to be equalized, because many goods and services are location specific and cannot be traded. Housing being an obvious example. Since houses cannot move, people have to move to arbitrage price difference. This is more generally true; goods markets are affected by both developments in labour and capital markets. Migration will increase the production of labour-intensive goods and services in the country receiving the immigrants and cause a reduction in the production of these goods and services in countries experiencing emigration.¹⁷ In a similar vein, capital flows will increase the production of capital-intensive goods in the recipient country and reduce it in the country of origin. Thus, to take an example, the production of cars in many Eastern European countries has increased while in the West, immigrants provide labour for social services, construction and other labour intensive work. These developments are welfare improving although unskilled workers in the West may experience a slight worsening of their labour market prospects (Dustmann *et al.*, 2013).

4.1 Capital flows, sudden stops and prices: the role of exchange rates

There are also disruptive interactions between capital and goods markets. Portfolio investment flows affect aggregate demand and the real exchange rate under both the common currency and floating exchange rates. However, the mechanism of the capital inflows and the consequences of the sometimes eventual sudden stop depend on the currency arrangement. The recent financial crisis showed how such flows can have disruptive effects both in the eurozone as well as in countries outside the eurozone. In a nutshell, in a floating exchange

rate regime, capital flows cause currency market volatility while in the eurozone they cause bond market volatility. In both cases, relative prices – the real exchange rate – increase during the capital inflow phase and fall during the outflow phase. The aftermath differs in that the floating currency can quickly increase the competitiveness of the economy through a sudden depreciation of the currency. In the eurozone, things are not that easy, and it can take years of high unemployment and demand compression for a current account deficit to turn into a surplus¹⁸.

In a floating currency regime, as Iceland learned at a high cost, the capital inflow is driven by interest rate spreads and expectations of future currency appreciation. The inflow causes currency appreciation and a fall in the price of imports, and a domestic credit expansion with rising prices of stocks and houses. The appreciation does not have to occur instantaneously, as the textbooks teach, but can take many years. Both developments increase private consumption demand – through a wealth effect and changes in relative prices – and cause a current-account deficit. The net investment position worsens as a result. Booming domestic demand raises prices in goods markets, measured in a common currency, compared with prices in other countries. A sudden stop of the capital flows, triggered by the realization that the party cannot go on, will then make the currency tank, asset prices fall, and the financial system suffers a debt crisis when the credit creation comes a halt. The currency depreciation then comes to the rescue by making relative prices fall and helps with the (export-led) recovery but only after a period of debt restructuring.

In the euro area, the capital inflow can be driven by rising house prices and a construction boom, as in Spain during the 2000s, or by a prodigal government, as was the case in Greece. Additionally, the lack of synchronisation of economic cycles may imply a procyclical common monetary policy for some countries. The inflow makes domestic prices increase relative to other countries, but more gradually than in the floating exchange rate countries. The aftermath is usually more drawn out because the safety valve of a floating currency is missing. The stop of the capital inflow triggers domestic credit contraction, a fall in asset prices and rising unemployment until domestic demand has fallen enough to reduce the trade deficit, which can no longer be financed, and domestic supply has adjusted through a process of wage devaluation. In the longer run relative prices fall, competitiveness is restored.

To elucidate the effect of capital flows on relative prices, we show in [Figure no. 4](#) the ratio of the CPI in several European countries divided by the CPI for Germany in the runup to and following the 2008 crisis in five eurozone countries and in Iceland, which has floating exchange rates. Note, in the left-hand panel, the rising real exchange rates in Greece, Ireland, Italy, Portugal and Spain before the crisis as these countries lost competitiveness due to a capital inflow and domestic credit creation. Ireland was badly hit in the fall of 2008 and its price level started to fall relative to prices in Germany in 2009. Relative prices started to fall in the other four countries when the eurozone crisis erupted in full force in 2010 and 2011. The right-hand panel has prices in Iceland measured in euros (calculated as the product of the CPI for Iceland and the exchange rate measured in the number of euros in one unit of the local currency (krónur, ISK)) divided by the CPI for Germany. Relative prices increased somewhat before the crisis but then fell precipitously when the sudden stop of the capital inflow caused the currency to tank. The fall in prices in Iceland relative to Germany was more than 50% from the peak in 2006 to the low in 2008.

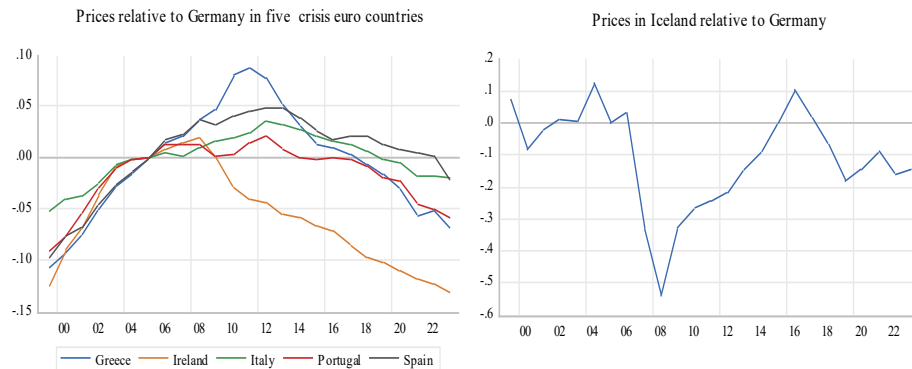


Figure no. 4 – Capital flows and relative prices with and without the euro

Note: The two panels show the log-difference between prices in each country and Germany, which are made equal in year 2005.

Low prices then helped trigger a tourism boom in Iceland, which raised relative prices until its peak in 2016. The collapse of tourism during the COVID-19 pandemic made prices fall relative to those in Germany.

Figure no. 5 shows the evolution of prices in Iceland relative to prices in Ireland (euro price level in Iceland relative to prices in Ireland) (left-hand panel). Both countries' banking systems were hit in the autumn of 2008, Ireland's banking system was saved by the ECB while Iceland's collapsed in a spectacular fashion. Note the rapid fall in prices in Iceland in 2008, which restored competitiveness almost overnight. The right-hand panel of Figure no. 5 shows that the fall in relative prices in Iceland in 2008 was solely caused by the currency depreciation while the rise in the following years is caused by domestic inflation, much of which is caused by the gradual passthrough of lower exchange rates into prices.

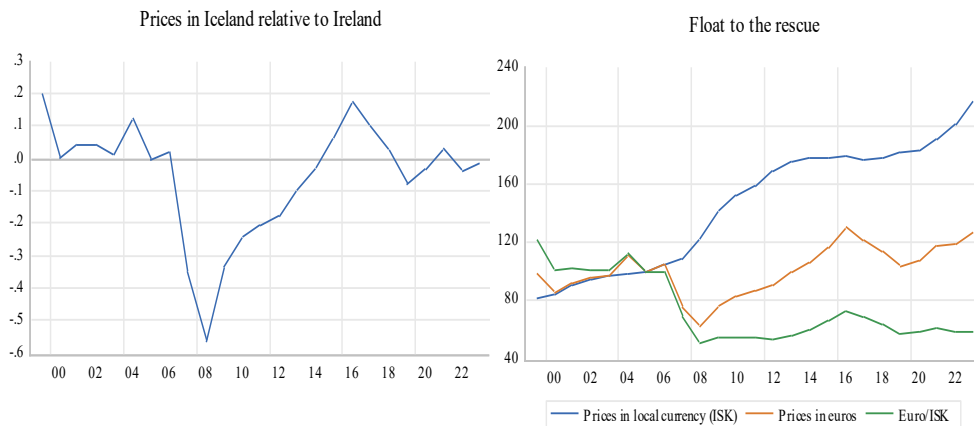


Figure no. 5 – Recovery in Iceland compared to Ireland

Note: The left-hand panel shows the log-difference between prices in Iceland and Ireland, which are made equal in year 2005. The right-hand side panel shows indices that take value 100 in 2005.

4.2 An error-correction model of price adjustment

In order to elucidate these effects further, we estimated an error regression equation using a fixed effects estimator. As before, we use data from the countries that were consistently in the eurozone or outside the eurozone and in the single market. There are 10 eurozone countries (in addition to Germany, the numerar) and five single-market non-euro countries. We use price data from the beginning of the euro in 1999 until 2023. Our data are the Consumer Price Index (CPI) for each of the euro countries and converted into euros at current exchange rates for the non-euro countries. Denote the log of the CPI in country i by p_{it} and the log of the CPI for Germany by p_t . The error-correction equation can then be written as follows:

$$Dp_{it} = \alpha_i + \beta_1 * Dp_t + \beta_2 * p_{t-1} + \beta_3 * p_{it-1} + e_{it} \quad (4)$$

The price level of country i is adjusting to the German price level, the short run adjustment is the coefficient of German inflation and if adjustment is instantaneous $\beta_1 = 1$. The long-run coefficient on German inflation is $-\beta_2/\beta_3$. Goods market integration would imply that $-\beta_2/\beta_3 = 1$, which implies $\beta_2 = -\beta_3$. Imposing these two restrictions we can re-estimate the equation as:

$$D(p_{it} - p_t) = \alpha_i + \gamma * (p_{t-1} - p_{it-1}) + \epsilon_{it} \quad (5)$$

The coefficient of the lagged dependent variable γ measures the speed of adjustment. The results for Equation (4) are shown in Table no. 3 and for Equation (5) in Table no. 4. The countries are grouped into eurozone members, countries with floating exchange rates and the intermediate fixed exchange rate case, which only includes Denmark.¹⁹ We also show the average value of the estimated coefficients for the country groups for the sake of comparison. Finally, the last column has the estimated standard error of regression, which is a measure of the size of the country shocks.

The estimated coefficient β_1 of German inflation is close to, and not significantly different from, one for the eurozone countries and also for Denmark but far from one for the floating currency economies other than Norway. This implies greater inflation convergence within the eurozone than within the single market at large. Whereas there is faster short-run adjustment in the euro zone to inflation shocks, there is slower long-run adjustment to price level divergences. The speed of adjustment in the floating rate countries (0.169) is on average more than five times that in the eurozone (0.030). This fits the story told above about the financial crises in the eurozone and in Iceland.

The higher speed of adjustment in the floating countries comes at a price. The size of the economic shocks, measured by the standard errors of regression in Table no. 3, is more than four times as large (0.064 instead of 0.015) on average in the floating countries than in the eurozone. The standard error is by far the largest in Iceland, which was hit by the largest shock in 2008, but it is also higher than the eurozone average in the other four floating economies. One can judge the extent of divergence from having short and long run coefficients different from one, by comparing the standard errors in Tables no. 3 and no. 4.

Table no. A3 gives the residual correlations between the countries. These will have quite large standard errors, given the degrees of freedom of the equation. And, in general, they are not large and some of the large ones are difficult to explain, such as Italy and Finland of 0.61. Correlations between the euro countries tend to be positive, averaging 0.11, as do correlations between the floaters, averaging 0.28, but between euro and floaters there are mixtures of positive and negative averaging close to zero.

**Table no. 3 – Price adjustment equation (4), annual data 1999-2023, prices in euros
(standard errors in parentheses)**

	a_i	Dp_t	p_{t-1}	p_{t-1}	s.e.
Eurozone					
Austria	-0.366 (0.106)	0.954 (0.047)	0.382 (0.122)	-0.301 (0.100)	0.004
Belgium	0.315 (0.449)	1.013 (0.134)	-0.194 (0.462)	0.127 (0.366)	0.010
Finland	0.058 (0.085)	0.721 (0.122)	0.154 (0.130)	-0.164 (0.119)	0.008
France	0.090 (0.044)	0.736 (0.069)	0.123 (0.091)	-0.142 (0.091)	0.005
Greece	0.599 (0.115)	1.280 (0.157)	-0.137 (0.063)	0.009 (0.047)	0.011
Ireland	0.580 (0.081)	1.163 (0.117)	0.016 (0.040)	-0.142 (0.040)	0.009
Italy	0.240 (0.062)	1.105 (0.077)	-0.041 (0.065)	-0.011 (0.055)	0.005
Netherlands	0.005 (0.112)	1.180 (0.123)	0.308 (0.123)	-0.310 (0.107)	0.010
Portugal	0.348 (0.075)	1.048 (0.102)	0.001 (0.059)	-0.075 (0.050)	0.007
Spain	0.472 (0.074)	1.122 (0.079)	-0.116 (0.050)	0.015 (0.037)	0.006
Average	0.234	1.032	0.050	-0.100	0.015
Floating currencies					
Iceland	0.065 (1.135)	-1.140 (1.629)	0.371 (0.269)	-0.384 (0.164)	0.125
Norway	1.465 (0.506)	0.932 (0.584)	0.017 (0.142)	-0.334 (0.173)	0.044
Sweden	1.005 (0.529)	0.406 (0.549)	0.156 (0.139)	-0.372 (0.185)	0.042
Swiss	-1.558 (1.180)	0.275 (0.713)	0.707 (0.427)	-0.366 (0.198)	0.049
UK	0.971 (0.761)	1.504 (0.774)	0.165 (0.133)	-0.380 (0.177)	0.059
Average	0.389	0.395	0.283	-0.367	0.064
Floating currencies					
Denmark	0.248 (0.060)	0.912 (0.095)	0.016 (0.086)	-0.069 (0.083)	0.007

Table no. 4 – Price adjustment equation (5), annual data 1999-2023, prices in euros relative to Germany (standard errors in parentheses)

	a_i	p_{i,t-1} - p_{t-1}	st.e.
Eurozone			
Austria	0.003 (0.010)	0.026 (0.318)	0.004
Belgium	0.005 (0.010)	-0.125 (0.278)	0.010
Finland	0.002 (0.012)	-0.110 (0.494)	0.010
France	0.000 (0.011)	0.073 (0.680)	0.007
Greece	0.001 (0.008)	-0.103 (0.148)	0.016
Ireland	-0.004 (0.013)	-0.070 (0.172)	0.016
Italy	0.001 (0.008)	-0.145 (0.328)	0.007
Netherlands	0.003 (0.007)	0.477 (0.162)	0.022
Portugal	-0.001 (0.009)	-0.168 (0.245)	0.011
Spain	0.004 (0.008)	-0.156 (0.184)	0.010
Average	0.001	-0.030	0.023
Floating currencies			
Iceland	-0.040 (0.010)	-0.397 (0.053)	0.126
Norway	-0.010 (0.010)	-0.002 (0.120)	0.051
Sweden	-0.013 (0.009)	-0.062 (0.128)	0.046
Switzerland	0.026 (0.015)	-0.162 (0.104)	0.049
UK	-0.020 (0.010)	-0.220 (0.089)	0.058
Average	-0.011	-0.169	0.066
Fixed exchange rate			
Denmark	-0.001 (0.008)	0.004 (0.464)	0.010

5. CONCLUDING THOUGHTS

From the establishment of the European Coal and Steel Community in 1951, the founding fathers of the European single market dreamed of a frictionless common market in goods and services, labour and capital, which would generate lower prices, increased trade and higher rates of economic growth. They also believed that economic integration would promote political integration and make war between European States less likely.

The experience so far is mixed. The countries belonging to the European Union have enjoyed almost eight decades of peace. Student exchanges and a common labour market have contributed to increased understanding and acceptance of national differences. A war between member states is unthinkable. The common labour market has given millions the opportunity to improve their lot, and the integration of goods and service markets has increased trade and welfare, as can be said about capital market integration.

But while integration has certainly increased welfare, it has also caused political and economic upheaval at times. Political parties that oppose migration have challenged the vision of the Founding Fathers of the European project and threaten the status quo. Capital flows caused a financial crisis in the first decade of the century in some of the single-market countries, some within and others outside the eurozone. While macroprudential supervision and regulation and fiscal rules set by the European Union can help stave off future financial crises, immigration is more difficult to address. This is because of the clear economic benefits and the subjective nature of the opposition coming from people who feel that their culture, their way of life, is threatened by people who have different habits and customs.

The EU has created a common market and a common currency but not the common state functions that would operate to promote adjustment within a country, in particular a common fiscal policy, which is quite limited. The Founding Fathers hoped that it would develop into a Federal United States of Europe. This was often treated as an ambition to be like the US. It is sometimes forgotten how slowly the US Federal State developed. It took over a century and a quarter for the Federal Reserve to be established. The main function of the Federal Government in the early years was to fight wars. Checks and balances, particularly to protect states' rights, were embodied in the Constitution and it took a Civil War to clarify the extent of States' right. It may be that it will require wars to strengthen a common fiscal policy and central authority in the European Union, even to make a European State. That is certainly not a distant prospect at the time of this writing.

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ANNEXES

Table no. A1 – Country groupings

	Non-single market	Single market	Euro	Euro-north	Euro-south
Australia	X				
Austria		X	X	X	
Belgium		X	X	X	
Canada	X				
Chile	X				
Colombia	X				
Costa Rica	X				
Czechia		X			
Denmark		X			
Estonia					
Finland		X	X	X	
France		X	X	X	
Germany		X	X	X	
Greece		X	X		X
Hungary					
Iceland		X			
Ireland		X	X	X	
Israel	X				
Italy		X	X		X
Japan	X				
Korea, Rep.	X				
Latvia					
Lithuania					
Mexico	X				
Netherlands		X	X	X	
New Zealand	X				
Norway		X			
Poland					
Portugal		X	X		X
Slovak Republic					
Slovenia					
Spain		X	X		X
Sweden		X			
Switzerland		X			
United Kingdom	X	X			
United States	X				

Table no. A2 – Estimation of FH equation using panel data (IV)

IV with FE							
	(All) GCF	(Single M.) GCF	(Non-SM) GCF	(SM, no euro) GCF	(eurozone) GCF	(euro, north) GCF	(euro, south) GCF
GDS	0.593*** (7.52)	0.589*** (7.10)	0.450*** (3.98)	0.364*** (2.98)	0.662*** (5.85)	0.566*** (3.45)	0.761*** (6.18)
d9398	1.146 (0.56)	-0.600 (-0.37)	0.961 (0.38)	-2.617 (-1.16)	0.157 (0.05)	-3.800** (-2.00)	8.152*** (5.12)
d9907	8.694*** (3.56)	10.439*** (2.73)	3.525 (1.59)	5.509 (1.00)	14.174*** (4.17)	8.685*** (3.01)	9.619** (2.09)
d814	2.981* (1.66)	0.957 (0.43)	5.489* (1.93)	-2.501 (-1.10)	1.904 (0.69)	-4.091 (-0.48)	3.664 (1.28)
d1519	0.269 (0.09)	-4.942* (-1.86)	7.320** (2.21)	-1.407 (-0.89)	-7.635* (-1.94)	-4.865 (-0.44)	-3.820 (-0.92)
d2022	4.730** (1.97)	4.431 (1.44)	5.256** (1.96)	5.220 (1.22)	3.195 (1.07)	12.419** (2.48)	4.542 (1.13)
gds9398	-0.116 (-1.39)	-0.114 (-1.56)	-0.016 (-0.19)	-0.071 (-0.69)	-0.130 (-0.98)	0.031 (0.31)	-0.481*** (-7.25)
gds9907	-0.433*** (-4.04)	-0.541*** (-3.52)	-0.198** (-2.01)	-0.379* (-1.91)	-0.680*** (-5.37)	-0.483*** (-5.17)	-0.380* (-1.72)
gds814	-0.270*** (-3.67)	-0.236** (-2.49)	-0.271** (-2.45)	-0.117 (-1.10)	-0.249** (-2.50)	-0.010 (-0.03)	-0.290** (-2.38)
gds1519	-0.161 (-1.44)	0.021 (0.19)	-0.368*** (-2.93)	-0.108 (-1.42)	0.159 (0.89)	0.071 (0.17)	-0.049 (-0.26)
gds2022	-0.315*** (-3.29)	-0.322*** (-2.70)	-0.281*** (-2.73)	-0.324** (-2.28)	-0.260** (-2.36)	-0.557*** (-3.10)	-0.357** (-2.01)
_cons	9.686*** (5.45)	11.046*** (6.08)	12.071*** (4.86)	15.485*** (6.29)	11.063*** (3.89)	9.581** (2.12)	8.442*** (2.89)
Difference 60-92 and 93-98	-0.116	-0.114	-0.016	-0.071	-0.13	0.031	-0.481
Difference 93-98 and 99-07	-0.317	-0.427	-0.182	-0.308	-0.55	-0.514	0.101
Difference 99-07 and 08-14	0.163	0.305	-0.073	0.262	0.431	0.473	0.09
Difference 08-14 and 15-19	0.109	0.257	-0.097	0.009	0.408	0.081	0.241
Difference 15-19 and 20-22	-0.154	-0.343	0.087	-0.216	-0.419	-0.628	-0.308
Dif 93-98/60-92		-0.098		-0.055	-0.114	0.047	-0.465
Dif 99-07/93-98		-0.245		-0.126	-0.368	-0.332	0.283
Dif 08-14/99-07		0.378		0.335	0.504	0.546	0.163
Dif 15-19/08-14		0.354		0.106	0.505	0.178	0.338
Dif 20-22/15-19		-0.43		-0.303	-0.506	-0.715	-0.395
Number of Countries	36	17	12	5	11	7	4
Wald Test intercepts	15.71(0.00)	22.43(0.00)	8.43(0.08)	23.35(0.00)	142.1(0.00)	51.68(0.00)	113.2(0.00)
Wald Test slope	17.74(0.00)	20.05(0.00)	20.23(0.00)	11.47(0.02)	214.1(0.00)	32.10(0.00)	16.61(0.00)
N	1483	727	527	238	442	252	190
R ²	0.590	0.618	0.713	0.663	0.620	0.521	0.735

Table no. A3 – Correlation of shocks measured by residuals from equation (4)

	Aut	Bel	Fin	Fra	Gre	Ire	Ita	Net	Por	Spa	Ice	Nor	Swe	Swi	UK	Den
Eurozone																
Austria		-0.11	0.15	0.41	-0.01	0.10	0.35	-0.15	0.60	0.09	0.18	-0.27	0.13	0.17	-0.02	-0.03
Belgium	-0.11		0.33	-0.12	0.32	-0.25	0.02	0.38	0.13	0.58	-0.04	0.47	0.29	0.35	-0.26	0.69
Finland	0.15	0.33		0.23	-0.03	-0.27	0.61	0.35	0.03	0.00	-0.04	0.34	0.27	0.36	-0.36	0.63
France	0.41	-0.12	0.23		0.32	0.02	0.57	-0.45	0.37	0.22	-0.27	0.01	0.07	0.00	-0.21	0.09
Greece	-0.01	0.32	-0.03	0.32		-0.49	0.32	-0.03	0.22	0.18	-0.09	0.10	-0.07	0.23	-0.38	0.52
Ireland	0.10	-0.25	-0.27	0.02	-0.49		-0.15	-0.13	0.09	-0.21	-0.16	-0.61	-0.39	-0.37	0.19	-0.40
Italy	0.35	0.02	0.61	0.57	0.32	-0.15		0.08	0.46	-0.05	0.09	0.01	0.05	0.33	-0.26	0.54
Netherlands	-0.15	0.38	0.35	-0.45	-0.03	-0.13	0.08		-0.14	0.14	0.25	0.10	0.04	0.18	0.04	0.46
Portugal	0.60	0.13	0.03	0.37	0.22	0.09	0.46	-0.14		0.06	0.16	0.00	0.31	0.42	0.19	0.14
Spain	0.09	0.58	0.00	0.22	0.18	-0.21	-0.05	0.14	0.06		-0.12	0.45	0.35	-0.09	-0.25	0.23
Average	0.16	0.14	0.16	0.17	0.09	-0.14	0.25	0.01	0.20	0.11	0.00	0.06	0.10	0.16	-0.13	0.29
	0.11										0.08					
Floating																
Iceland	0.18	-0.04	-0.04	-0.27	-0.09	-0.16	0.09	0.25	0.16	-0.12		0.04	0.10	0.24	0.33	-0.07
Norway	-0.27	0.47	0.34	0.01	0.10	-0.61	0.01	0.10	0.00	0.45	0.04		0.78	0.28	0.06	0.32
Sweden	0.13	0.29	0.27	0.07	-0.07	-0.39	0.05	0.04	0.31	0.35	0.10	0.78		0.40	0.27	0.20
Switzerland	0.17	0.35	0.36	0.00	0.23	-0.37	0.33	0.18	0.42	-0.09	0.24	0.28	0.40		0.26	0.55
UK	-0.02	-0.26	-0.36	-0.21	-0.38	0.19	-0.26	0.04	0.19	-0.25	0.33	0.06	0.27	0.26		-0.27
Average	0.04	0.16	0.11	-0.08	-0.04	-0.27	0.04	0.12	0.22	0.07	0.18	0.29	0.39	0.30	0.23	0.14
	0.04										0.28					
Fixed																
Denmark	-0.03	0.69	0.63	0.09	0.52	-0.40	0.54	0.46	0.14	0.23	-0.07	0.32	0.20	0.55	-0.27	

Notes

¹ See the Single market Scorecard by the European Commission (https://single-market-scoreboard.ec.europa.eu/competitiveness/integration_en).

² The Treaty of Rome introduced the principle of free movement of workers, but its focus was largely on creating a common market for goods. Another step was taken by the Freedom of Movement of Workers Directive (1968), which allowed workers from one EEC member state to seek employment in another without needing a work permit. The most important step towards creating a common market in labour was the Maastricht Treaty, which came into effect in November 1993. It made free movement a fundamental right of EU citizens and established the concept of EU citizenship, allowing any EU citizen the right to live and work anywhere in the Union, irrespective of employment status. The Maastricht Treaty was also the last step in setting up an integrated capital market. It was preceded by the Capital Liberalization Directive (1988), which mandated the complete liberalization of capital movements across member states by July 1, 1990.

³ However, imports from non-EU countries have been found to be disruptive. Colantone and Stanig (2018) investigated the effect of imports from China on electoral outcomes in 15 Western European countries between 1988 and 2007. They found that at the regional level, an increase of imports from China leads to an increase in support for nationalist and isolationist parties, in particular support for radical-right parties.

⁴ See, amongst others, Kahanec (2013).

⁵ Dorn and Zweimuller (2021) estimate the static migration gain, in terms of higher wages of Bulgarians living in other European countries, to be around 8 percent of GDP.

⁶ Immigration lowered the wage growth in the 20th percentile of the wage distribution by only 0.21%.

⁷ Studies from other countries reach similar results. Glitz (2012) found no effect on wages in Germany of the large flow of immigrants from Eastern Europe and the former Soviet Union during the 1990s and the 2000s. Switzerland opened up its labour market in 2005 to EU workers and Beerli *et al.* (2021) found no adverse effects on the native workforce in the border regions.

⁸ See <https://manifesto-project.wzb.eu>.

⁹ The countries are Albania, Argentina, Armenia, Australia, Austria, Azerbaijan, Belarus, Belgium, Bolivia, Bosnia-Herzegovina, Brazil, Bulgaria, Canada, Chile, Colombia, Costa Rica, Croatia, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Mexico, Moldova, Montenegro, Netherlands, New Zealand, North Macedonia, Northern Ireland, Norway, Panama, Peru, Poland,

Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States, Uruguay. For a list of variables see https://manifesto-project.wzb.eu/download/data/2024a/codebooks/codebook_MPDataset_MPDS2024a.pdf.

¹⁰ Several other papers have estimated the speed of convergence in Europe. [Crespo Cuaresma *et al.* \(2008\)](#) found that being an EU Member State increases long-term economic growth. They attributed this to the transmission of technological knowledge among the EU Member States as well as financial help from the EU to the poorer members. [Cavenaile and Dubois \(2011\)](#) showed that membership of the EU increases long-term growth. [Fritzsche and Kuzin \(2011\)](#) detected convergence clusters.

¹¹ See also [Katsimi and Zoega \(2016\)](#).

¹² These results are supported by [Helliwell and McKittrick \(1998\)](#), [Bayoumi and Rose \(1993\)](#) for British regions, [Helliwell and McKittrick \(1998\)](#) for Canadian regions and [Sinn \(1992\)](#) for U.S. regions.

¹³ The countries are: Australia, Austria, Belgium, Bosnia, Canada, Chile, Colombia, Costa Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, UK, and US.

¹⁴ We omit Luxembourg from the 38 OECD countries and also Turkey because it turned out to be a large outlier in our estimation.

¹⁵ The one exception is the UK, which belongs to our group of single-market countries until its exit in 2020 and to the non-single market countries in the 2021-2022 period.

¹⁶ In Table 2, we estimate equation (1) with OLS while in Table A2 we perform IV estimations using the lagged savings ratio as instrument in order to address a possible endogeneity problem pointed out in the literature (see [Feldstein and Horioka, 1980](#); [Frenkel, 1992](#); [Kasuga, 2004](#)).

¹⁷ This is the renowned Rybczynski Theorem in international trade.

¹⁸ See, amongst others, [Raza *et al.* \(2018\)](#) and [Lane and Milesi-Ferretti \(2012\)](#). Both papers find no evidence of real exchange rates affecting the post-crisis current account dynamics in the eurozone but find evidence of domestic demand compression playing a bigger role in the current account adjustment.

¹⁹ We omit late entrants into the single market, such as the Eastern European countries, and late entrants into the eurozone, such as the Baltic economies.