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Essays on European Economic Integration, Institutions and Fiscal Rules

Jonne Lehtimäki

TURUN YLIOPISTON JULKAISUJA – ANNALES UNIVERSITATIS TURKUENSIS
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University of Turku

Turku School of Economics
Department of Economics
Economics
Doctoral Programme of Turku School of Economics

Supervised by

Doctor, Jouko Vilmunen
University of Turku

Professor, Heikki Kauppi
University of Turku

Reviewed by

Associate Professor, Michael Bergman
University of Copenhagen

Doctor, Juha Kilponen
Bank of Finland

Opponent

Associate Professor, Michael Bergman
University of Copenhagen

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Dedicated to my family.
I would not be the person I am today without their support and influence.

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ABSTRACT

This doctoral dissertation studies the economic effects of European integration and fiscal governance, focusing on the European Single Market and fiscal rules. The dissertation is comprised of an introductory chapter and four independent essays. It applies a combination of the Synthetic Control Method (SCM) and panel data analysis to evaluate effects on economic growth and public finances.

The first essay uses the SCM to empirically evaluate the economic growth effects of the European Single Market. The results show that the single market has generated significant real GDP per capita increases with smaller member states benefiting more substantially than larger countries. The study highlights the role of trade liberalisation in enhancing economic performance.

The second essay, also using the SCM, studies the impact of European integration and European Union's (EU) fiscal framework on government debt levels. The results show that both EU membership and the establishment of the Stability and Growth Pact (SGP) have had significant debt-limiting effects across a large majority of the studied country groups and individual member states. The results imply that actual government debt levels in EU countries are considerably lower than they would have been without common fiscal rules, even for countries with low compliance.

The third essay builds upon the second and compares the effects of national and supranational fiscal rules on government debt across EU member states. The results indicate that the SGP has effectively reduced government debt. National fiscal rules show varying levels of effectiveness. The findings indicate that fiscal rules often complement rather than substitute each other and it is important to account for the interaction between national and EU-level fiscal frameworks.

The final essay extends the analysis beyond Europe and examines the effects of national and supranational fiscal rules in a global sample. It analyses their impact on government debt, government budget balances, public investment and economic growth. The results suggest that supranational rules outperform national ones in ensuring fiscal discipline, while also confirming the complementarity of different rules. Although fiscal rules generally target fiscal variables, the study also identifies some potential spillover effects on economic growth.

KEYWORDS: fiscal rules, economic integration, international fiscal issues, macroeconomic policy, macroeconomic aspects of public finance, fiscal policy

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TIIVISTELMÄ

Tämä väitöskirja käsittelee Euroopan taloudellista integraatiota ja finanssipoliittisia kehikoita, keskittyen Euroopan sisämarkkinoihin ja finanssipoliittisiin sääntöihin. Työ koostuu johdannosta ja neljästä itsenäisestä esseestä. Tutkimuksessa sovelletaan synteettistä kontrollimetodia (SCM) ja paneeliaineistoja talouskasvun sekä julkisen talouden vaikutusten tutkimiseen.

Ensimmäisessä esseessä arvioidaan Euroopan sisämarkkinoiden talouskasvuvaikutuksia empiirisesti SCM:n avulla. Tulokset osoittavat, että sisämarkkinat ovat tuottaneet merkittävää kasvua tarkasteltaessa reaalista BKT:ta asukasta kohden ja pienikokoisemmat jäsenvaltiot ovat hyötyneet kaupankäynnin esteiden poistumisesta huomattavasti suurempia maita enemmän.

Toisessa esseessä tutkitaan SCM:n avulla Euroopan unionin (EU) ja sen finanssipoliittisen kehikon vaikutusta jäsenvaltioiden julkisen velan tasoihin. Tulokset osoittavat, että EU-jäsenyydellä sekä vakaus- ja kasvusopimuksella on ollut merkittäviä julkista velkaa rajoittavia vaikutuksia valtaosassa tutkittuja maaryhmiä ja yksittäisiä jäsenvaltioita. Tulosten mukaan EU-jäsenvaltioiden toteutuneet velkatasot ovat huomattavasti alhaisempia kuin ne olisivat olleet ilman yhteisiä finanssipoliittisia sääntöjä.

Kolmas essee vertailee kansallisten ja ylikansallisten finanssipoliittisten sääntöjen vaikutuksia julkiseen velkaan EU:n jäsenvaltioissa. Tulokset osoittavat, että vakaus- ja kasvusopimus on laskenut julkisen velan tasoja. Kansallisten finanssipoliittisten sääntöjen tehokkuus on vaihtelevaa. Tulokset osoittavat lisäksi, että finanssipoliittiset säännöt toimivat usein komplementteina, ja siksi on tärkeää huomioida finanssipoliittisten kehikoiden välinen vuorovaikutus.

Viimeinen essee tutkii kansallisten ja ylikansallisten finanssipoliittisten sääntöjen vaikutuksia maailmanlaajuisessa otoksessa. Se analysoi sääntöjen vaikutusta julkiseen velkaan, julkisen talouden nettorahoitusasemaan, julkisiin investointeihin ja reaaliseen talouskasvuun. Tulosten mukaan ylikansalliset säännöt toimivat kansallisia paremmin julkisen talouden hallinnassa, vahvistaen samalla eri sääntöjen komplementaariset vaikutukset. Finanssipoliittiset säännöt keskittyvät yleensä pääasiassa julkisen talouden muuttujiin, mutta tulosten perusteella niillä on epäsuoria vaikutuksia myös talouskasvuun.

ASIASANAT: finanssipoliittiset säännöt, taloudellinen integraatio, kansainväliset finanssipoliittiset kysymykset, makrotalouspolitiikka, julkisen talouden makrotaloudelliset kysymykset, finanssipolitiikka

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"Economics is a special language that enables us to explore, understand, and explain complex ideas about society."

Per aspera ad astra. It has been a long road since those first steps through the doors of Publicum in 2005 and it has taken me on a wild hunt from my personal Shire of Turku and Parainen with many sidepaths and side quests, a journey that has been quite unique and quite interesting. Often it felt like putting on an eminence front, but it has allowed me to think about economics from different points of view and I believe that to truly understand, one needs the contrast, not adherence to a single idea and that ideals are often strengthened by the challenges they endure. To quote Thomas Carlyle, *"What we become depends on what we read after all of the professors have finished with us. The greatest university of all is a collection of books."*

What can change the nature of a man? I have certainly matured a lot during these years and often wonder how I got to where I am today. Along with the foundational lessons from Jukka Pekkarinen and Pekka Sutela in *Kansantaloustiede*, I will always think back to reading James M. Buchanan's book *What Should Economists Do?* from 1979 as a collection of essays, which, in retrospect, has been one of the most influential works of economic literature I have come across. The points of view Buchanan presented of economics as a study of voluntary exchange and human cooperation, the role of markets as institutions that facilitate mutually beneficial exchanges and the importance of analysing the institutional framework within which fiscal policy decisions are made, have been guiding lights for my thoughts along with the love and pursuit of knowledge based on John Williams's 1965 novel *Stoner*, especially how it presents the concept of research as a deeply personal pursuit which provides purpose for life and which, at its core, is about dedicating oneself to advancing the wisdom of humankind.

I have often ruminated on whether the walker chose the path, or the path the walker. One is born with a unique set of talents and abilities, and one must choose which of those talents to nurture, which to ignore completely. Sometimes the choice is obvious. This dissertation has often made me think of myself as a one-man wolf pack doing a job with a purpose, but I will freely admit that I would not be at the point of writing these words without all the people, good friends in far away times, who have shared different parts of this road with me. I am certain my exceedingly

coffee-addled brain will fail to recall everyone and many important moments have gotten lost to time like tears in the rain, but I want to say that I have greatly valued the time and experiences we have shared.

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Economics is a momentum game and I got a great initial boost from working with some outstanding people in the early parts of my career in MTT Economic Research, Statistics Finland and the Research Unit for the Sociology of Education. They have all been important, but I would especially like to mention Lassi Ahlvik, Janne Artell, Julia Fomin, Juha Hedman, Janne Helin, Kim Holmberg, Anni Huhtala, Antti Iho, Sari Kuisma, Juhani Pekkarinen, Eija Pouta, Elina Somervuori, Jukka Tapio, Kristian Taskinen, Niko Takoja, Paula Toivo, Samuli Voltti and all my other close colleagues for various shared discussions, laughs, lunches and research done together.

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A home is sometimes a place you travel long and far to find and one can not find oneself in Goa if one has lost himself in Pasila. I want to thank everyone I have worked with since returning to Finland, especially the people involved in the Finnish Recovery and Resilience Plan, including all the wonderful colleagues in the State Treasury and the European Commission. More importantly, I want to thank everyone I have met in the Ministry of Finance and especially the Secretariat for EU and International Affairs, who have been important for my development and, more specifically, Susanna Ikonen, Jenni Jaakkola, Leena Mörttinen, Hanna Oraheimo, Kasper Paasikallio, Saara Palo, Elina Rauvala, Leena Savolainen, and Jouni Sinivuori for the many interesting discussions, cooperation in various workstreams as well as the friendships we have formed. Last but not least, my closest colleagues Antti Kekäläinen and Laura Vartia and, finally, Marketta Henriksson, to whom I am immensely grateful for everything I have learned over the past five years.

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To end with the words of Frederick the Great, which resonate with me more and more as years pass: *"The greatest and noblest pleasure, which we can have in this world, is to discover new truths, and the next is to shake off old prejudices."*

Turku, 11 November 2025
Jonne Lehtimäki

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Abbreviations

CEMAC	Central African Economic and Monetary Community
EA	Euro area
EAC	East African Community
EAMU	East African Monetary Union
ECB	European Central Bank
ECCU	Eastern Caribbean Currency Union
ECSC	European Coal and Steel Community
EEC	European Economic Community
EMS	European Monetary System
EMU	Economic and Monetary Union
ESM	European Stability Mechanism
EU	European Union
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GEC	General Escape Clause
GFC	Global financial crisis
GMM	Generalised Method of Moments
IFI	Independent Fiscal Institution
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
PWT	Penn World Table
RMSPE	Root Mean Squared Prediction Error
SCM	Synthetic Control Method
SGP	Stability and Growth Pact
SRM	Single Resolution Mechanism
SSM	Single Supervisory Mechanism
TFP	Total Factor Productivity
WAEMU	West African Economic and Monetary Union
WB	World Bank

List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

I Lehtimäki, Jonne and Sondermann, David. Baldwin versus Cecchini revisited: the growth impact of the European Single Market.
Empirical Economics, 2022; 63: 603–635.

II Kraemer, Robert and Lehtimäki, Jonne. Government debt, European Institutions and fiscal rules: a synthetic control approach.
International Tax and Public Finance, 2024; 31 (4): 1112–1157.

III Kraemer, Robert and Lehtimäki, Jonne. Government debt: the impact of fiscal rules at the European and national level.
Empirica, 2023; 50 (3): 783–805.

IV Lehtimäki, Jonne. The fiscal and macroeconomic effects of fiscal rules.
Journal of Economics, 2025; 146: 379–441.

1 European Integration and Fiscal Rules

To understand the process and background of European integration as well as the development and broadening use of fiscal rules, it is important to consider the historical context as well as the economic and political environments in which they have taken place. This section is based on the historical accounts from Milward (1999), Gillingham (2003), Dinan (2004, 2005), Ingham (2004), Ludlow (2005), Judt (2006), Pelkmans (2006), Neal (2007), Jovanović (2013), Molle (2017), Sandbu (2017), Warlouzet (2017), Brunnermeier et al. (2018), De Grauwe (2020), Baldwin and Wyplosz (2022), Bernanke (2022) and Cochrane et al. (2025) as well as others in more specific instances.

1.1 History of European integration: From market creation to fiscal coordination

The modern history of European integration begins in the aftermath of World War II, when much of Europe had to be rebuilt and tensions between the United States and the Soviet Union grew at the start of the period later referred to as the Cold War. The desire to avoid potential future conflicts and to create lasting economic and political stability as well as peace in Europe was at the forefront after the devastation experienced by a large majority of the continent.

European integration began with Jean Monnet's and Robert Schuman's proposal to integrate the coal and steel industries of France and West Germany to make a war between the two nations "materially impossible" through interdependence and trade. This, together with the Schuman declaration in May of 1950, led to the first concrete step towards a more interconnected Europe and the creation of the European Coal and Steel Community (ECSC), which was established in the Treaty of Paris in 1951 by Belgium, France, Italy, Luxembourg, the Netherlands and West Germany. While the scope of the ECSC was limited, it established the principle of supranational authority in key economic sectors.

The ECSC was successful in mending relationships and building trust between the six countries and provided a common market for coal and steel as well as a framework for oversight of these industries, which helped in fostering economic growth and cooperation during a time period during which global uncertainty was increasing. The cooperation between the six member countries also demonstrated that mu-

tual benefits could be gained from a common market and there was a foundation on which increased economic integration could provide further gains.

The European Economic Community (EEC) was the next step for the six countries and it was established in the Treaties of Rome in 1957 along with the European Atomic Energy Community. The EEC treaty aimed to create a broader common market instead of concentrating only on coal and steel and would, over time, remove barriers to trade of goods and services as well as allow for free movement of labour and capital. The effect of the EEC was also positive and led to sustained economic growth in the six member countries and this, along with global political trends, increased the interest for membership in other European countries. However, the core objective of the establishment of a common market proved difficult to achieve in practice and (intangible) barriers remained.

The next decades were a time period of slow progress as new countries joined the EEC: Denmark, Ireland and the United Kingdom in 1973, Greece in 1981 and Portugal and Spain in 1986. A notable integration step was the completion of the customs union, which eliminated internal tariffs and established a common external tariff. The period also revealed the limitations of mere tariff elimination, as non-tariff barriers continued to fragment European markets. Within the EEC, countries had divergent views on the extent and nature of European integration with some countries suggesting a federal union whereas others preferred looser arrangements where the common institutions would concentrate on trade.

The Werner Report, compiled under the chairmanship of Pierre Werner and published in 1970, was the first official report outlining ambitious proposals on how Europe could form a proper economic and monetary union. Beyond this, the 1970s were a turbulent time in the global economy with the two oil crises of 1973–1974 and 1979 and integration was slowed by national concerns and member states displaying increasing resistance to the loss of authority to the Community institutions (Taylor, 1983). The establishment of the European Monetary System (EMS) in 1979 was an attempt at ensuring monetary stability through fixed exchange rates. However, it did not lead to deeper fiscal integration.

The early 1980s marked a turning point in European integration as the continent faced challenges of economic stagnation combined with little institutional progress, sometimes referred to as ”eurosclerosis”, a term attributed to Giersch (1985). Completing the internal market, heavily driven by Commission President Jacques Delors, became one of the main solutions to these trends as it was seen as a potential way to enhance economic growth through higher trade and cooperation. In 1985, a White Paper on the Completing of the Internal Market was published and it identified 279 legislative measures needed to eliminate physical, technical and fiscal barriers to internal trade. The paper was followed by the Single European Act in 1986, which provided the legal framework and the Cecchini Report published in 1988, which provided an economic justification for the single market programme. These documents,

along with the Maastricht Treaty of 1992, were the cornerstones of the formation of the European Union (EU) as well as the European Single Market.

1.2 Fiscal rules: From national to supranational coordination

The development of fiscal rules paralleled the deepening of market integration. The Maastricht Treaty outlined the convergence criteria, which would become the core of European fiscal governance. These limits reflected German concerns about fiscal discipline in a monetary union and provided a basis for supranational fiscal coordination.

The Maastricht framework was further solidified as part of the Stability and Growth Pact (SGP) in 1997, which added operational details on the fiscal rules and coordination within the upcoming Economic and Monetary Union (EMU) as well as the formation of the euro area (EA) and the introduction of the common currency, euro, at the beginning of 1999. Within the EA, national governments retained control over their own fiscal policies, while the European Central Bank (ECB) received the mandate to conduct the unified monetary policy, including the management of interest rates and the maintenance of price stability. Establishing a monetary union without a fiscal union created potential incentives for governments to run excessive deficit spending, which could subsequently lead to destabilising the common currency. The SGP was an attempt to control and monitor the fiscal policy development of member states through the preventive arm and to address arising fiscal challenges through the corrective arm.

The first generation of rules consisted of simple numerical targets. The Maastricht criteria limited government deficits to 3% of GDP and government debt to 60% of GDP, or converging towards the limit. While these rules provided clear benchmarks, their non-flexible nature proved problematic during economic downturns, forcing governments to implement procyclical fiscal policies that potentially amplified the fluctuations from business cycles. The early 2000s exposed the SGP's weaknesses when large member states violated supranational fiscal rules without any sanctions. This led to the SGP reform of 2005 where the rules were made more flexible but in some ways more complex and less clear.

The global financial crisis (GFC) and subsequent European sovereign debt crisis exposed weaknesses in both market integration and fiscal coordination. The response included major reforms to European economic governance through the "Six-Pack" set of regulations in 2011, followed by the "Two-Pack" in 2013, which strengthened surveillance and enforcement mechanisms. The Fiscal Compact added another layer to this framework, requiring EA and willing EU member states to implement balanced budget rules in national law.

The sovereign debt crisis also led to additional institutional innovations beyond

the regulatory reforms. The establishment of the European Stability Mechanism (ESM) in 2012 created a permanent crisis resolution mechanism, and the Banking Union aimed at breaking the sovereign-bank doom loop through the Single Supervisory Mechanism (SSM) and Single Resolution Mechanism (SRM). These developments represented a further deepening of fiscal and financial integration, although they remained incomplete due to the lack of common deposit insurance schemes. The GFC also revealed the coordination challenges in a monetary union of member states with fiscal sovereignty, which has led to debates about a permanent fiscal capacity and risk-sharing mechanisms, which remain unsolved questions in the evolution of European fiscal governance, even after the economic governance review of 2024.

The evolution of European economic integration remains a dynamic process. The challenge lies in learning from past experiences while adapting to new economic realities and political constraints. The EU and its fiscal framework remain the most ambitious experiment in supranational fiscal coordination with its complex framework of rules and procedures. The Maastricht criteria, with specific deficit and debt limits, established benchmarks that would influence fiscal frameworks worldwide. However, the European experience also highlighted the challenges of implementing rigid rules across diverse economies. The difficulty of enforcing rules for larger member states, the tendency toward procyclical fiscal policy during downturns, and the challenges of coordination within a monetary union can provide valuable lessons for constructing supranational fiscal frameworks in other regions.

1.3 Fiscal rules in the global context

The development of fiscal rules represents one of the most significant transformations in the management of public finances over the past decades. This evolution reflects a fundamental shift in how governments approach fiscal policy, moving from pure discretion toward rule-based frameworks designed to ensure sustainability and macroeconomic stability.

The earliest regulatory framework, which could be identified as fiscal rules, was presented in the aftermath of the debt crises of the 1830s and 1840s in the United States when the federal government refused to assume state debts, leading to defaults. Following this, different states adopted balanced budget requirements, which focused on preventing excessive borrowing (Schleicher, 2023). After this, the classical gold standard inherently provided natural limits on government finances, as excessive deficits would negatively affect gold reserves and threaten currency convertibility, effectively imposing market discipline on fiscal policy. These basic principles of fiscal constraint were observed to enhance government credibility and economic stability.

The beginning of a modern concept of fiscal rules can be traced back to the post-

World War II period, which became evident in the Bretton Woods system of fixed exchange rates as countries observed the need to establish explicit fiscal constraints. In practice, the first rules concentrated on simple single numerical targets such as balanced budgets or debt and expenditure limits. Friedman (1948) was among the first to recommend a cyclically-adjusted balanced budget rule as a long-run policy stance with a goal of eliminating uncertainty and lowering the procyclical nature of fiscal policy. Additionally, Kydland and Prescott (1977) identified that rule-based policies are a preferable choice against a time-inconsistent discretionary approach as democratic governments have a tendency to deviate from their initial policies. A similar observation was made later by Taylor (2000), who noted that automatic stabilisers seem to be more effective and outperform discretionary actions.

The collapse of Bretton Woods in the early 1970s, followed by oil shocks and stagflation as well as the debt crises of the 1980s, led to a new wave of fiscal rule development as policymakers realised that simple numerical limits were insufficient for modern economic challenges. This observation led to academic research increasingly emphasising the importance of credible policy frameworks for maintaining macroeconomic stability (Taylor, 1993). Monetary policy rules, such as inflation targeting, had been successful in controlling inflation during the Great Moderation and fiscal discipline as well imposing institutional restrictions (Fatás and Mihov, 2003) were seen as vital factors for macroeconomic stability. In addition, international institutions made recommendations for developing fiscal frameworks, so the broadened use of rules targeting different aspects of fiscal policy was a natural next step.

The first comprehensive national fiscal framework was established by the 1994 Fiscal Responsibility Act of New Zealand (Scott, 1995), which combined numerical targets with transparency requirements and institutional reforms. The concept of a legislative framework, which could enhance fiscal discipline without completely constraining the flexibility of fiscal policy, seemed a promising policy avenue and other countries soon followed with Brazil, Chile, and various European countries developing increasingly sophisticated frameworks.

The turn of the millennium saw widespread global adoption of fiscal rules, accompanied by significant innovation in their design. For example, Chile introduced a structural balance rule, which takes into account the price development of copper (Frankel, 2011), demonstrating how commodity-exporting countries could manage resource revenue volatility and Switzerland established a debt brake system (Danninger, 2002), which provided a new model for combining debt control with economic stabilisation. These developments reflected growing recognition that effective fiscal frameworks needed to balance multiple objectives while maintaining operational simplicity.

The evolution of European fiscal rules is closely related to this growing international interest in fiscal frameworks, which reflect a fundamental challenge in pub-

lic sector economics: how to ensure the sustainability of government finance while maintaining sufficient flexibility for budgetary and economic management. These goals have also led to fiscal rules evolving from very simple one-dimensional numerical constraints and targets to complex frameworks involving a multitude of objectives and institutions.

As noted in Kopits (2001), the International Monetary Fund (IMF) began tracking fiscal rules in the 1990s after observing that their use was growing. Perhaps due to the medium-term and long-term approach and expanding concerns over fiscal sustainability issues, their use has been growing ever since with a vast majority of advanced and emerging countries now having adopted at least some forms of fiscal rules with varying levels of complexity, stringency, targets and enforcement mechanisms.

Different regions have developed distinct approaches to addressing the sustainability of public finances. The EU's fiscal framework, while notable for its ambition and complexity, represent just one approach. The Anglo-Saxon countries, especially Australia, New Zealand, the United Kingdom and the United States, have emphasised transparency and medium-term planning over strict numerical targets, Latin American countries have established innovative commodity-linked rules while Asian economies have generally favoured simpler frameworks with greater discretion.

The amount of fiscal rules in developing economies has been increasing as well, even with institutional and structural frameworks often still in their infancy. African countries have increasingly adopted fiscal frameworks, often in connection with IMF programs or regional integration initiatives. The West African Economic and Monetary Union (WAEMU) and the East African Community (EAC) have developed supranational frameworks, which have many similarities with the frameworks in advanced countries. Meanwhile, resource-rich countries in the Middle East and North Africa have focused on rules for managing resource revenues and ensuring long-term fiscal sustainability.

The success of fiscal rules has varied considerably across regions and countries, but several key factors have emerged as crucial for effective implementation. Successful rules commonly require strong institutional frameworks, including clear legal foundations (Vinturis, 2023) and adequate monitoring mechanisms. Technical capacity, skilled staff and robust data systems are also needed to ensure effective implementation, monitoring and surveillance.

1.4 The future of fiscal rules

The GFC marked a crucial turning point in the development of fiscal frameworks. The crisis exposed the limitations of existing rules, particularly their inability to accommodate severe economic shocks while maintaining credibility. This led to the emergence of a "second-generation" fiscal rules, characterised by greater flexibil-

ity through escape clauses, improved accounting for economic cycles, and enhanced enforcement mechanisms (Eyraud et al., 2018). These frameworks attempted to balance credibility and flexibility as well as recognise that rules must simultaneously be binding enough to influence behaviour and flexible enough to accommodate policy needs, at least to some extent.

The pandemic initiated another phase in the evolution of fiscal frameworks, prompting a fundamental reassessment of how rules should be designed to handle major shocks while maintaining credibility as a policy anchor. The unprecedented nature of the crisis led to the widespread activation of escape clauses and suspension of traditional fiscal constraints. This has led to greater emphasis on flexibility mechanisms, the integration of sustainability considerations, and increased attention to the quality of public spending. The pandemic also highlighted the importance of maintaining fiscal space for responding to a crisis while ensuring long-term fiscal sustainability.

The increasing role of fiscal rules in the conduct of fiscal policy represents a recognition that discretionary fiscal policy, while necessary, benefits from operating within a structured framework that promotes debt sustainability and fiscal stability. Modern fiscal frameworks are evolving toward more flexible and comprehensive approaches (Blanchard et al., 2021) that can accommodate multiple policy objectives while maintaining credible constraints on government behaviour. This evolution reflects a growing understanding that effective fiscal policy requires balancing the need for disciplined financial management with the capacity to respond to changing economic circumstances.

Modern fiscal frameworks also increasingly recognise the importance of institutional support. The amount and scope of independent fiscal institutions (IFIs) have increased globally (Calmfors and Wren-Lewis, 2011; Larch and Braendle, 2018; Beetsma et al., 2019) and they provide oversight, assessments, analysis and recommendations. Enhanced monitoring mechanisms and stronger coordination across government levels have become standard features and, in some cases, other policy areas, including monetary policy and structural reforms, have been integrated into fiscal rules.

Contemporary fiscal frameworks face several key challenges. Climate change requires integrating environmental considerations into fiscal planning (Caselli et al., 2024) and may require new approaches to measuring fiscal space and sustainability. ”Green fiscal rules” have been suggested as a potential method for introducing flexibility for climate-related investments, but exempting specific spending categories from deficit calculations can also negatively affect the overall credibility of fiscal constraints. Ageing populations also create significant long-term fiscal pressures (Kotamäki and Lehtimäki, 2025) that rules must accommodate, and the digital economy poses new questions about economic measurement, tax bases and fiscal space. Meanwhile, experiences like the pandemic highlight the need for crisis resilience

while maintaining credibility. The growing importance of international policy coordination, particularly in addressing global challenges, is central to the need for better alignment of national fiscal frameworks.

Several key factors have been observed to be crucial for successful implementation. First, rules must be simple enough to be easily understood and monitored while sophisticated enough to address complex policy challenges while also being integrated with broader macroeconomic objectives. Second, they require strong institutional support, including IFIs, transparent reporting mechanisms, and clear enforcement procedures. Third, political commitment and broad societal acceptance about the importance of fiscal discipline are essential for maintaining rule compliance over time. Finally, fiscal rules have to balance between flexibility and credibility, short-term stabilisation and long-term sustainability as well as national autonomy and international coordination.

As countries and supranational unions continue to refine their fiscal frameworks, the focus is increasingly on developing ”smart” rules that can adapt to changing circumstances while maintaining their effectiveness as policy anchors. This includes better integration with other policy areas, improved mechanisms for handling uncertainty, and stronger links to long-term sustainability objectives. Fiscal rules have not been a panacea for fiscal challenges, but well-designed frameworks can contribute significantly to better fiscal outcomes and enhanced macroeconomic stability.

The key lesson from this history is that effective fiscal rules require careful considerations about their technical design and institutional framework. They must be simple enough to be operational, flexible enough to handle shocks, and credible enough to influence behaviour. Global challenges are becoming more complex and a greater understanding of the various facets of different fiscal frameworks can offer future policymakers important lessons about adapting fiscal rules to country-specific institutions and frameworks while maintaining the core principles of fiscal sustainability and credibility.

2 Previous Research and Positioning of the Dissertation

This dissertation integrates several theoretical frameworks with modern econometric methodology. The theoretical basis draws from theories of:

1. An optimal currency area (Mundell, 1961; McKinnon, 1963; Kenen, 1981) and how labour mobility, capital mobility, risk-sharing systems, business cycles as well as how international trade and diversified output structures affect the benefits and costs of joining an union.

2. Fiscal federalism (Oates, 1972; Weingast, 2009, 2014) on how to optimally distribute fiscal responsibilities across different government levels, how to incorporate political economy considerations, institutional factors, hard budget constraints and government behaviour, which can be applied to a multi-level governance structure as well as moral hazard issues from a monetary union and credible commitment mechanisms and fiscal discipline.

3. Institutional economics (North, 1990; Acemoglu et al., 2005) on the development of formal institutions and how they can drive economic growth, trade and fiscal responsibility through enforceable rules, which can reduce uncertainty and transaction costs as well lead to more sustainable and predictable fiscal policy.

The four papers of the dissertation build on previous research on European integration and fiscal governance and contribute to filling gaps in the literature related to the realised contrafactual evidence on the establishment of the European Single Market and the EU as well as the SGP and finally on the realised effects and the potential interaction of national and supranational fiscal rules in the EU and in the global economy. The aim of the dissertation is to advance the understanding of European economic integration, temporal dynamics in policy effectiveness, heterogeneous effects across country sizes, interaction between different policy frameworks, and trade-offs between multiple policy objectives.

2.1 The European Single Market

When looking at the economic integration of Europe in the modern time, the early theoretical works examine the potential benefits of market integration. Cecchini et al. (1988) provided initial estimates of single market benefits through a narrative of the economic necessities, channels, and impact of creating a true single market. Related to this document, the European Commission estimated the effect of the single market to be a one-off increase in the income of Member States between 4.25% and 6.50% whereas Baldwin (1989) calculated the growth impact to be at least double the size, from 13.0% with a potential of a higher growth premium of up to 33.0% if the innovation effects from common endogenous growth models would be realised to their full extent. The large difference between the estimates mainly relates to the role of dynamic effects being explicitly accounted for in the latter approach. The higher estimates are, at least theoretically, supported by Khandelwal et al. (2013), who note that productivity gains from trade liberalisation are often far greater than predicted as trade barriers might be managed through inefficient institutions. The positive welfare effect from trade liberalisation is also confirmed by Billmeier and Nannicini (2013).

Some other early empirical work studying the effects of integration and trade are Baldwin and Venables (1995), who examined regional integration impacts and Frankel and Romer (1999), who developed methodological approaches for identifying trade and integration effects. Later Micco et al. (2003) and Glick and Rose (2016) examined the trade effects from the EMU. Beyond such papers there is still only a limited amount of quantitative contrafactual studies on the trade effects of European integration, even though the benefits of integration and lowering barriers to trade are fundamental questions when potential further steps of integration are discussed. The most notable exceptions are Campos et al. (2019), who look at the economic growth effects from EU membership, Cieślik and Turgut (2021), who study the growth effects of the EU's eastern enlargement, Vermeulen (2022), who notes a significant negative impact from remaining outside the single market for firms in border regions of Central and Eastern Europe and Gabriel and Pessoa (2024), who study the economic growth effects from EMU membership.

Therefore, there was a gap in the literature for using novel contrafactual methods, such as the Synthetic Control Method (SCM), for studying the effects of the establishment of the European Single Market and removing barriers to trade. The growth effects implied by the results of the first paper of this dissertation closely match the ones estimated by Baldwin (1989), while also providing new evidence on the heterogeneous effects between larger and smaller countries. The findings of the paper on smaller country benefits connect to previous work by Krugman (1991), Melitz (2003) and Alesina et al. (2005) on country size, trade openness and economic integration as well as the temporal analysis of benefits, which connects to König and Ohr (2013) on European economic integration dynamics.

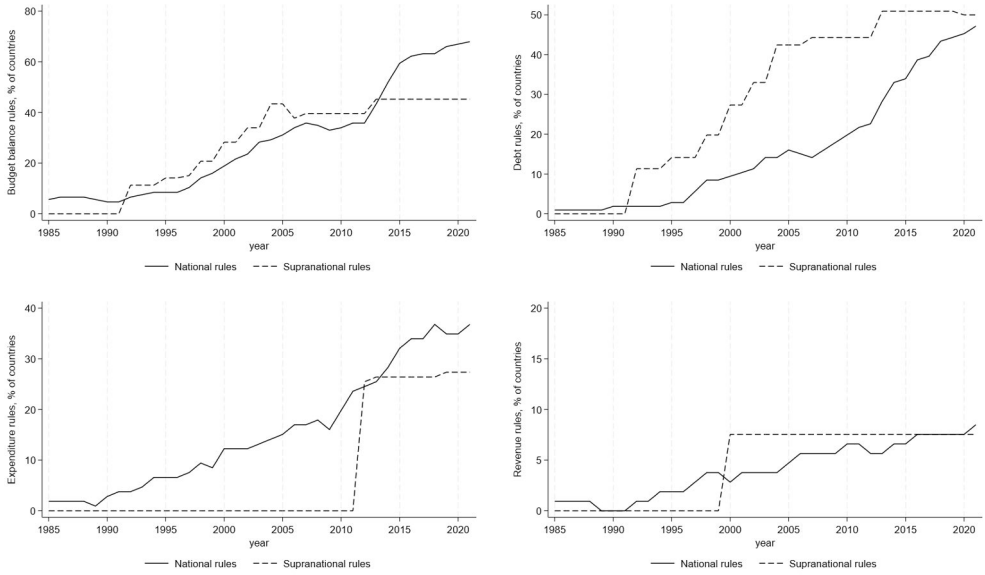
2.2 Fiscal rules

Research on fiscal rules evolved from early theoretical works of Buchanan and Wagner (1977), who argued that rules are necessary to keep policymakers from conducting discretionary policies with a deficit bias due to indifference about intertemporal budget constraints, and Barro (1979), who showed how debt policy could be used to minimise the distortionary effects of taxation and, therefore, support fiscal rules to maintain sustainable debt levels. Additionally, Von Hagen and Harden (1995) suggested institutional solutions, Kopits and Symansky (1998) established foundational criteria for effective fiscal rules, and Wyplosz (2005) advanced debates about rules versus institutions. Some noteworthy papers from earlier literature also include Von Hagen (1991), which was the first comprehensive empirical study of state-level fiscal rules in the United States and observed the importance of rule design, enforcement and the varied effectiveness of different types of fiscal constraints, the examination of Poterba (1994) on government responses to deficits and how they are affected by fiscal institutions and how stricter rules usually lead to faster fiscal adjustment and the analysis of Alesina and Perotti (1995) on the political determinants of fiscal policy and how fiscal rules can be used to solve the political bias towards deficits.

The impact of fiscal rules on fiscal policy has varied substantially across countries. Research has consistently shown that well-designed rules, supported by strong institutions and political commitment, can effectively influence fiscal outcomes, even if the magnitude and realised effects differ. Countries with credible fiscal frameworks typically demonstrate lower deficit bias, more countercyclical fiscal responses, and higher levels of debt sustainability. However, the effectiveness of rules depends on their design and the institutional context in which they function.

As fiscal rules have potential positive effects across diverse aspects of public finances, the number of countries following at least some form of fiscal rules has increased rapidly over the past 30 years (Halac and Yared, 2018, 2022). Figure 1 displays this increase for all four main types of rules.

Figure 1. The historical growth of fiscal rules



Notes: Share of countries with fiscal rules by type, 1985-2021. (Lehtimäki, 2025)

In the EU, the agreement on the fiscal framework and the establishment of the SGP were major steps in European integration and created an element of fiscal surveillance to the EA, which was later broadened to the entire EU. Understanding the actual effects of the SGP and potential substitution or complementary with national fiscal rules remains vital for the future of the union. In this respect, Eichengreen and Von Hagen (1996) provided a major building block for the EMU by analysing fiscal rules in the context of monetary unions and the relationship between fiscal rules and currency stability. Beyond effectiveness and relevant for supranational frameworks, the literature has also studied fiscal rule compliance and the political economy of non-compliance. Studies such as Reuter (2015, 2019) have shown that rules can be effective even when not fully complied with, suggesting that their effects can also operate through reputational costs rather than formal sanctions alone.

The previous literature applying the SCM for analysing effects on government debt is quite rare with only a few notable exceptions: Koehler and König (2015) study the total effects of the SGP on the EA but do not study individual countries, Strong (2023) studies the effect of fiscal rules in the West African CFA zone and Kotamäki and Lehtimäki (2025) study the effects of population ageing but also consider economic growth and productivity along with government debt.

The second paper of this dissertation fills this gap in the literature and applies the SCM to analyse the effects of EU fiscal rules and the SGP on government debt

for different country groupings as well as all individual countries that have been members of the EU. The approach provides a counterfactual of what government debt levels would be without the EU and the SGP.

The study extends the theoretical framework established by Kopits and Symansky (1998) on effective fiscal rules, while also addressing identification challenges highlighted by Caselli and Reynaud (2020) through a different methodological approach. Furthermore, the study contributes to the literature on institutional aspects of the EU fiscal framework, connecting to work by Debrun et al. (2008) and Larch and Braendle (2018), as well as on rule effectiveness by Heinemann et al. (2018) and Reuter (2019).

The results show significant effects for the EU fiscal framework across various country groups and individual countries. There is some heterogeneity in the effects between countries and this adds to the understanding of fiscal rule effectiveness, building on the earlier work of Berganza (2012) who emphasised the importance of country characteristics in fiscal rule effectiveness.

While the SGP provides a supranational fiscal framework in the EU, it is also important to account for national fiscal rules. A majority of previous research looking at the various effects of individual national or supranational fiscal rules typically focuses on one type of rule or a more limited set of outcomes. Papers examining both aspects are less common. Therefore, there is a gap in the literature for studies looking at the effectiveness of national and supranational rules simultaneously and whether they act as substitutes or complementaries.

The third paper of the dissertation looks at the short-term, medium-term and long-term effects of the SGP and its different reforms as well as national fiscal rules on government debt in EU countries. The paper employs time and country fixed effects, connecting it to a substantial body of empirical literature on fiscal rules, such as Von Hagen and Wolff (2006), Buti et al. (2007) and Debrun et al. (2008), while addressing various panel data challenges. The effects for different time horizons explain the dynamics of fiscal rule effectiveness, which are related to the work by Bergman et al. (2016) on rule compliance over time, while the examination of national and supranational rules relates to research by Iara and Wolff (2014) on domestic frameworks, Barbier-Gauchard et al. (2021) on national fiscal rules and fiscal discipline and Larch and Braendle (2018) on European fiscal frameworks while providing evidence about the temporal dimension of rule effectiveness as well as the importance of considering the design of national fiscal rules.

The study also connects to the work of Kopits and Symansky (1998) on rule characteristics while providing empirical evidence about how the effects change over different time horizons. This connects to literature on rule credibility and effectiveness and the results suggest that the impact of rules may vary significantly across different time horizons. The examination of both supranational and national rules extends the study to analysing multi-level fiscal governance, building on the studies of Wyplosz

(2005) and Hallerberg et al. (2009) about institutional frameworks.

The fourth paper of the dissertation extends the analysis presented in the third paper to a total sample of 106 countries around the world and studies the effects on government debt, government budget balances, public investment and economic growth. It provides the same temporal analysis as the third paper of effects across different time horizons, examining both supranational and national rules. The approach establishes how rule effectiveness evolves over time, providing some advice on policy design and implementation.

The study offers concrete evidence on how fiscal rules have functioned in practice across multiple dimensions of fiscal and economic performance while linking the literature on fiscal rules with broader research on economic growth and public investment. The approach provides a more complete picture of rule effects than earlier studies, which have typically focused on single outcomes. The study extends this line of research by providing a more comprehensive assessment across both national and supranational contexts, which explains some parts of their relative effectiveness and potential complementarities.

As with the third paper, this study connects to the foundational theoretical framework established by Kopits and Symansky (1998), who outlined the key characteristics for effective fiscal rules. It builds on the same previous empirical studies such as Debrun et al. (2008), who examined fiscal rules in the EU context, Guerguil et al. (2017), who suggested flexible rule design and Gootjes and De Haan (2022), who studied fiscal rule effectiveness.

The Davoodi et al. (2022) fiscal rules database provides a systematic and comprehensive foundation, which extends beyond regional studies like those focused on the EU, such as Larch and Braendle (2018) or Latin America such as Berganza (2012). The multi-outcome approach provides a broader understanding of how rules affect different aspects of fiscal and economic performance, addressing limitations of earlier single-outcome studies.

The examination of public investment effects particularly connects to concerns raised in the literature about fiscal rules potentially constraining productive public spending. Some of the most prominent recent studies are Ardanaz et al. (2021), which notes that flexible fiscal rules tend to outperform non-flexible ones when it comes to public investment and note that public investment is only reduced during episodes of fiscal consolidation if fiscal rules are not flexible. A similar result is observed by Guerguil et al. (2017), who add that the strong impact of flexibility, especially to ensure the investment-friendliness of rules and to avoid procyclicality. Closely related, Delgado-Téllez et al. (2022) conclude that increased public social spending has been displacing public investment but fiscal frameworks have also forced governments to reduce investment to comply with the fiscal rules in effect while Larch and van der Wielen (2025) note that complying with fiscal rules tends to increase the fiscal space available for investment.

The examination of economic growth effects addresses a policy question that has received relatively less empirical attention in the fiscal rules literature, potentially as the mechanism for affecting economic growth is more indirect than for fiscal variables. Therefore, a majority of previous work focuses on fiscal variables and studies looking at economic growth effects are quite rare with only a few exceptions such as Castro (2011), who concludes that the SGP has not been harmful to growth of real GDP per capita and growth has been higher after the fulfilment of the deficit criterion has been officially assessed and Ilzetzki et al. (2013), who study how fiscal rules affect the size of fiscal multipliers as well as discuss their potential effects on economic growth. Therefore, the study fills a gap by directly examining how rules affect economic performance, connecting to broader literature on fiscal policy and economic growth.

The study also contributes to ongoing theoretical debates about optimal rule design, implementation and multi-level frameworks in an increasingly complex policy environment. It connects to work by Eyraud et al. (2018) on second-generation fiscal rules, providing empirical evidence on how different rule designs affect various economic outcomes. The inclusion of both national and supranational rules, in particular, has the potential to improve the understanding of multi-level fiscal governance, building on the work of Wyplosz (2005) on fiscal institutions versus rules. These aspects connect to emerging literature on fiscal rule design and implementation and to Caselli and Reynaud (2020) on fiscal rule effectiveness, while providing additional evidence about broader economic effects beyond direct fiscal impacts as well as potential trade-offs and complementarities that need to be considered in rule design and implementation.

2.3 Theoretical considerations

This section provides a simplified reduced-form theoretical framework for describing the channels and estimating effects of the European Single Market and the functioning of fiscal rules. The framework draws from Ljungqvist and Sargent (2004), Blanchard (2006), McCandless (2009) as well as Wickens (2011) and employs reduced-form relationships rather than fully structural models, prioritising empirical clarity and transparency in examining heterogeneous effects across diverse institutional contexts. It focuses on realised policy outcomes and the interaction effects between multiple layers of fiscal governance.

The growth effects from the European Single Market operate through mechanisms that vary systematically by country size. For smaller economies, the removal of trade barriers represents a proportionally larger expansion of market access. Following the new trade theory literature, such as Krugman (1991) and Melitz (2003), firms in smaller countries gain access to economies of scale previously constrained by limited domestic demand. This market integration and expansion allows for faster

technology diffusion (Labhard et al., 2025) and increased foreign direct investment (FDI) (Khandelwal et al., 2013), competition and firm selection, mainly through the entry of multinational enterprises (Melitz, 2003) and scale economies from specialisation. Larger economies can also gain benefits from reallocation of resources to more productive uses, more optimal concentration of economic activity, higher competition in previously protected sectors and some new export opportunities.

The introduction of the European Single Market was expected to lead to a reduction of tariffs and non-tariff barriers and can be formalised within a standard production and trade framework. If output Y for country i at time t is defined by:

$$Y_{i,t} = A_{i,t}\, F(K_{i,t}, L_{i,t}, K^P_{i,t}), \tag{1}$$

where $A_{i,t}$ is total factor productivity (TFP), $K_{i,t}$ is private capital, $L_{i,t}$ is labour, and $K^P_{i,t}$ public capital. The Single Market primarily affects output through productivity and factor accumulation. Small open economies are expected to be more sensitive to changes in productivity through the diffusion of foreign technology while larger economies can rely more on domestic demand and scale effects.

Looking at static allocation effects, bilateral exports $X_{i,j,t}$ increase due to lower trade costs through a gravity-type mechanism:

$$X_{i,j,t} = Grav_{i,j,t}\, \tau^{-\theta}_{i,j,t}, \tag{2}$$

where $Grav_{i,j,t}$ captures gravity-model fundamentals, such as country size, distance and trade infrastructure, for country i with other countries j, $\tau_{i,j,t}$ is (potentially asymmetric) bilateral trade costs and θ is trade elasticity, which represents the responsiveness of trade flows to changes in trade costs. A fall in $\tau_{i,j,t}$ implies reallocation of resources toward more productive sectors and trading partners, raising efficiency. Smaller countries often achieve proportionally larger gains, since the expansion of markets represents a greater relative increase in potential demand, whereas larger countries benefit more from within-market reallocation and scale effects.

In heterogeneous-firm models, the average productivity evolves according to:

$$A_{i,t} = \bar{A}(\tau_{i,t}, \mathrm{FDI}_{i,t}, \mathrm{Comp}_{i,t}) \tag{3}$$

with $\tau_{i,t}$ representing trade costs, $\mathrm{FDI}_{i,t}$ inward foreign investment, and $\mathrm{Comp}_{i,t}$ the intensity of market competition, which increases with trade liberalisation as domestic firms face greater competitive pressure from foreign entrants. Trade liberalisation increases competition and causes the retirement of less productive firms, and increases average $A_{i,t}$. In smaller countries, openness increases foreign competition and selection effects more strongly, whereas in larger economies the size of the domestic market can lower foreign competition, so the productivity gains can potentially be less dramatic but more persistent.

The dynamic link between trade liberalisation and growth can be summarised in three equations:

$$\Delta d_{i,t} = \frac{r_{i,t} - y_{i,t}}{1 + y_{i,t}} d_{i,t-1} - pb_{i,t} + sfa_{i,t}, \tag{4}$$

First, Equation 4, where $d_{i,t} = \frac{D_{i,t}}{Y_{i,t}}$ represents the debt-to-GDP ratio, shows that trade integration can (indirectly) improve debt dynamics if growth $y_{i,t}$ increases relative to interest rates $r_{i,t}$ while general government primary balance $pb_{i,t}$ and stock-flow adjustments $sfa_{i,t}$ (statistical discrepancies and other factors affecting the debt stock that are not captured in the budget balance, such as asset valuation changes) remain constant. This is particularly important for smaller states with higher borrowing costs, as credibility gains from Single Market membership can lower $r_{i,t}$.

$$\Delta \log Y_{i,t} = \phi_0 + \phi_1 \Delta \log A_{i,t} + \phi_2 \Delta \log K_{i,t} + \phi_3 \Delta \log K^P_{i,t} + \varepsilon_{i,t}, \tag{5}$$

Second, using Equation 1 as the basis for an empirical growth accounting specification, performing a log transformation and taking first differences yields Equation 5, which links the rate of growth to productivity and factor accumulation. The coefficients ϕ_1, ϕ_2, ϕ_3 capture how increases in TFP, private investment, and public capital affect economic growth. Larger countries may see stronger effects from domestic investment ϕ_2 because of market size, while smaller ones may rely more on imported TFP gains, ϕ_1, from aspects such as multinational enterprises.

$$\Delta \log A_{i,t} = \gamma_0 + \gamma_1 \Delta \log \frac{1}{\tau_{i,t}} + \gamma_2 \Delta \log \mathrm{FDI}_{i,t} + \gamma_3 \Delta \log \mathrm{Comp}_{i,t} + \nu_{i,t} \tag{6}$$

Finally, Equation 6 defines the determinants of TFP growth. Reductions in trade costs ($\Delta \log \frac{1}{\tau_{i,t}}$) directly boost TFP, while FDI and competition reinforce the effect. For smaller countries, γ_1 and γ_2 are often larger due to higher openness and reliance on foreign capital. In contrast, larger countries may see stronger domestic competition effects (γ_3).

The European Single Market affects growth by reallocating resources across sectors, raising productivity through firm selection and competition, and building capital accumulation via market enlargement and FDI. These effects differ depending on the size of a country with smaller economies experiencing higher openness and credibility gains, while larger economies potentially benefit more through scale and within-country reallocation.

When it comes to fiscal rules, their effectiveness is based on public choice theory, time-inconsistency problems, and institutional economics. As Buchanan and Wagner (1977) note, in the absence of institutional constraints, democratic governments have systematic incentives towards deficit spending. Governments prefer to commit to

fiscal discipline ex ante but deviate ex post to gain benefit from spending or tax cuts. This time-inconsistency (Kydland and Prescott, 1977) creates a systematic bias towards deficits. Also, as Weingast (2009) notes, there is a tendency to overspend relative to the social optimum due to a common pool problem as political agents draw from a common budget while sharing the costs with others through higher deficits or taxes. Additionally, politicians have an incentive to increase spending or cut taxes before elections, which leads to a deficit bias particularly in election years. Finally, voters can potentially underestimate the future tax burden of current deficits, which is exceptionally prevalent when debt servicing costs are low.

Fiscal rules can be used to address these issues by acting as limits to policy discretion through legal constraints, transparency requirements and reputational costs. Additionally, supranational fiscal rules address the potential for substantial negative spillovers between member countries by constraining national fiscal policy (Eichengreen and Von Hagen, 1996).

In a simplified framework, fiscal rules can be classified by their main target variable. Debt rules constrain general government debt $D_{i,t}$, budget balance rules constrain general government primary balances $pb_{i,t}$ (or, in some cases, overall budget balances which include interest payments), expenditure rules constrain government expenditure $G_{i,t}$ or its growth, and revenue rules set levels for government revenue $T_{i,t}$ or prevent procyclical revenue policy. Each operates through distinct channels, which can be used to describe the expected outcome effects studied in the third and fourth paper of this dissertation.

The effects of fiscal rules on constraining government debt operate through direct and indirect mechanisms. The standard government debt dynamics equation presented in Equation 4 provides the theoretical foundation for describing how fiscal rules can affect debt development. Rules targeting the primary balance (or the overall budget balance) directly influence the $pb_{i,t}$ term, whereas expenditure rules may affect both the budget balance and, through their impact on public investment, potentially influence growth rates. Debt rules create direct constraints on the accumulation of debt, while revenue rules affect the fiscal capacity to service existing debt.

An additional channel operates through sovereign risk premia. Credible fiscal rules can reduce the interest rate $r_{i,t}$ by signalling fiscal discipline to financial markets, thereby improving debt dynamics through the interest-growth differential $(r_{i,t} - y_{i,t})$ in Equation 4. This channel may be particularly important for highly indebted countries where risk premia are elevated.

It is also worth noting that in the case of the EU, it is possible to interpret Equation 4 as an intersect between the EU fiscal framework and the European Single Market. The single market affects debt dynamics through economic growth $y_{i,t}$, potentially improving the interest-growth differential. On the other hand, fiscal rules directly constrain $D_{i,t}$ and $pb_{i,t}$. These aspects imply that integration provides growth benefits that improve fiscal sustainability, while fiscal rules set constraints that pre-

vent excessive deficits and debt accumulation. This interaction is particularly important in a monetary union where fiscal spillovers can have negative effects on the value and credibility of the common currency.

Effects on government budget balances operate mainly through their effects on the primary balance or budget constraints. The nominal government budget constraint can be written as:

$$G_{i,t} + r_{i,t}D_{i,t-1} = T_{i,t} + (D_{i,t} - D_{i,t-1}) + sfa_{i,t} \tag{7}$$

where $G_{i,t}$ denotes government expenditure, $r_{i,t}D_{i,t-1}$ the nominal interest payments on accumulated debt, $T_{i,t}$ government revenues, and $(D_{i,t} - D_{i,t-1})$ new borrowing (i.e. the change in nominal debt).

Rearranging Equation 7 to concentrate on new borrowing yields:

$$(D_{i,t} - D_{i,t-1}) = G_{i,t} - T_{i,t} + r_{i,t}D_{i,t-1} + sfa_{i,t}$$

The primary balance is defined as revenue minus non-interest expenditure:

$$pb_{i,t} = \frac{T_{i,t} - G_{i,t}}{Y_{i,t}} \tag{8}$$

where $Y_{i,t}$ is nominal GDP. Substituting this into the rearranged budget constraint and noting that the overall budget balance equals the primary balance minus interest payments, or equivalently, the change in debt equals the negative of the primary balance plus interest payments, it follows that:

$$(D_{i,t} - D_{i,t-1}) = -pb_{i,t} \cdot Y_{i,t} + r_{i,t}D_{i,t-1} + sfa_{i,t}$$

Dividing both sides by nominal GDP, $Y_{i,t}$, and noting that $Y_{i,t} = (1 + y_{i,t})Y_{i,t-1}$, where $y_{i,t}$ is the real GDP growth rate, yields the debt dynamics equation, which is exactly the same as Equation 4:

$$\Delta d_{i,t} = \frac{r_{i,t} - y_{i,t}}{1 + y_{i,t}} d_{i,t-1} - pb_{i,t} + sfa_{i,t} \tag{9}$$

where the debt-to-GDP ratio is $d_{i,t} = \frac{D_{i,t}}{Y_{i,t}}$ and $\Delta d_{i,t} = d_{i,t} - d_{i,t-1}$. A positive $pb_{i,t}$ corresponds to a primary surplus, reducing the debt ratio, while a negative $pb_{i,t}$ indicates a primary deficit, increasing it. Using the primary balance separates the direct impact of fiscal policy decisions from market-determined interest costs, which is particularly important when comparing fiscal positions across countries with different borrowing costs. Fiscal rules that impose deficit, debt, or structural balance limits operate directly through this term, constraining the flow component of debt accumulation. Many fiscal rules target the general government budget balance (primary balance plus interest payments), but the analytical framework remains the same with interest payments treated as an additional constraint

In practice, the effects depend on the numerical limits as well as on the composition of adjustment. Revenue rules may change fiscal capacity by stabilising or raising $T_{i,t}$, whereas expenditure rules influence the allocation of $G_{i,t}$ between current spending and investment. Supranational rules often strengthen budget balances more effectively than national rules, potentially due to their greater credibility and enforcement mechanisms.

Fiscal rules can also potentially have effects on public investment as it is a distinct component of government expenditure with long-run growth effects. If government expenditure consists of $G_{i,t} = g^c_{i,t} + I^P_{i,t}$, where $g^c_{i,t}$ denotes current government spending and $I^P_{i,t}$ public investment, the dynamics of public capital follow:

$$K^P_{i,t} = (1 - \delta_p)K^P_{i,t-1} + I^P_{i,t}. \tag{10}$$

where δ_p is the depreciation rate of public capital.

Fiscal rules that set limits to expenditure can constrain $I^P_{i,t}$ if political pressures protect current spending. By contrast, revenue rules that ensure stable fiscal capacity may create room for investment, while debt rules can limit intertemporal trade-offs by restricting debt-financed capital accumulation.

The effects on economic growth operate through several channels. Fiscal rules affect the fiscal stance and, therefore, directly influence aggregate demand. Partly due to this, consolidation mandated by rules can reduce short-run growth if fiscal multipliers are large. Additionally, they affect public investment and the accumulation of productive public capital, which in turn affects potential output. Finally, credible rules reduce risk premia and the effective interest rate $r_{i,t}$, improving debt dynamics and supporting growth.

It is also worth noting that the effects of fiscal rules described in this section can be interdependent. Fiscal consolidation required by rules may, for example, have short-term negative effects on growth (reducing $y_{i,t}$), potentially offsetting some of the direct benefits from improved general government balances. The net effect depends on the size of fiscal multipliers, the composition of fiscal adjustment, and the credibility of the fiscal framework (Blanchard and Perotti, 2002).

This is especially true in a multi-level framework and the theoretical basis for complementarity between national and supranational fiscal rules draws from the literature on fiscal federalism and institutional design. Supranational rules can provide a framework for external commitment that helps national governments overcome time-consistency problems in fiscal policy (Kydland and Prescott, 1977). National rules, by contrast, can be tailored to country-specific circumstances and may enjoy greater democratic legitimacy. When national and supranational rules target different aspects of fiscal policy, they may complement each other by creating more comprehensive constraints on fiscal behaviour. However, if rules conflict or impose contradictory requirements, they may undermine each other's effectiveness (Wyplosz,

2005).

The complementarity arises when multiple rules target different dimensions of fiscal policy and create a more comprehensive system of constraints than either level individually would. Supranational rules, such as the SGP, generally focus on aggregate outcomes like general government deficits and general government debt levels that have potential spillover effects in a monetary union. These aggregate targets can be achieved through various fiscal adjustments, and supranational rules generally do not specify the methods by which consolidation should be done. On the other hand, national fiscal rules can constrain specific fiscal aggregates that are not addressed by supranational frameworks.

Complementarity also works through differing enforcement mechanisms and credibility channels. Supranational rules benefit from external monitoring and multilateral peer pressure, which can help national governments overcome domestic political resistance to fiscal discipline. However, supranational enforcement faces credibility challenges, particularly when non-compliance is observed in large member states with political influence over collective decisions. National fiscal rules are often set in domestic constitutional or legislative frameworks and monitored by national institutions, including increasingly prevalent IFIs, so they may have stronger enforcement credibility in the domestic political environment. All this implies that one of the levels may still be effective even if the other fails to constrain fiscal behaviour.

The theoretical case for complementarity, ultimately, is based on the principal-agent problems inherent in fiscal governance. Multiple agents (such as political parties, ministries, levels of government) compete for fiscal resources from a common budget, creating coordination failures and common pool problems (Weingast, 2009, 2014). A single fiscal rule, whether national or supranational, constrains only some of these agents or some dimensions of their behaviour. Multiple rules operating at different levels of governance create a more complete framework, constraining a larger number of agents across different levels of government. The empirical findings of the third and fourth essays of this dissertation of both national and supranational rules having statistically significant effects when included simultaneously support this theoretical framework of actual complementarity rather than redundancy.

Along with complementarity considerations and technical design, the effectiveness of fiscal rules also depends on the political incentives. The government's decision to comply with fiscal rules can be modelled as a dynamic game between current and future governments (Halac and Yared, 2014). If β represents the government's discount factor and λ the political cost of rule non-compliance (including reputational costs and potential sanctions), the government chooses fiscal policy $\{G_{i,t}, Tax_{i,t}\}$ to maximise:

$$\max \sum_{t=0}^{\infty} \beta^t [U(G_{i,t}) - C(Tax_{i,t}) - \lambda NC_{i,t}] \tag{11}$$

which is subject to the budget constraint in Equation 7 and all fiscal rule constraints. $U(G_{i,t})$ represents the political benefits from government spending, $C(Tax_{i,t})$ the political costs of taxation, and $NC_{i,t}$ is non-compliance with fiscal rules.

This framework helps explain why supranational rules may be more effective than national ones. Supranational rules can increase λ through external monitoring and multilateral surveillance, making non-compliance politically more costly. Additionally, they may help overcome time-inconsistency problems by providing commitments that future governments cannot easily modify (Beetsma et al., 2019).

However, the credibility of sanctions is essential. If sanctions are never imposed (as has generally been the case with the SGP), the effective value of λ diminishes, reducing rule effectiveness. This implies that enforcement mechanisms and institutional designs have effects beyond those implied by numerical targets alone.

Finally, the heterogeneous effects observed in the third and fourth essays of this dissertation across countries and rule types deserve further theoretical consideration. Following papers such as Nerlich and Reuter (2013) and Bergman et al. (2016) as well as others, several potential sources of heterogeneity can be identified. One such source are the broader institutional environments and their potential role in the effectiveness of rules. In countries with strong institutions, including independent judiciaries, effective bureaucracies, and robust audit systems, fiscal rules may be more credible and better enforced. This can be formalised by allowing the compliance cost λ in the political economy framework to vary with the quality of institutions $Q_{i,t}$:

$$\lambda = \bar{\lambda} \cdot f(Q_{i,t}), \quad f'(Q_{i,t}) > 0 \tag{12}$$

Equation 12 implies that the same rule will be more effective in constraining fiscal behaviour in countries with high-quality institutional environments. Additionally, aspects such as political fragmentation, government stability, and the political cost of non-compliance affect rule effectiveness. Parliamentary systems with coalition governments might face greater challenges in maintaining fiscal discipline, as multiple parties must agree on fiscal policy (Hallerberg et al., 2009) and proximity to elections may affect compliance, with governments more likely to deviate from rules when electoral pressures are high.

Countries with different economic structures may also respond differently to fiscal rules. For example, economies with large automatic stabilisers may find budget balance rules more constraining during downturns, whereas resource-dependent economies face additional challenges in applying rules due to revenue volatility. The impact on public investment may also vary depending on the existing capital stock as countries with large infrastructure gaps may find expenditure rules more constraining for growth-enhancing investment.

Beyond the type of rule (debt, deficit, expenditure, revenue), specific design features can have strong implications. Rules with well-defined escape clauses, clear

correction mechanisms, and IFIs tend to be more effective (Schaechter et al., 2012). The stringency of numerical targets relative to current fiscal position also affects binding constraints as, for example, a 60% debt rule is highly constraining for a country at 100% debt but non-binding for one at 40%. Finally, the initial economic conditions at the time of adoption can also affect the longer term effectiveness (Fatás et al., 2025).

2.4 Methodology

The dissertation applies two different main methodological concepts: the SCM and a time and country fixed effect approach to study the questions of European integration and fiscal rules.

The SCM, originally introduced in Abadie and Gardeazabal (2003) and later developed further in Abadie et al. (2010) and Abadie et al. (2015), is a case study analysis approach designed to separate actual effects of different reforms or structural changes (or their absence) from other developments by simulating a counterfactual based on a comparison group. The SCM enables more robust identification strategies than traditional econometric methods, facilitates detailed analysis of heterogeneous effects, and allows for credible counterfactual construction.

A studied group $J + 1$. The group includes an individual observation of interest $j = 1$ where a treatment takes place in period T_i. The remaining set of observations in the group $j = 2, ..., J + 1$ are not affected by the treatment and, therefore, form the control group. The control group is used to simulate a counterfactual. Abadie et al. (2010) express $j = 1$, the individual country, area, etc., as the "treated unit" while the non-treated units form the "donor pool". The sample $t = 1, ..., T$ consists of the pre-treatment observations T_0 and post-treatment years T_1 (with $T_0 + T_1 = T$), which is the entire sample of a study.

The SCM algorithm calculates the counterfactual non-treatment development by using the donor pool. Abadie et al. (2015) define it as a weighted average of observations in the donor pool, consisting of a $J \times 1$ vector of weights $W = (w_2, ..., w_{J+1})'$ with $0 \leq w_j \leq 1$ of $j = 2, ..., J + 1$ and $w_2, ..., w_{J+1} = 1$. It then chooses the value of W to match the characteristics of the treated unit with the synthetic control.

X_1 is a $(k \times 1)$ vector consisting of all the pre-treatment control variables of the treated unit which should match the ones of the comparison group, formed by X_0 which is the $k \times J$ matrix, as closely as possible. The selected synthetic control, W^*, should minimise the difference between the treated unit and the synthetic control (this implies the minimum of vector $X_1 - X_0W$).

By combining these elements, the formal approach can be defined. $m = 1, ..., k$, X_{1m} is the value of the m-th variable for the treated unit, and X_{0m} is a $1 \times J$ vector of the values of the m-th variable for units in the donor pool. Following Abadie and Gardeazabal (2003), W^* is chosen as the value of W that minimises:

$$W^* = \sum_{m=1}^{k} \upsilon_m (X_{1m} - X_{0m}W)^2, \tag{13}$$

where υ_m is the weight reflecting the importance the model assigns to m-th variable when defining the difference between X_1 and X_0W. These weights are used for the synthetic control estimator for the effect of the treatment, which is the difference of post-treatment outcomes in the treated unit and the effects observed in the donor pool:

$$Y_{1t} - \sum_{j=2}^{J+1} w_j^* Y_{jt}, \tag{14}$$

where Y_{jt} is the observed effect in country j at time t and Y_1 a $(T_1 \times 1)$ vector of the post-treatment values of the treated country. Y_0 is therefore a $(T_1 \times J)$ matrix, with j being the post-treatment values of the effect for country $j + 1$.

Based on equations (13) and (14), it is possible to match variables in X_0 and X_1 to serve as predictors of the post-treatment outcome.

The SCM provides a robust approach for case studies but it relies on the assumption that a weighted combination of control units can adequately approximate the correct counterfactual and, therefore, identify a plausible synthetic version of the unit of interest. If structural differences between treated and control units are large, this assumption may be violated. The robustness checks provided in the first and second paper of this dissertation mitigate this concern, but cannot fully eliminate it. Beyond the construction of the donor pool, the main challenge for the research questions of this dissertation are the potential anticipation effects.

When it comes to the construction of the donor pool, the first paper deliberately restricts the pool to Organisation for Economic Co-operation and Development (OECD) economies not undergoing similar structural integration shocks, ensuring comparability in income levels and institutional maturity while also avoiding the inclusion of any countries directly affected by the establishment of the single market. The United States, Israel, and Japan receive a high weight, reflecting their strong pre-treatment similarity in growth trajectories. To check robustness against overweighting, the study conducts leave-one-out treatments where high-weight donors are excluded from the pool, showing that results remain qualitatively similar.

In the second paper, the donor pool is based mainly on non-EU OECD countries, with robustness checks extending the pool to selected emerging economies where sufficient data was available. This is further complemented by bias-corrected SCM estimates. The weights are generally more dispersed than in the single market case, although in a few individual cases single countries in the comparison sample receive very large weight. Across both studies, diagnostics such as Root Mean Squared Pre-

diction Error (RMSPE) values, weight distributions, and placebo tests are reported to enhance the validity of the counterfactuals.

When it comes to anticipation effects, they are a real concern for the first essay studying the European Single Market because the Single European Act of 1986 signalled deep integration reforms well before the formal 1993 implementation. The paper addresses this by re-estimating the SCM using alternative intervention years ranging from the late 1980s to the early 1990s. The results show that while small divergences emerged before 1993, the strongest and most persistent growth premia were observed precisely after 1993. This suggests that expectations may have played a small role, but the major growth effect was only realised after the formal launch of the single market, which validates the chosen treatment year.

The second essay has similar issues with timing. The Maastricht treaty was signed in 1992 and the SGP was politically agreed upon in 1997, but enforcement started in 1998 and 1999. To address this, the SCM is applied with various alternative treatment times. The findings reveal modest fiscal adjustments prior to 1997, but the dominant debt-restraining effect materialised after 1997. This indicates that the formation of the EU and the political agreement on the convergence criteria had some effects on fiscal discipline, but the more notable ones occurred after the finalisation of the SGP.

However, it is worth noting that recent methodological developments have addressed several limitations of the standard SCM approach, which could have addressed some of the potential challenges. Some examples of this are Gobillon and Magnac (2016), who note that the quality of the synthetic control depends critically on the characteristics of the donor pool, suggesting that including units with very different structural characteristics may bias results, Xu (2017), who develop a generalised synthetic control method, which allows for interactive fixed effects and the can help address the potential for unobserved time-varying factors, and Ben-Michael et al. (2021), who introduce the augmented synthetic control method, which combines SCM with regression adjustment to improve balance on pre-treatment outcomes and covariates.

The second approach taken in this dissertation is largely based on previous panel data studies using fixed effects and theoretically on Baltagi (2008), Wooldridge (2010), Stock and Watson (2020) and Hansen (2022). The use of fixed effects follows established empirical approaches in the literature while focusing specifically on temporal aspects of rule effectiveness. This methodological choice allows for controlling for both time-invariant country characteristics and common time trends, helping to identify the effects of fiscal rules across different time horizons. It is designed to account for different facets of national and supranational fiscal rules as well as potential dynamic developments. The dynamics as well as the persistence of the effects are studied through different time windows with the longer time windows expected to eliminate some of the potential short-term noise and business cycle effects.

The seminal work of Bohn and Inman (1996) established the foundation for studying fiscal rules using panel data methods, though their focus was on the United States. In the European context, for example, Debrun et al. (2008) and Heinemann et al. (2018) have extensively employed country fixed effects to control for persistent institutional, cultural, and structural differences across member states that might influence both the adoption of fiscal rules and fiscal outcomes. This methodological choice helps address potential endogeneity concerns arising from the fact that countries with stronger fiscal institutions might be more likely to adopt and maintain strict fiscal rules.

Time fixed effects play an equally vital role in this analytical framework, capturing common shocks affecting all EU countries simultaneously, such as the 2008 financial crisis or changes in ECB monetary policy. As demonstrated by Reuter (2015), failing to account for these temporal effects could lead to spurious correlations between fiscal rules and outcomes, particularly given the synchronised business cycles within the EU and common external pressures. While national fiscal rules can be studied using traditional panel methods, supranational rules like the SGP and the ones set by the Fiscal Compact require careful consideration of their uniform application across countries. By simultaneously examining national and supranational rules, these studies can provide understanding about their complementarity or potential conflicts, a dimension that has been relatively unexplored in previous literature.

The combination of both country and time fixed effects effectively focuses on the impact of rule changes from both country-specific characteristics and common temporal shocks and should identify the causal impact of fiscal rules. This closely matches what Grembi et al. (2016) do in their difference-in-differences framework. Recent methodological advances have built upon this foundation by incorporating additional elements into studies. For example, Caselli and Wingender (2018) have extended the basic fixed effects framework by considering the dynamic nature of fiscal adjustments and potential heterogeneous effects across different types of fiscal rules. This evolution in methodology reflects a growing observation that the impact of fiscal rules may vary depending on institutional quality and economic conditions.

On a global scale, the application of these methodologies has provided solid results as well. The approach was notably advanced by Schaechter et al. (2012) in their comprehensive IMF study spanning 81 countries from 1985 to 2012. Their methodology set a benchmark for controlling both country-specific institutional characteristics and global economic cycles when assessing the effectiveness of different types of fiscal rules. Tapsoba (2012) employed a similar fixed effects approach to analyse fiscal policy outcomes across both advanced and developing economies, notably introducing propensity score matching techniques alongside panel fixed effects to address selection bias in fiscal rule adoption. This methodological innovation has been particularly valuable for studying emerging market economies where institutional quality varies significantly. Finally, Guerguil et al. (2017) expanded the

analytical framework to examine the cyclicality of fiscal policy across 167 countries, using both time and country fixed effects to control for global economic conditions and country-specific factors. Their work was particularly notable for examining how different designs of fiscal rules affect fiscal policy responses to economic cycles.

The methodological approach also facilitates the examination of potential spillover effects between countries, an important consideration given the integrated nature of EU economies. Previous studies like De Jong and Gilbert (2020) have shown how fiscal policy decisions in one member state can affect others, making the control for time fixed effects particularly important in isolating the true impact of fiscal rules.

Together, country and time fixed effects address the fundamental identification challenge of studying the causal effect of fiscal rules from both country-specific confounders and time-specific confounders. The identifying variation comes from changes in fiscal rule status within countries over time, relative to other countries not experiencing such changes in the same period.

This is the case especially for national fiscal rule adoption, which is generally staggered across countries and time periods. Countries tend to adopt different types of rules at different dates, and a substantial majority of countries in the samples of the third and fourth essays of this dissertation have gone through multiple rule changes (adoptions, reforms and suspensions). This variation in treatment timing allows fixed effects to identify effects from differential adoption patterns. If all countries adopted rules simultaneously, fixed effects would provide no identifying variation and time fixed effects would absorb the common treatment.

When it comes to potential simultaneity concerns regarding the use of fiscal variables as control variables, it is worth noting that the chosen approach affects the interpretation of control variables rather than the fiscal rule coefficients. The control variables absorb variation in the dependent variables of different formulations, which should allow the coefficients of fiscal rules to capture the additional effect of rules operating through other channels, for example changes in fiscal behaviour, political constraints or credibility effects. If fiscal rules affect the dependent variables only through these observed channels, such as improving primary balances, lowering interest rates, or boosting growth, then controlling for them would eliminate the effects of the fiscal rules. The fact that fiscal rule coefficients remain significant after controlling for these variables suggests that rules have actual effects and they change the policy reaction function or affect unobserved factors.

Finally, countries may adopt fiscal rules in response to weakening fiscal status. This aspect of potential reverse causality is addressed by using one-year lags of fiscal rules, which should ensure that rule status is predetermined relative to the outcome, eliminating same-period simultaneity. Additionally, country fixed effects address persistent differences in fiscal performance that might predict rule adoption. If countries with, for example, high debt levels are more likely to adopt rules, this is absorbed by the fixed effects. In this case, the variation comes from changes in debt

trajectory following rule adoption, relative to individual historical patterns. Finally, the multiple time horizon specifications help differentiate crisis-driven adoption from sustained effects. If rules are adopted during crises but have no causal effect, they would be expected to have negative effects in the short term (i.e. mean reversion after crises) but no long-term relationships. Therefore, the results of persistent effects across 5-year and 10-year horizons imply actual impact rather than spurious correlation from crisis-driven adoption.

The results of the third and fourth essays suggest that fiscal rules are robustly associated with improved fiscal outcomes across multiple specifications, time horizons, and estimation approaches. As the results are quite robust, the relationship is unlikely to be entirely spurious. However, the precise causal effect and the mechanisms through which rules operate are not addressed in this dissertation and some notable econometric challenges remain. It is possible that unobserved time-varying country-specific factors could confound the relationship between dependent variables and fiscal rules. Therefore, it is prudent to interpret the results as conditional correlations or partial effects rather than definitively causal effects. It is also possible that the approach fails to capture the heterogeneity in the sample. Disaggregating by rule type, government level as well as national and supranational rules can capture some heterogeneity, but within-type heterogeneity still potentially remains.

More advanced econometric methods such as the Generalised Method of Moments (GMM) used in Kraemer and Lehtimäki (2026a,b) could have solved some of these challenges. Such approaches have their own weaknesses as fiscal variables are generally quite persistent and using multiple lags as instruments can potentially lead to weak instruments. However, as long as such issues are addressed sufficiently, they could provide an approach with fewer endogeneity concerns. Also, the approach of the third and fourth paper does not address issues such as rule compliance or enforcement or aspects such as IFIs, which is done in other research. It also does not explore the potential effects captured by fiscal rule indices, which could better address heterogeneity in aspects such as rule design and strength or whether fiscal rules affect the central aspect of the procyclicality of fiscal policy and constraining deficits during downturns (Bergman and Hutchison, 2015; Nerlich and Reuter, 2016; Combes et al., 2017).

3 Main Findings of the Essays

The four papers of this dissertation progress from the economic benefits of economic integration to the governance structures needed to sustain it. The first paper demonstrates that the European Single Market has generated substantial growth premiums, particularly for smaller member states. This raises an important follow-up question: have the fiscal governance mechanisms established alongside integration succeeded in maintaining debt sustainability? The second and third papers address this question by examining how EU fiscal rules independently as well as in interaction with national frameworks constrained debt growth across member states. The fourth paper broadens the analysis to a global sample, assessing whether fiscal rules improve fiscal outcomes and how they affect public investment and economic growth. This progression from documenting integration benefits to analysing governance mechanisms as well as examining broader economic trade-offs provides a comprehensive view of both the opportunities and challenges inherent in managing trade and fiscal policy within integrated economic areas.

3.1 Baldwin versus Cecchini revisited: the growth impact of the European Single Market

The European Single Market is one of the most far-reaching steps of European integration and a core pillar of economic interdependence and cooperation. It has enabled a high degree of free movement of goods, services, people and capital across member states and has benefited all participants to some degree.

The first paper of the dissertation, Lehtimäki and Sondermann (2022), uses the SCM to study the economic growth impact from the establishment of the Single Market for the entire area as well as for the 12 original member states, covering the period between 1972 and 2014. It is the first study using the method for this purpose and provides estimated economic growth trajectories for an alternative world where the Single Market was not implemented in 1993. Slight anticipation effects can be observed during 1988-1993, coinciding with the establishment of Single Market legislation. The effects are particularly strong up to the GFC, with sustained growth effects also after the crisis despite substantial economic challenges. The long timeframe of the empirical study captures both anticipation effects and long-term economic growth impacts.

The findings of the paper show that there have been substantial economic growth benefits from the Single Market. The real GDP per capita is approximately 12 to 22% higher in 2008 for the original 12 countries, which aligns with the expected gains suggested by Baldwin (1989). The benefits have been very heterogeneous between countries and smaller member states, such as Ireland, the Netherlands and Portugal, have gained more from joining the single market due to enhanced trade access, economies of scale and improved investment conditions within the Single Market. Of the large countries Spain stands out with large economic benefits, whereas France, Germany and Italy experienced smaller positive growth gains as their larger domestic markets had less to gain from regional market expansion. The findings demonstrate how the ECSC, EEC, and Single Market created complementary effects over time, while also proving the long-term sustainability of integration benefits despite economic challenges.

The paper contains extensive robustness checks to confirm the reliability of the results. These tests include in-time placebo experiments, variation in donor countries and covariates and checking for potential bias from overlapping policies, such as the introduction of the common currency in a subset of member states. The results remained consistent, confirming that the observed growth effects can be primarily attributed to the establishment of the Single Market rather than other integration measures.

The findings of the paper emphasise the importance of further deepening and broadening the Single Market, particularly when it comes to services, which remain less integrated than markets for goods. The smaller, open economies tend to benefit more from trade liberalisation within the Single Market, suggesting that further EU integration could continue to yield economic benefits, especially for smaller EU economies. The substantial growth effects observed reinforce the value of continued efforts to eliminate remaining barriers and to unify standards and improve market access for services.

3.2 Government debt, European Institutions and fiscal rules: a synthetic control approach

The second paper, Kraemer and Lehtimäki (2024), investigates the impact of the European fiscal framework and integration steps, more specifically the formation of the EU and the SGP, on government debt levels across EU member states.

The paper uses the SCM to estimate a counterfactual debt trajectory to simulate a world where the EU was not formed and the SGP was not implemented. This approach allows for an assessment of how the EU fiscal framework has influenced government debt levels.

Based on the results, the SGP and the Maastricht criteria have significantly limited debt accumulation in a majority of EU countries. The result holds for individual

countries as well as different country groupings. The EA countries also benefited from debt stabilisation effects, although they have been somewhat more varied than for the EU as a whole. The debt-reducing effect has been most evident during the years prior to the GFC.

Smaller EU economies and high-debt countries observed a more significant debt-restricting effect from EU fiscal rules than larger economies. Countries traditionally compliant with fiscal rules, such as Sweden and Denmark, managed to maintain lower debt levels, showing that compliance enhanced the effectiveness of the rules. The results support the argument for compliance with fiscal rules to keep debt levels sustainable.

EU fiscal rules likely had normative pressure on debt levels, aligning with past literature on the indirect effects of fiscal rules. The study performs robustness checks, including placebo tests and alternative donor pools, to validate the SCM results. The findings remain qualitatively unchanged, suggesting that the EU fiscal framework has had a debt-restricting effect for a large majority of the member states. At the same time, the GFC highlighted the challenges of enforcing debt rules during a substantial crisis.

3.3 Government debt: the impact of fiscal rules at the European and national level

The third paper of the dissertation, Kraemer and Lehtimäki (2023), studies the effects of the SGP and its reforms as well as national fiscal rules on government debt levels across EU countries. According to the results, the SGP has generally been effective for lowering government debt levels since its establishment, although the effects vary depending on the specific reform phase. The initial establishment of the SGP's preventive and corrective arms have notable debt-reducing effects, whereas later reforms have been less effective, especially during the financial crisis.

The effects of national fiscal rules vary substantially. Fiscal rules set for the general government and regional levels have reduced debt levels, whereas certain central government rules have even led to increases. Budget balance rules generally contributed to debt reduction at the national and regional levels, while debt rules have also had some statistically significant effects across different studied time periods. National expenditure and revenue rules have had varied effects depending on the studied sector.

Based on the results, national and supranational fiscal rules often complement each other in the EU instead of working as substitutes. Therefore, the EU level should take national fiscal rules into account in order to maximise the effectiveness of implemented rules. Overall, both supranational and well-designed national fiscal rules play crucial roles in managing government debt effectively across EU member states.

3.4 The fiscal and macroeconomic effects of fiscal rules

The fourth paper studies the effects of national and supranational fiscal rules on key fiscal and macroeconomic variables, namely government debt, government budget balance, public investment, and economic growth. It is a large-scale analysis that compares different types of fiscal rules across numerous countries, supranational institutions and over different time periods.

The paper employs a panel data methodology with country and time fixed effects, and the study combines macroeconomic data with fiscal rule information across various time horizons. This approach accounts for dynamic developments and analyses how fiscal rules impact economic indicators over different periods. The analysis also examines potential interactions between national and supranational rules.

According to the results, supranational rules tend to be more effective than national ones in achieving desired fiscal outcomes, maintaining fiscal discipline and enhancing fiscal stability whereas national rules can be tailored to achieve specific fiscal or economic targets. Supranational rules benefit from multilateral oversight, clearly defined targets, and standardised methodologies that enhance their effectiveness.

National budget balance rules and supranational debt and expenditure rules are particularly effective at reducing government debt over the long term. Supranational revenue rules, although rarely implemented, also show potential for significantly lowering government debt, suggesting a promising area for policy innovation. Supranational expenditure rules outperform national rules in consistently improving budget balances across different time windows, reinforcing the benefit of shared fiscal oversight.

National fiscal rules generally have minimal impact on public investment. However, supranational revenue rules display a strong positive effect on public investment across all time frames, indicating that these rules could be valuable for policymakers seeking to enhance public investment levels. The impact of fiscal rules on economic growth is limited, though national revenue rules and supranational expenditure rules show positive effects on growth in some instances. Conversely, supranational revenue rules have negative effects in the short to medium-term, which implies some complexity in balancing fiscal rules with growth objectives.

National and supranational rules seem to act as complements rather than substitutes, meaning that employing both simultaneously can strengthen fiscal discipline and stability. This implies that both levels of governance should consider tailored fiscal rules, combining them as appropriate to enhance economic stability and growth while managing government debt and public investment levels in a sustainable way.

It can also be argued that supranational bodies might consider focusing on expenditure and debt rules to stabilise fiscal outcomes, while national authorities could adopt revenue rules to improve fiscal performance without sacrificing economic growth.

An optimally designed combination of national and supranational rules can stabilise fiscal conditions, stimulate investment, and, in some cases, even boost economic growth. The findings particularly suggest that supranational rules are essential for achieving long-term fiscal goals and that rarely used fiscal rules, such as revenue rules at the supranational level, may offer promising, underutilised mechanisms for fiscal discipline.

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