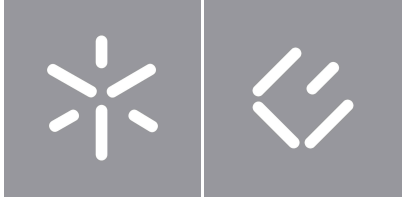


University of Minho
School of Economics and Management

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Regional development disparities: The economic impact of the Metropolitan Area legal status

april 2026



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Masters Dissertation in Economics

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Professor Francisco Veiga

april 2026

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Abstract

This dissertation examines whether metropolitan governance improves regional economic performance, with particular relevance for the Minho region in Portugal. While Minho displays key functional characteristics of a metropolitan area, the effectiveness of such a reform depends on the institutional framework in which it is embedded. The analysis combines qualitative institutional assessment with a quantitative causal estimation using the synthetic control method. The Górnoslasko-Zaglebiowska Metropolia (GZM) in Poland, established in 2017, is used as the treated case, and a synthetic counterfactual is constructed from a weighted combination of Polish NUTS II regions, evaluating the impact of metropolitan status on GDP per capita, average wages, and investment per capita. The results show no strong or immediate positive effects following the creation of the GZM in GDP per capita and average wages, while investment exhibits greater volatility without robust evidence of a sustained treatment effect. These findings suggest that metropolitan status alone is insufficient to generate significant short-term economic gains, even in cases where it has dedicated financial mechanisms.

Keywords Metropolitan governance, Synthetic control, Regional inequalities, Economic growth, Institutional capacity,

Resumo

Esta dissertação analisa se a governação metropolitana melhora o desempenho económico regional, com especial relevância para a região do Minho, em Portugal. Embora o Minho apresente características funcionais essenciais de uma área metropolitana, a eficácia de tal reforma depende do quadro institucional em que se insere. A análise combina uma avaliação institucional qualitativa com uma estimativa causal quantitativa, utilizando o método de controlo sintético. A Górnoslasko-Zaglebiowska Metropolia (GZM) na Polónia, criada em 2017, é utilizada como caso de tratamento, e um contrafactual sintético é construído a partir de uma combinação ponderada de regiões NUTS II polacas, avaliando o impacto do estatuto metropolitano no PIB per capita, nos salários médios e no investimento per capita. Os resultados não revelam efeitos positivos fortes ou imediatos na sequência da criação da GZM no que diz respeito ao PIB per capita e aos salários médios, enquanto o investimento apresenta uma maior volatilidade sem evidências robustas de um efeito de tratamento sustentado. Estas conclusões sugerem que o estatuto metropolitano, por si só, é insuficiente para gerar ganhos económicos significativos a curto prazo, mesmo nos casos em que dispõe de mecanismos financeiros específicos.

Palavras-chave Governação metropolitana, Controlo sintético, Desigualdades regionais, Crescimento económico, Capacidade institucional,

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Acronyms

Acronym	Definition
CIM	Comunidade Intermunicipal (Intermunicipal Community)
EQI	European Quality of Government Index
EU	European Union
FDI	Foreign Direct Investment
FUA	Functional Urban Area
GEE	Gabinete de Estratégia e Estudos (Office of Strategy and Studies)
GDP	Gross Domestic Product
GDPpc	Gross Domestic Product per capita
GZM	Górnoslasko-Zaglebiowska Metropolia
INE	Instituto Nacional de Estatística (National Statistics Institute)
MAPE	Mean Absolute Percentage Error
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
PRR	Plano de Recuperação e Resiliência (Recovery and Resilience Plan)
RMSPE	Root Mean Squared Prediction Error
SCM	Synthetic Control Method

Chapter 1

Introduction

1.1 Thematic Framework and Relevance of Research

Territorial disparities remain one of the central challenges of European cohesion policy. As reflected in Article 174 of the Treaty on the Functioning of the European Union, reducing inequalities between regions is a core objective of European integration yet, despite decades of market integration and public intervention, economic activity, population, and investment continue to concentrate in large urban areas, while many smaller and peripheral regions struggle to sustain growth, attract capital, and retain skilled labour.

This pattern has become even more pronounced in today's globalized and highly connected economy. Greater mobility of labour and capital, particularly within the Schengen area, has intensified competition between regions and reinforced the attractiveness of large urban centers. Cities offer better access to employment opportunities, infrastructure, public services, and amenities, which helps explain why they continue to attract both people and investment. At the same time, these agglomerations face increasing congestion, infrastructure bottlenecks, and housing pressures where prices in large cities are significantly higher than in smaller urban areas making the development of alternative growth poles an increasingly pressing policy concern.

In this context, the design of sub-national governance has emerged as a key issue. Territorial institutions may either reinforce existing spatial inequalities or help mitigate them, depending on their structure, resources, and capacity. Understanding the relationship between governance arrangements and regional economic performance is therefore essential for policymakers seeking to promote more balanced development.

Portugal provides a particularly instructive case for examining these dynamics. The country has undertaken a series of governance reforms over the past two decades aimed at

decentralization and regional development, including the strengthening of Commissions for Coordination and Regional Development (CCDRs), the creation of Intermunicipal Communities (CIMs), the transfer of competences to local authorities, and increased municipal funding. These reforms reflect a clear recognition that territorial governance matters. However, their impact has been limited in terms of spatial economic outcomes: economic activity remains highly concentrated, with the Lisbon metropolitan area alone accounting for a substantial share of national GDP, and the two metropolitan regions together generating more than half of total output.

The democratic dimension of this concentration further reinforces its relevance. Survey evidence suggests that Portuguese citizens tend to express higher levels of trust in local government than in national institutions with around 38% of respondents reporting trust in local government compared to 32% in national government, while only 24% believe that the political system allows them to have a meaningful say in decision-making, creating a structural asymmetry in which the level of government that enjoys greater democratic legitimacy is also the one with the least capacity to influence economic outcomes. As a result, the question of whether strengthening metropolitan governance could improve both economic performance and institutional effectiveness becomes particularly important.

It is within this broader context that the case of the Minho region acquires specific importance. As a poly-centric region containing two of Portugal's largest cities outside the existing metropolitan areas, Minho has become the focus of an ongoing debate regarding the potential creation of a new Metropolitan Area with its combination of population growth and institutional absence making it a particularly relevant case for assessing whether the formal recognition of metropolitan status can generate measurable economic gains. More broadly, it provides an opportunity to examine whether governance reform alone can alter the trajectory of a region that already exhibits some of the characteristics associated with agglomeration potential.

This question extends beyond the Portuguese case. Across Europe, governments have experimented with different forms of metropolitan governance in response to persistent regional inequalities, yet the outcomes have been uneven. While some regions appear to benefit from improved coordination and increased institutional capacity, others experience limited or no measurable effects. Existing literature suggests that the impact of such reforms depends critically on factors such as institutional design, financial resources, and

administrative autonomy.

This dissertation contributes to this debate by examining whether metropolitan status, when granted under favourable institutional conditions, can produce measurable economic effects. In doing so, it addresses a gap in the literature, where theoretical arguments in favour of metropolitan governance are well developed, but robust empirical evidence on its causal impact remains relatively scarce.

1.2 Objectives

This dissertation pursues two interconnected objectives that aim to contribute both to the academic literature on regional development and to the policy debate on decentralization in Portugal.

The first objective is to characterize Portugal's regional governance framework and assess its implications for regional economic performance. This involves examining the evolution of decentralization reforms, evaluating regional inequalities within Portugal, and situating the Portuguese case within the broader European landscape of metropolitan governance. The purpose of this analysis is to identify the structural constraints and opportunities that shape the effectiveness of sub-national governance arrangements and therefore complementing the empirical analysis with a qualitative analysis into the institutional conditions that provide the success conditions for metropolitan reform.

The second objective is to estimate the causal economic impact of acquiring metropolitan area legal status on key regional economic indicators. Since regions do not acquire such status randomly, a simple before-and-after comparison would confound the effect of the reform with pre-existing differences in economic trajectories, to address this identification problem, the dissertation employs a synthetic control approach, constructing a counterfactual that allows for a comparison between observed outcomes and the trajectory that would likely have occurred in the absence of the reform.

This dissertation hypothesizes that the economic effects of metropolitan governance reform are conditional rather than automatic. Specifically, metropolitan status is expected to produce measurable positive outcomes only when accompanied by sufficient institutional capacity, dedicated financial resources, and administrative autonomy. In contexts where these conditions are absent, such as Portugal, the expected economic impact is

therefore limited.

To assess this proposition, the dissertation examines the case of the Górnoslasko-Zaglebiowska Metropolia in Poland, a particularly suitable case because it combines metropolitan status with dedicated funding and institutional capacity. If no positive effect is identified in this most favorable scenario, this would provide strong evidence that metropolitan status alone is insufficient to drive regional economic performance.

Taken together, these objectives aim to provide an empirically grounded contribution to the ongoing debate on territorial governance, offering insights that are relevant both for the Portuguese case and for the broader European discussion on how institutional design can contribute to reducing regional disparities.

Chapter 2

Literature

2.1 Agglomeration Effects

Productivity and wages tend to be higher in larger cities or urban areas. This was first noted by Smith (1776) and confirmed by modern empirical studies such as Rosenthal and Strange (2004) who show that positive effects of agglomeration such as labor market pooling, input sharing, and knowledge spillovers are present in large cities. Ultimately, agglomeration economies are the benefits that come when firms and people locate near one another together in cities and industrial clusters, with urban economists inferring urban success from high local wages, which are connected to an increase in productivity, leading in turn to robust real estate prices, and population growth (Glaeser, 2010).

Across OECD countries, 70% of the population live in metropolitan regions, which host a larger proportion of people today compared to two decades ago in all OECD countries, except Greece. The reason behind this has been the growth in share of the population registered in large metropolitan areas (1,6% from 2001 to 2021), in contrast, medium sized metropolitan areas saw a decrease of 0,2%. It is also worth pointing out that immigration flows are very concentrated in metropolitan areas (80,3%), specifically in large metropolitan areas (52,8%), highlighting that foreigners see these regions as more appealing and feel that those have a higher likelihood of providing them with better conditions (OECD, 2023a).

The effects of agglomeration have long attracted the attention of regional economists, generating extensive research on the role of density and clustering. There are two main types of agglomeration economies: those that result from the concentration of firms within the same industry, known as localization economies, and those that arise from the overall density and diversity of economic activity in a given area, referred to as urbanization

economies (Cohen et al., 2019) .

The scope and intensity of agglomeration effects depend on the type of agglomeration involved. Agglomeration economies associated with close proximity and interaction among firms in urban contexts tend to weaken as distance increases (Audretsch and Feldman, 1996). Urbanization economies generate benefits mainly through cost reductions for firms located near businesses operating in different industries. Because larger and denser places offer a wide range of goods and services, firms can access external inputs such as accounting, legal support, and design services that are not specific to their own sector.

Localization economies, in contrast, emerge when firms from the same industry cluster in a particular area. The advantages in this case also relate to cost savings, but they stem from the possibility of sharing industry-specific infrastructure and suppliers, as well as from the presence of a specialized labor pool tailored to that sector (Duranton and Puga, 2004). In addition, firms located in stronger industrial clusters are significantly more likely to innovate, with the probability of innovation increasing with the size of employment in the firm's own industry in the region (Baptista and Swann, 1998).

Agglomeration effects are consistent with theories of learning and knowledge spillovers in cities, meaning that areas with higher levels of density and greater education levels are the most likely to receive gains from agglomeration (Abel et al., 2012). Additionally, adequate transportation systems facilitate the concentration of firms and enhances agglomeration effects, as infrastructure improvements helped shift economic activity from traditional, crowded urban centers to intermediate cities and moderate-density districts in India (Ghani et al., 2016).

The scale of these impacts is something to take into account when designing new Metropolitan Areas and new economic clusters. Most research, suggests that, despite advances in information technology, proximity continues to matter and that agglomeration economies operate across both broad and narrow spatial scales, including neighborhoods and individual buildings (Rosenthal and Strange, 2008), as well as regional and subregional levels (Giuliano et al., 2019).

The effects of agglomeration in metropolitan areas are not consensual. Evidence suggests that metropolitan areas with a stock of human capital one standard deviation below the mean do not experience productivity gains from agglomeration (Abel et al., 2012). Similarly, a study on agglomeration effects in the Netherlands finds that agglomeration

at short distances, below 5 km, has no statistically significant impact on wages. Positive and significant effects emerge only at medium distances, between 5 and 10 km, but these effects weaken rapidly as distance increases and become insignificant beyond roughly 40 to 80 km (Verstraten et al., 2019).

Additionally, it could be argued that the productivity benefits of agglomeration effects are caused by external factors such as a missing local variable that is correlated with both density and productivity (endogenous quantity of labor bias) or skilled workers may have a stronger preference for high density, which could happen because density leads to better cultural amenities, among other reasons (endogenous quality of labor bias). Combes et al. (2010) control for these aspects (through the use of instrumental variables (IV) for the first identification problem and the use of the longitudinal dimension of the data) and find that a coefficient of 0.027 for the elasticity of wages to local density, in France, versus a coefficient of 0.05 without any controls.

Policy design takes a central role in this issue making it important to understand the role of agglomeration economies at a micro level, as they can differ across industries (Fernandes et al., 2017). Most national economic models are designed for optimizing national income growth, creating a trade-off between allocating labor and capital to the places they are the most productive and reducing regional disparities (Basheer et al., 2022). Metropolitan governance reform represents one possible avenue through which this trade-off may be partially reconciled, by creating institutional structures capable of fostering agglomeration economies in regions beyond the dominant economic centers, without simply redirecting resources away from where they are most productive.

Understanding the scale and conditionality of agglomeration effects is therefore essential when evaluating the potential economic impact of metropolitan governance reform, as the benefits of institutional restructuring are likely to depend on whether the region in question already possesses the density, human capital, and connectivity thresholds necessary for agglomeration economies to materialize.

2.2 Determinants of Regional Inequality

The spatial concentration of economic activity is one of the most studied subjects in regional economics, with theoretical foundations rooted in the New Economic Geography

framework developed by Krugman (1991). Krugman argues that the interaction between increasing returns to scale, transport costs, and factor mobility generates self-reinforcing centripetal forces that pull economic activity towards already developed regions, while centrifugal forces, such as land costs, act as counterweights. This tension between agglomeration and dispersion determines the spatial equilibrium of an economy and helps explain why regional disparities tend to persist and, in many cases, widen over time even in the absence of policy distortions.

Over the last two decades, income inequality between regions has grown in over half of the countries with available data, remaining significant across all nations (OECD, 2023a). Europe is no exception as regional inequality remains a persistent challenge with substantial variations between and within member states, with data from the EUŧs regional competitiveness index (RCI) showing that its large regions, namely capital regions, that benefit from agglomeration economies perform strongly (Dijkstra et al., 2023) . The consequences of persistent regional neglect extend beyond economics as declining public investment and limited opportunities in lagging regions have fueled political discontent with strong territorial foundations, manifesting in the rise of populism (Rodríguez-Pose, 2018), a dynamic that lends additional urgency to the policy questions motivating this dissertation.

The dominance of capital regions in national economic output is not a recent phenomenon, but its intensity has increased markedly since the 1980s. Using data covering 173 European regions across 16 countries from 1900 to 2015, Rosés and Wolf (2018) document a U-shaped evolution of regional inequality in Europe: convergence between regions was strong from 1900 to around 1980, driven by structural change, market integration, and technology diffusion, but this process reversed after 1980, with capital regions gaining an increasing share of total GDP while many industrial and peripheral regions fell behind. The authors attribute this reversal to the rise of tradable services and the concentration of financial and corporate headquarters in capital cities, dynamics that are consistent with the New Economic Geography mechanisms. This long-run historical perspective reinforces the argument that the growing weight of capital regions is not a temporary cyclical phenomenon but a structural tendency.

Looking into specific countries, Spain saw its regional inequalities re-emerge in the 1990ŧs,after a century of convergence (Martínez-Galarraga et al., 2015), Italy saw strong

regional divergences in the interwar years, followed by a period of convergence (1951-1971), but from 1971 to 2011 saw that the North-South divide increased in GDP (Felice, 2019). The analysis of the evolution of the localization of the economic activity in Portugal, between 1890 and 1980, shows a inverted U-shaped curve, in line with that observed in other regions of Europe, with strong process of concentration of the economic activity in the coastal zones due to the benefits generated by the agglomeration economies, coinciding with the process of decline of the agriculture in the interior of the country (Badía-Miró et al., 2012).

Sweden constitutes a notable exception to this general pattern. Unlike Spain, Italy, Portugal and many other European countries, Sweden did not follow the typical inverted U-shaped curve of regional inequality during industrialisation. Instead, Enflo and Rosés (2015) document a long-run decline in regional income disparities across Swedish counties from 1860 to 1980. A particularly distinctive feature of the Swedish experience was the active role of government: from 1940 to 1980, successive Social Democrat administrations implemented policies that simultaneously compressed the wage distribution and facilitated internal migration from declining northern counties towards expanding industrial regions, accelerating regional convergence beyond what market forces alone would have produced. Nevertheless, from 1980 onwards, Sweden too experienced a reversal, with regional incomes diverging as services and knowledge-intensive industries concentrated in the three major metropolitan areas of Stockholm, Göteborg, and Malmö, a dynamic consistent with the broader European trend, however, during that period, (1980-2000), governments subsidised firms and people in the declining areas.

The Swedish case thus illustrates both the possibility of sustained policy-driven convergence and its limits: even the most successful historical example of regional equalization ultimately proved vulnerable to the structural shift towards metropolitan-led growth that characterizes the contemporary European economy.

The determinants of firm location are central to understanding how market forces have operated in practice across Europe. Foreign firms tend to locate in economically dynamic regions characterized by strong market potential, higher GDP growth, and favorable labor conditions (CieŚlik, 2013), however this can be industry specific. The conditions that support high-growth entrepreneurship differ from those that encourage new firm creation more broadly, and they vary across urban and rural contexts as well as between industrial

sectors, suggesting the importance of place-specific development strategies (Li et al., 2016).

The governance structure of a region is also a recognized determinant of its economic attractiveness as the institutional capacity to coordinate investment and availability and quality of infrastructures across a functional urban area reduces costs for firms and signals to investors that the region can deliver on long-term commitments (Globerman and Shapiro, 2002). The link between governance and economic performance is one of the central theoretical motivations for the present dissertation, as it suggests that acquiring metropolitan area status may alter the investment attractiveness of a region beyond what its underlying economic fundamentals would predict.

The European Union attempts to tackle the regional inequalities caused by market forces through its regional cohesion policy, that supports lesser developed regions in the EU through a variety of funding instruments. Empirical findings suggest positive average effects of EU Structural Funds on GDP per capita growth in eligible regions, but find significant heterogeneity depending on the institutional capacity of recipient regions (Becker et al., 2010) (Becker et al., 2012). This finding is directly relevant for this study as the effectiveness of increased EU funding that may follow from metropolitan area status will depend critically on the region's capacity to deploy those resources productively.

Iammarino et al. (2019) document the re-emergence of regional inequalities across Europe over the past four decades, arguing that neither market forces nor cohesion policy have been sufficient to reverse the trend of divergence between leading and lagging regions, which brings strength to the argument of necessity of governance reform. Countries seem to be following suit as post pandemic policy trends in Europe show a renewed emphasis on marginalized regions, reform of governance structures and capacity building at regional and local level. Policy reforms and new strategies who broaden the approach to regional growth have been introduced in Germany, Norway, Austria and Estonia, institutional changes in governance are under way in Italy and the Netherlands, decentralization processes are occurring in Portugal, Bulgaria, France, Romania and Slovenia, albeit in different manners and with various degrees of contestation, with initiatives to foster a more place-based approach (Bachtler and Downes, 2023).

In the Portuguese context a significant spatial concentration persists as the gap between the capital city and other regions is particularly wide (Dijkstra et al., 2023). The Lisbon area and Northern Portugal account for 80% of FDI projects in 2023 (Ernst &

Young, 2024), meaning market-driven forces have not produced convergence. These conclusions raise a direct question: can a reform of governance structure at the sub-national level, specifically the granting of metropolitan area status to a polycentric urban region such as Minho, constitute a meaningful intervention in the trajectory of regional inequality?

2.3 Metropolitan Governance Systems

Metropolitan governance has been one of the most debated topics in urban and regional studies, generating two opposing theoretical traditions. The first, rooted in Tiebout (1956) model of local public expenditure, argues that administrative fragmentation is not a problem but rather a mechanism of efficiency: when citizens can freely choose their municipality of residence based on the bundle of public services and taxes offered, jurisdictional competition produces allocatively efficient outcomes without requiring institutional consolidation. Ostrom et al. (1961) extended this logic to metropolitan governance, challenging the prevailing assumption that the multiplicity of political units in metropolitan areas constitutes a pathological condition requiring reform. In their view, polycentric systems can be self-organizing and effective, which is of particular relevance to the Minho case.

The opposing tradition advocates for consolidation, arguing that fragmented metropolitan governance produces coordination failures, duplicated services, and spatial inequalities between richer and poorer municipalities within the same functional urban area. Lefèvre (1998) offers a critical review of metropolitan government and governance experiences in Western countries, arguing that top-down institutional reforms have largely failed and that newer bottom-up, partnership-based approaches, while politically appealing, carry their own unresolved tensions around democratic legitimacy and accountability. Heinelt and Kübler (2005) systematize this debate by identifying three distinct schools of thought in the literature: the traditional metropolitan reform school advocating two-tier governance, the public choice school following Tiebout, and neo-regionalism, which emerged in the early 2000s and emphasizes voluntary cooperation and soft governance arrangements as alternatives to formal institutional restructuring.

A more recent theoretical perspective reframes metropolitan governance reform not as

a technocratic question of efficiency but as a political process of rescaling state space, arguing that the creation of metropolitan institutions challenges pre-existing political spaces and generates friction between national, regional, and local authorities, as each level seeks to protect its influence over territorial policy (Brenner, 2003)(Brenner, 2009). This perspective is particularly relevant for the Portuguese case, where the tension between the central state, the CCDRs, the inter-municipal communities, and individual municipalities creates a complex and often conflicting institutional landscape. d'Albergo and Lefèvre (2018) further develop this argument, showing that the construction of metropolitan scales is not solely driven by economic rationality but is deeply shaped by political and discursive factors, meaning that metropolitan areas are as much political projects as they are functional governance solutions.

Comparative European evidence reveals significant diversity in both the form and outcomes of metropolitan governance reforms. In England, France, and Italy, countries with similar levels of development, very different paths were taken for the creation of metropolitan governance, with very different justifications (Demazière, 2021), while reform trajectories across Germany, Poland and Spain, were also highly dependent on existing institutional frameworks, occuring at different rhythms, forms, and degrees of institutionalization depending on the spatial and political context (Zimmermann and Getimis, 2017)(Tomàs, 2019). This finding has direct methodological implications for the present dissertation, as it reinforces the need for context-specific analysis rather than the uncritical application of models developed in other national settings.

A further conceptual challenge in evaluating the potential of a Minho Metropolitan Area concerns the poly-centric nature of the region. Parr (2004) provides a systematic analysis of the conditions under which a poly-centric urban region can be said to exist, arguing that polycentricity requires not only the presence of multiple proximate urban centers but also meaningful functional inter-dependencies between them, including commuting flows, shared labor markets, and complementary economic specializations. Parr further contrasts poly-centric urban regions with other regional types noting that there is an apparent success of these type of regions. However, poly-centric urban regions continue to be surrounded by a degree of vagueness that complicates its study and should be regarded as a hypothesis rather than a proven or discredited concept, requiring careful conceptual analysis and empirical testing before drawing conclusions.

The challenges of metropolitan reform are not limited to the design of governance structures but extend to the political dynamics of their implementation. A survey of city mayors across Europe finds that while there is broad recognition among local leaders of the need for metropolitan coordination, political resistance remains a significant barrier to reform (Dlabac et al., 2018). Evidence from territorial amalgamation processes in the toolkit developed for the Council of Europe's Centre of Expertise for Local Government Reform, similarly shows that top-down consolidation efforts frequently generate local opposition and can produce perverse outcomes when implemented without adequate consultation and capacity-building (Council of Europe, 2017). This is further supported by Tavares and Rodrigues (2015), whose analysis of the Portuguese parish amalgamation reform of 2013 demonstrates that top-down territorial reforms driven primarily by fiscal austerity considerations tend to generate political resistance and produce uneven results across different territorial contexts.

Taken together, the literature suggests that metropolitan governance reform is neither inherently beneficial nor inherently problematic, meaning that its outcomes depend critically on the pre-existing institutional context, the degree of political consensus among local actors, the availability of financial resources, and the specific competences attributed to the new metropolitan body. This conclusion motivates the empirical strategy of the present dissertation, which seeks to move beyond theoretical arguments and estimate the measurable economic impact of acquiring metropolitan area status.

Chapter 3

Institutional and Regional Context Analysis

3.1 Portugal's decentralization efforts

Until 1974, Portugal was highly centralized, with almost all political and administrative decisions made in Lisbon under a dictatorial regime. The Carnation Revolution opened the door to democratic reforms, with the Portuguese Constitution recognizing political autonomy for the regions of the Azores and Madeira and, in principle, providing for mechanisms of administrative decentralization on the mainland (Assembleia da República, 1976), although these were not immediately implemented. A subsequent reform further reinforced the autonomy of municipalities and parishes by granting them direct competences (Assembleia da República, 1999).

The first institutional response to the need for regional coordination in the immediate post-revolution period was the creation of the Regional Coordination Commissions in 1979, dividing the country into five geographic areas of intervention (Governo da República Portuguesa, 1979), with the support of local authorities becoming a central objective of these structures following the establishment of local government after 1974. Portugal's accession to the European Union in 1986 significantly expanded the role of these bodies, extending their competences to urban planning, land use, and the management of national and European financial programs (Governo da República Portuguesa, 1986).

Following a series of further institutional reforms, the current Commissions for Regional Coordination and Development (CCDRs) were created in 2003 through the merger of the Regional Coordination Commissions and the Regional Directorates for Environment and Land Use Planning, integrating competences in the areas of regional planning and development, environment, land use, nature conservation, and local authority support. A

further democratization reform in 2020 introduced indirect elections for the presidency of the CCDRs, only slightly addressing longstanding concerns about their democratic legitimacy (Governo da República Portuguesa, 2020). Despite this evolutionary trajectory, the CCDRs remain de-concentrated bodies of the central state rather than truly autonomous regional authorities, limiting their capacity to act as independent drivers of regional development.

At the inter-municipal level, the Inter-Municipal Communities (CIMs) were formally created by Assembleia da República (2013), which also established the legal framework for local authorities, the transfer of competences from the state to local authorities and inter-municipal entities. The CIMs correspond to the 23 NUTS III territorial units and constitute voluntary associations of municipalities through which member councils delegate part of their legally assigned competences to a supra-municipal body, with the aim of achieving economies of scale and resolving problems of a cross-municipal nature.

Under the framework law for the transfer of competences (Assembleia da República, 2018), which also established a gradual program for transferring new responsibilities to municipalities across a wide range of domains including education, health, justice, culture, social services, housing, roads, and public transport, inter-municipal entities gained responsibilities including inter-municipal planning of school transport networks, the planning of primary healthcare units, and the definition of networks of voluntary fire brigade stations. However, as has been noted in the political debate surrounding their creation, the transfer of competences to the CIMs was not accompanied by equivalent financial transfers, limiting their effective capacity to exercise their formal attributions.

This does not change with Portugal's two existing metropolitan areas as they lack both the political and financial authority to meaningfully address metropolitan-wide challenges, as real decision-making power continues to rest largely with individual municipalities and the central government. The Área Metropolitana de Lisboa (AML) was first established in 1991, yet its institutional trajectory has been characterised by persistent underperformance relative to its formal mandate, as despite successive legislative reforms, the AML has maintained an inherited fragmented institutional structure in which an inter-municipal entity timidly fosters cooperation and coordination through bilateral arrangements, while it has always been hard to affirm a new intermediate level of government only a couple of decades after the restoration of municipal autonomy (Gonçalves et al., 2023).

The 2013 reform did not fundamentally alter this dynamic. As documented above, the metropolitan areas of Lisbon and Porto share the same legal framework as the CIMs, with no independent fiscal resources, no own revenue, and governance bodies composed of actors whose primary democratic mandates derive from their individual municipalities. Research on the Integrated Strategy for Territorial Development of the AML within the Portugal 2020 framework concluded that the concept of multilevel governance, as theoretically defined, does not apprehend the entire process of formulating and implementing metropolitan policy, with the analysis revealing that there is a gap between the competences formally attributed to Portuguese metropolitan areas and the governance capacity exercised in practice, which is structural characteristic of the institutional design itself (Gonçalves, 2020).

Table 1: Competences and institutional characteristics of Portugal's main subnational governance structures.

	CCDR	CIM	Metropolitan Area
Nature	Deconcentrated state body	Inter-municipal association	Inter-municipal association
Accountability	Central government	Municipal councils	Municipal councils
Key competences	Regional planning; EU fund management; environment; land use	Transport planning; waste management; school networks; healthcare planning	Metropolitan transport; strategic territorial development
Fiscal autonomy	None	Limited	Limited
Own revenue	No	No	No
EU fund management	Yes (primary)	Partial	Partial

Own elaboration based on Law no. 75/2013 and Decree-Law no. 27/2020.

As Table 1 makes clear, the three structures differ less in their formal competences than in their relationship to the central state and their capacity to exercise those competences autonomously. The CCDR retains the broadest functional scope but operates as an arm of central government rather than a genuinely regional authority. The CIMs and metropolitan areas share the same legal framework and similar competence profiles, with metropolitan areas distinguished primarily by their designation and a marginally broader remit in transport and territorial strategy. Crucially, none of the three structures

disposes of independent fiscal resources or own revenue, making all of them structurally dependent on central government transfers and therefore limited in their capacity to act as autonomous drivers of regional development. It is within this context of incomplete and asymmetric decentralization that the debate around the creation of a Minho Metropolitan Area must be understood, as the question is not merely whether such a structure should exist, but whether the Portuguese institutional framework is capable of endowing it with the tools necessary to produce meaningful economic outcomes.

3.2 Portugal in the European Regional Landscape

Before examining Portugal's internal regional dynamics, it is useful to situate the country within the broader European context. Across the European Union, significant variation exists in how economic activity and institutional resources are distributed across the territory, reflecting differences in governance models, historical development paths, and the intensity of agglomeration forces. Comparing Portugal with other member states along these dimensions allows for a more grounded assessment of the scale and nature of its regional challenges, and provides a reference point against which the potential impact of governance reforms can be evaluated.

Figure 1 presents sub-national government spending as a percentage of total public expenditure across selected EU member states, offering a comparative perspective on the degree of fiscal decentralization across Europe. The data reveals a wide spectrum of governance models, from Denmark at 67%, where sub-national governments manage nearly two thirds of all public spending, to Greece at 7%, where the central state retains overwhelming fiscal dominance. Portugal, highlighted in the figure, stands at 15%, ranking fourth from the bottom among the countries included in the sample and well below the majority of EU member states regardless of their size, federal structure, or level of economic development.

Several comparisons are particularly instructive. Portugal's subnational spending share is lower than that of unitary states of smaller dimension such as Latvia at 25%, Estonia at 24%, Slovenia at 19%, and Slovakia at 19%, countries which, like Portugal, do not have a federal governance model. Not surprisingly, Portugal spends considerably less sub-nationally compared to Spain at 52% and Germany at 48%, which have exten-

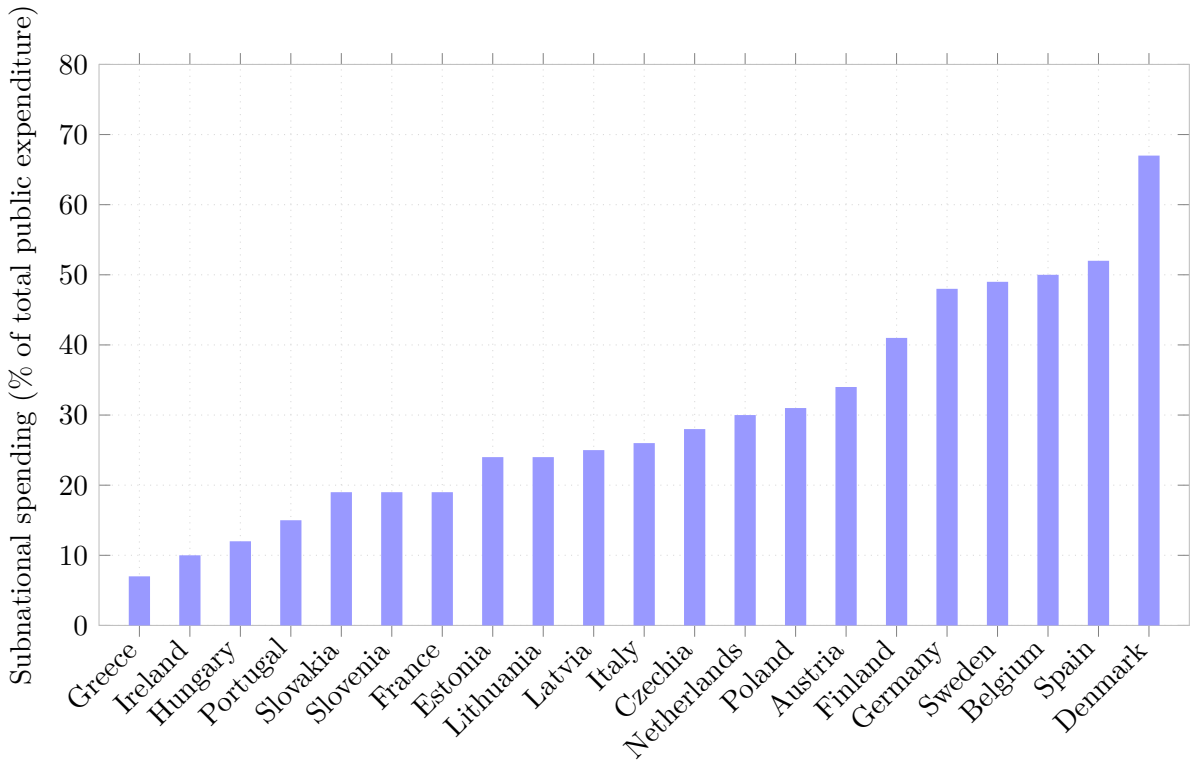


Figure 1: Subnational government spending as a percentage of total public expenditure across selected EU member states. Own elaboration with data from OECD (2023c).

sive regional autonomy but the gap with more moderately decentralized countries such as Poland at 31%, the Netherlands at 30% and Italy at 26% is equally striking and harder to explain by structural or historical factors alone.

This fiscal centralization has direct implications for the research questions motivating this dissertation. Firstly, it implies that despite the creation of structures such as CCDRs and CIMs and the transfer of competencies to municipalities, Portugal's central government is not providing the financial resources for them to have an impact. Secondly, a metropolitan area operating within a system where local and regional governments control only 15% of public expenditure faces structural constraints that limit its capacity to act as an independent driver of regional development, regardless of the formal competences attributed to it, thus severely reducing its potential.

The fiscal picture is further reinforced by evidence on the administrative distribution of public services. According to the OECD's Government at a Glance 2025 report, Portugal is among the most administratively centralized countries in the sample, with all 12 public services analyzed, including identity document issuance, civil registration, and social benefit management, remaining exclusively under the responsibility of the central

government. Among the 18 EU member states covered by the report, Portugal is one of only four where complete centralization of these services is observed, alongside Slovenia, Finland, and Ireland. While this comparison excludes several member states including Germany, Poland, and Romania, the result is nonetheless striking, as it places Portugal in a small group of countries where subnational governments play no role in the direct delivery of core administrative services to citizens. Taken together with the fiscal decentralization data presented above, this evidence reinforces the argument that Portugal's subnational governance structures, including its metropolitan areas and inter-municipal communities, operate within an institutional framework that concentrates both financial resources and administrative functions at the central level to a degree that is unusual by European standards, and that significantly constrains the capacity of regional bodies to act as autonomous drivers of territorial development.

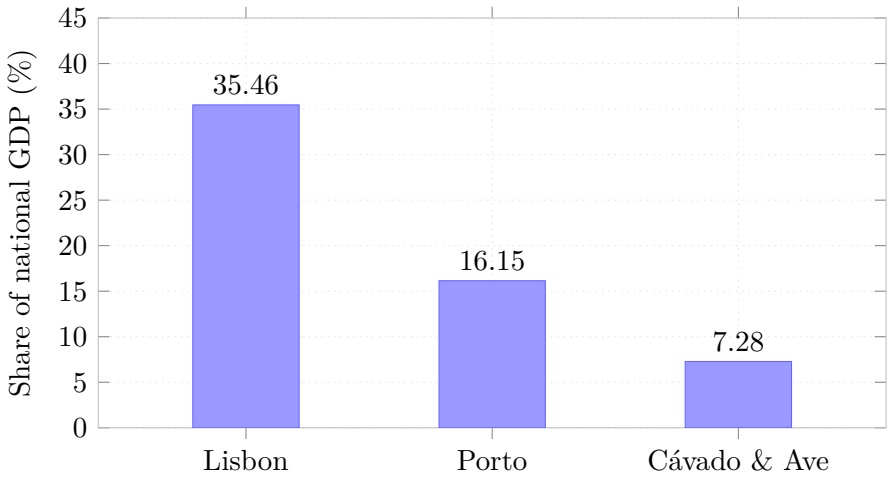


Figure 2: Share of national GDP by NUTS III region, 2021. Own elaboration with Eurostat (nd) data.

The degree of economic concentration within Portugal is stark with 27.86% of Portugal's population living in the Lisbon Metropolitan Area and the two metropolitan areas housing 44.64% of the population. As Figure 2 illustrates, the Lisbon metropolitan area alone accounts for 35.46% of national GDP, the seventh-highest share in the European Union, excluding countries with less than 5 million people that were not included in the analysis due to lack of data on a third region. This highlights the significantly higher productivity of the Lisbon region, more than double the share of Porto at 16.15%, with its GDP share being lower than its population share (16,8%) while Cávado and Ave together (due to their proximity and likely inclusion in the potential Minho metropolitan area) ,

the region with the highest population density outside the metropolitan areas, therefore the region with most potential according to the literature on agglomeration effects and home to the city of Braga, contributes only 7,28%.

In order to place Portugal in meaningful comparative perspective, a peer group of 10 EU member states was constructed using two selection criteria. The first was data availability: only countries for which Eurostat's regional database provides GDP data for at least three distinct NUTS III regions were included, a requirement that led to the exclusion of Luxembourg, Malta, Cyprus, Latvia, Lithuania, Estonia, Ireland, Croatia, Slovakia, and Greece. The second criterion was comparability of scale: countries whose population size differs substantially from Portugal's were excluded on the grounds that larger economies naturally exhibit lower concentration ratios in their leading regions, as economic output is distributed across a greater number of metropolitan areas, which would systematically bias the peer average downwards and render the comparison uninformative. On this basis, Spain, Germany, Poland, France, and Italy were excluded. The resulting peer group of 10 EU member states (Finland, Denmark, Bulgaria, Austria, Hungary, Sweden, Czequia, Belgium, Netherlands and Romania) provides a reference sample of comparable smaller European economies against which Portugal's degree of regional concentration can be assessed on more equal terms.

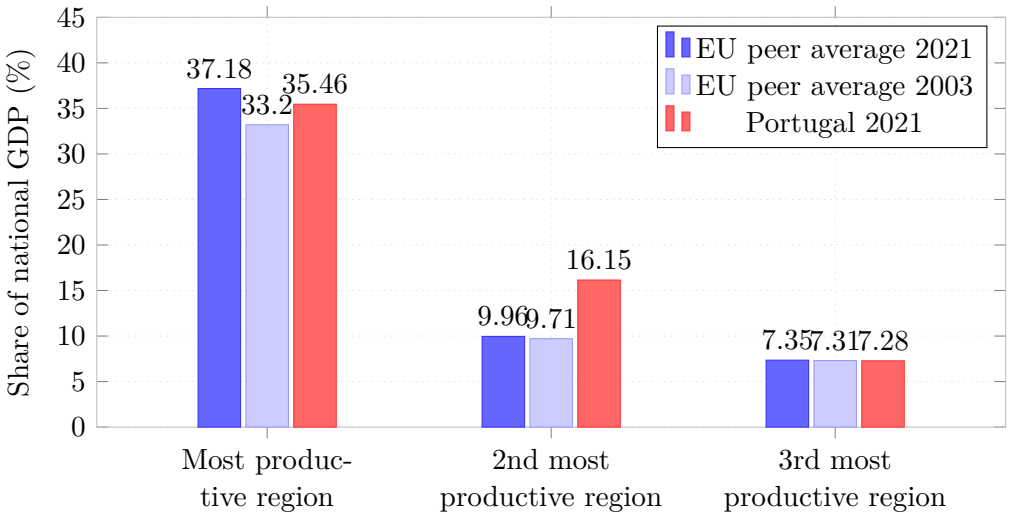


Figure 3: Share of national GDP by regional rank: EU peer country average (2003 and 2021) and Portugal (2021). Five largest EU economies excluded. Own elaboration with Eurostat (nd) data.

Among this peer group, all capital cities were in the region with the highest GDP and accounted on average for 37.18% of national GDP in 2021, slightly above Portugal's

Lisbon at 35.46%, suggesting that capital region primacy of this magnitude is not exceptional among smaller EU economies and reflects a structural pattern common to countries where one dominant urban centre concentrates the bulk of financial, administrative, and knowledge-intensive activity. In this respect, Portugal's degree of first-region concentration is broadly in line with its European peers, and cannot in itself be characterized as an anomaly.

The divergence emerges sharply at the second tier. The average share of the second most productive region among peer countries stands at 9.96% in 2021, while Porto contributes 16.15% of national GDP, a gap of over six percentage points that is difficult to attribute to differences in underlying economic potential alone. This overperformance of Porto relative to European second regions, combined with the comparatively modest share of the Cávado and Ave territory at 7,28%, points to a specific structural feature of the Portuguese regional system as economic activity is unusually concentrated in just two urban poles, with limited diffusion to the remaining regional hierarchy. In comparable European economies, output is distributed more evenly across the second and third tiers, suggesting the existence of a broader network of mid-sized urban regions capable of generating and retaining economic value independently of the capital. The only notable exceptions being Denmark and Sweden, with Århus and Göteborg representing 13,76% and 16,38%, respectively, although that could be due to specific particularities of their geography, since they are countries with a large land mass but small population density.

The evolution between 2003 and 2021 further reinforces this diagnosis. Across the peer group, the share of the most productive region increased by four percentage points, from 33.2% to 37.18%, while the shares of the second and third regions remained essentially flat, at 9.71% to 9.96% and 7.31% to 7.35% respectively. This pattern confirms that the post-1980 trend of metropolitan primacy has continued and accelerated among smaller EU economies over the past two decades, with leading regions capturing a growing share of national output while the remainder of the regional hierarchy stagnates. Interestingly and despite the criticisms surrounding the decentralization processes in Portugal, the share of the most productive region decreased by 1.8%, while the second most productive region remained essentially flat, meaning that Portugal's other regions gained ground on the two main economic poles.

Taken together, the evidence presented in this section places Portugal's regional con-

centration in a European perspective that is both reassuring and concerning. Reassuring, because the degree of capital city primacy that Portugal exhibits is broadly in line with comparable smaller EU economies, suggesting that Lisbon's dominance is not exceptional by continental standards. Concerning, because Portugal deviates sharply from its peers at the second tier, with Porto absorbing a share of national output nearly double the European average for second regions, leaving the remainder of the regional hierarchy with limited room to develop independently. It is thus of great importance to provide a more in-depth assessment of regional disparities within Portugal, in order to understand whether the concentration of economic activity in two dominant poles reflects genuine productivity advantages, structural governance failures, or a combination of both, and to identify the specific territorial and institutional conditions that would need to change for regions such as Minho to develop into meaningful economic poles within the national urban hierarchy.

3.3 Regional Disparities within Portugal

3.3.1 Economic Indicators

Within Portugal, the distribution of economic activity across regions reflects the broader European trends discussed above, but with characteristics that are specific to the country's institutional history and governance structure. Key indicators such as GDP per capita, average wages, population density, and investment flows reveal a pronounced concentration of economic output in the Lisbon and Porto metropolitan areas, with the remaining regions lagging considerably behind. Examining these disparities in detail is essential to understanding both the scale of the challenge facing regional policymakers and the potential relevance of governance reform as a tool for addressing it.

The Portuguese office of strategy and studies (GEE) and the government transparency portal present detailed data, in the city and regional levels, on various economic indicators, providing a clear assessment of regional disparities in Portugal.

Table 1 presents economic and demographic indicators for NUT III regions in the year 2021. The year 2021 was chosen as it is the latest year with information available, despite the fact that the analysis may be slightly skewed due to the impact of COVID-19 on service economies such as Lisbon and the Algarve. Nevertheless, the data reveals several

Region	GDP per capita (€)	Avg monthly wage (€)	Pop. density (hab/km^2)
Alto Minho	16700	1095	104.5
Alto Tâmega	13500	995.1	28.7
AM Porto	20200	1301.1	872
Ave	18000	1080.8	288.8
Cávado	18900	1134.3	337
Douro	15700	1031.5	45.6
Tâmega e Sousa	13300	980.7	223.1
Trás-os-Montes	16300	1021.9	19.3
Beira Baixa	19100	1082	17.6
Beiras e Serra da Estrela	14800	1051.2	33.4
Médio Tejo	17000	1115.8	69.1
Oeste	17000	1106.8	167.7
Região de Aveiro	21700	1209.9	220.6
Região de Coimbra	19200	1167.6	101.5
Região de Leiria	20600	1194	118.4
Viseu Dão e Lafões	16600	1099.7	78.5
AM Lisboa	26700	1562.7	968.9
Alto Alentejo	16900	1078.9	17.3
Alentejo Litoral	25500	1232.3	18.5
Alentejo Central	19000	1127.3	20.8
Baixo Alentejo	21600	1237.8	13.5
Lezíria do Alentejo	18000	1120	156.3
Algarve	21900	1106	94.1

Table 2: Economic and demographic indicators across Portuguese NUTS III regions. 2021. Own elaboration with data from Gabinete de Estratégia e Estudos (nd)

patterns that are relevant to the research question motivating this dissertation.

The most immediate observation is the substantial gap between Lisbon and the remaining regions. The metropolitan area (AM) of Lisbon, Portugal's capital and main economic center, represents 28 percent of the country's population, while representing only 3 percent of its territory (Instituto Nacional de Estatística, 2020). It is a very attractive region due to its economic profile, innovation and technological development frameworks, growth of third sector economy, existing infrastructure, national and international connectivity and cultural opportunities (OECD, 2023b).

AM Lisboa leads all regions in GDP per capita, average wage and population density by a considerable margin. Despite AM Porto presenting a population density only 10% below that of AM Lisboa, its GDP per capita is 24.4% lower at 20,200 euros compared to 26,700 euros, and its average wage is 16.7% lower. Moreover, AM Porto's GDP per capita of 20,200 euros is closely comparable to non-metropolitan regions such as Região de Aveiro

at 21,700 euros and Algarve at 21,900 euros, despite Porto's population density being higher. If metropolitan area status were the primary driver of economic performance, one would expect AM Porto to perform considerably above these regions, meaning that the fact that it does not reinforces the argument that the formal attribution of metropolitan status is a necessary but not sufficient condition for regional economic development, and that the competences, resources, and governance capacity associated with that status matter as much as the designation itself.

A second and more analytically interesting pattern emerges when examining the relationship between population density and economic performance across non-metropolitan regions. Tâmega e Sousa, for instance, presents a relatively high population density of 223.1 inhabitants per km^2, comparable to Ave and not far below Cávado, yet records the lowest GDP per capita in the entire sample at 13,300 euros, alongside the lowest average wage outside of Alto Tâmega. Similarly, Cávado and Ave, which together constitute the most likely territorial basis for a future Minho Metropolitan Area, display the highest population densities outside the two metropolitan areas, yet their economic indicators remain considerably below those of regions with far lower densities, such as Alentejo Litoral and Baixo Alentejo. These observations suggest that in the Portuguese case, population density alone is a poor predictor of regional economic performance, pointing to the relevance of other factors such as industrial structure, institutional capacity, and connectivity, which the literature review has identified as key determinants of regional development.

Table 3 presents the evolution of GDP per capita relative to the national average between 2016 and 2021, expressed as an index where Portugal equals 100, offering a dynamic perspective on regional convergence and divergence trends that complements the cross-sectional picture discussed above. Several patterns emerge from this data that are analytically relevant for the present dissertation.

The most striking observation is the decline of AM Lisboa from an index of 131.5 to 127.1, a reduction of 4.3 points over the five-year period. While the capital region remains comfortably above the national average, this downward trend is consistent with the broader European pattern identified in the previous section, where Portugal registered the largest decrease among comparable EU member states in the share of national GDP generated by its two main urban areas. AM Porto, by contrast, recorded a marginal improvement from 95.0 to 96.2, remaining just below the national average throughout the

Region	Index 2016	Index 2021	Variation
AM Lisboa	131.49	127.14	-4.35
AM Porto	95.03	96.19	1.16
Alto Minho	75.69	79.52	3.83
Alto Tâmega	64.64	64.29	-0.36
Ave	83.43	85.71	2.29
Cávado	82.87	90.00	7.13
Douro	72.38	74.76	2.39
Tâmega e Sousa	61.88	63.33	1.45
Trás-os-Montes	77.35	77.62	0.27
Beira Baixa	90.06	90.95	0.90
Beiras e Serra da Estrela	66.85	70.48	3.63
Médio Tejo	82.87	80.95	-1.92
Oeste	81.22	80.95	-0.26
Região de Aveiro	97.79	103.33	5.54
Região de Coimbra	91.16	91.43	0.27
Região de Leiria	99.45	98.10	-1.35
Viseu Dão e Lafões	74.59	79.05	4.46
Alto Alentejo	78.45	80.48	2.02
Alentejo Litoral	133.70	121.43	-12.27
Alentejo Central	86.74	90.48	3.74
Baixo Alentejo	95.03	102.86	7.83
Lezíria do Alentejo	86.19	85.71	-0.48
Algarve	106.63	104.29	-2.34

Table 3: GDP per capita index relative to national average (Portugal = 100), 2016 and 2021. An index above 100 indicates GDP per capita above the national average. Own elaboration with data from Gabinete de Estratégia e Estudos (nd) and Transparência (nd).

period and confirming the picture of a metropolitan area that has not yet consolidated a position of clear economic leadership relative to the rest of the country.

Examining the Minho region, Cávado, the NUT III that contains the Braga municipality, stands out as the strongest performer in the North, recording an improvement of 7.1 points, rising from 82.9 to 90.0, with Ave and Alto Minho also improving 2.3 and 3.8 points, respectively. Together, these three NUT III regions show a consistent upward trend, suggesting that the area is gradually converging towards the national average even in the absence of metropolitan status. A broader look at regional trends between 2016 and 2021 reveals that most below-average regions recorded only very modest improvements.

These cross-sectional and dynamic patterns yield three key insights for the dissertation's central question. First, metropolitan status alone does not guarantee economic performance as AM Porto's GDP per capita matches non-metropolitan peers like Aveiro

despite superior density, suggesting other factors matter more than designation. Second, density is a poor predictor of performance outside the capital region as Tâmega e Sousa exhibits high density but lowest GDPpc, while low-density Alentejo regions outperform Minho's dense cores. Third, Minho shows convergence potential without metropolitan status with Cávado's +7,1 point gain leads northern improvement, yet remains 10 points below national average.

3.3.2 Institutional Capacity

A central challenge in studying the economic impact of governance reform is the difficulty of measuring institutional capacity directly through conventional economic indicators. This dissertation attempts to approximate institutional capacity through three complementary indicators. The first is public trust in local institutions, measured through survey data at the NUT II level from the 2024 European Quality of Government Index (EQI), which Iammarino et al. (2019) identifies as one of the key dimensions of the governance deficit that underlies regional discontent. The second is the per capita allocation and execution rate of Recovery and Resilience Plan (PRR) funds at the NUT III level which reflects both the political capacity of regional actors to secure funding and their administrative capacity to deploy it within established time frames, directly operationalizing the absorptive capacity concept central to Becker et al. (2010) and Becker et al. (2012) findings on cohesion policy effectiveness. The third is the attraction of Foreign Direct Investment at the regional level, drawing on data from the EY Attractiveness Survey Portugal (2024), which captures the extent to which a region's institutional environment is perceived as conducive to long-term investment by external economic actors, consistent with the governance infrastructure argument of Globerman and Shapiro (2002). Taken together, these three proxies capture different dimensions of institutional capacity, from democratic legitimacy, to administrative effectiveness, to external economic credibility, providing a more comprehensive basis for assessing the governance environment of the regions under study than any single indicator could offer alone.

The European Quality of Government Index (EQI), developed by Charron, Lapuente and Bauhr at the Quality of Government Institute of the University of Gothenburg, measures perceived quality of government across all EU 27 member states at the NUTS 1 and NUTS 2 regional level, with the 2024 round covering 135,227 respondents across 210

regions. Rather than assessing formal institutional rules, the EQI captures the governance environment as actually experienced by citizens, measuring impartiality, absence of corruption, and service quality across healthcare, education, and law enforcement. This citizen-based approach is particularly relevant here, as it reflects the institutional environment that firms and residents encounter in practice, and research using EQI data has documented strong associations between regional governance quality and outcomes including income, employment, and the capacity to absorb EU cohesion funds. Although the index has been fielded in five rounds since 2010, changes in sample composition across waves prevent direct cross-wave comparisons of absolute scores; the analysis therefore focuses on relative rankings across regions within each round.

The first conclusion from the analysis is that Portugal ranks 12th out of the 27 EU countries in terms of perceived quality of government (QoG). Notably, Lisbon's recent ascent to 1st national position (2024) contrasts with the European norm, where capital regions often rank lowest domestically.

The results reveal considerable variation in the relative positioning of regions over time. Northern Portugal shows moderate improvement between 2010 and 2021, moving from the lowest ranking position to third place, before slightly declining again in the most recent wave, raising questions about whether the region possesses the institutional foundations necessary to maximize the potential benefits of metropolitan governance reform, a concern that is directly relevant to the absorptive capacity argument central to Becker, Egger and von Ehrlich's (2010, 2012) findings on cohesion policy effectiveness. In the opposite direction, the Algarve presents the most consistent downward trajectory, dropping from second place in 2010 to last place from 2017 onwards and Alentejo declines from first place in 2017 to fourth place in 2021, before recovering to third in 2024.

The Recovery and Resilience Plan (PRR) represents the primary vehicle through which Portugal has channeled post-pandemic European funding towards regional development, making the per capita allocation and execution rate of PRR funds a particularly relevant proxy for institutional capacity in the present context. As discussed in the literature review, the effectiveness of EU cohesion funding depends critically on the absorptive capacity of recipient regions (Becker et al., 2012), and the PRR introduces an additional layer of institutional demand by imposing strict milestones and deadlines for fund execution that reward administrative efficiency and penalize institutional weakness.

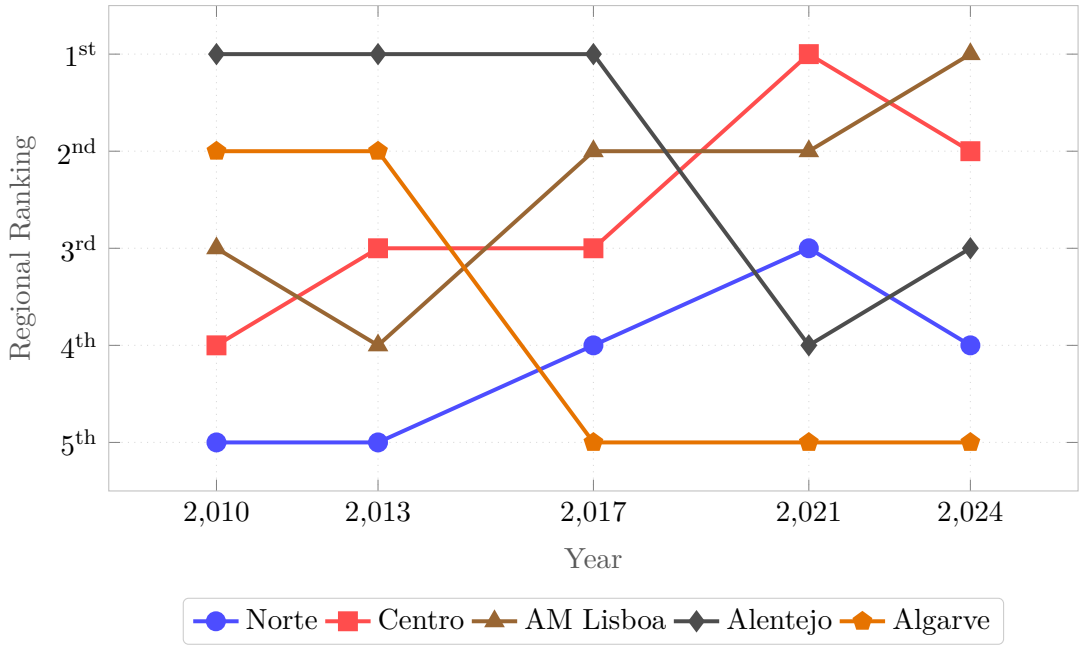


Figure 4: Relative ranking of Portuguese NUTS II regions by perceived institutional quality, 2010–2024.
Source: Quality of Government Institute of Gothenburg University (2024). 1 = best performing region.

Region	Funding per Capita (€)	Execution Rate (%)
Norte	1850.92	48.53
Centro	1695.32	46.15
AM Lisboa	1784.80	47.25
Alentejo	1660.98	48.73
Algarve	1337.48	43.08

Table 4: PRR funding per capita and execution rate by NUT II region. Own elaboration with data from Transparência (nd) Data extracted on 12th March 2026

At the NUTS II level, the Norte region receives the highest funding per capita at 1,850.92 euros, however, the execution rate tells a more nuanced story as Alentejo at 48.73%, followed closely by the Norte at 48.53%, while AM Lisboa records 47.25%, Centro 46.15%, and Algarve the lowest execution rate of 43.08%.

At the NUTS III level, the data reveals considerable internal variation within each macro-region that the aggregate figures conceal. For the regions most directly relevant to this dissertation, the PRR data presents a mixed picture as Ave receives above-average funding per capita relative to the national mean but record execution rates that are below the Norte regional average, suggesting a modest gap between the resources available to the region and its capacity to deploy them efficiently. Cávado is below the Portuguese continental average and receives 455 euros less per capita in funding compared to its

Region	Funding per Capita (€)	Execution Rate (%)
AM Lisboa	1784.85	47.25
AM Porto	2033.46	47.97
Alto Minho	1661.50	47.98
Alto Tâmega	1178.92	41.98
Ave	2078.29	45.81
Cávado	1622.63	47.23
Douro	2036.59	56.91
Tâmega e Sousa	1310.71	45.60
Trás-os-Montes	1789.98	49.10
Beira Baixa	1616.89	40.28
Beiras e Serra da Estrela	1721.61	36.68
Médio Tejo	1482.51	45.02
Oeste	839.15	45.69
Região de Aveiro	2125.27	51.24
Região de Coimbra	2193.03	43.22
Região de Leiria	1758.26	52.28
Viseu Dão e Lafões	1703.17	46.19
Alto Alentejo	2284.00	39.72
Alentejo Litoral	2342.65	50.07
Alentejo Central	1586.89	44.08
Baixo Alentejo	1991.75	57.77
Lezíria do Alentejo	1124.48	46.96
Algarve	1337.48	43.08

Table 5: PRR funding per capita and execution rate by NUT III region. Own elaboration with data from Transparência (nd) Data extracted on 12th March 2026

neighbour Ave while also performing slightly worse than Alto Minho (1622,63 euros and 1661,50 euros, respectively).

This fragmentation is precisely the type of coordination failure that metropolitan governance structures are theoretically designed to address. As the literature review established, one of the core arguments for metropolitan consolidation is that pooling administrative capacity across municipalities reduces duplication, improves strategic coordination, and strengthens the collective ability of a region to compete for and execute large-scale investment programs (Lefèvre, 1998). The PRR data suggests that the Minho region may be leaving resources underutilized not due to a lack of economic potential, but due to the absence of a governance structure capable of coordinating investment across its constituent municipalities in a coherent and strategically focused manner.

Foreign Direct Investment attraction is the third proxy used to approximate institutional capacity. Unlike the QoG index and PRR execution rates, which capture governance quality from the perspective of citizens and public administrators respectively,

FDI flows reflect how external economic actors evaluate a region's institutional environment when making long-term capital allocation decisions. As Globerman and Shapiro (2002) demonstrate, governance infrastructure is a significant determinant of FDI location choices independently of underlying factor endowments, making investment attractiveness a market-based signal of institutional credibility that complements the survey-based and administrative measures discussed above.

The EY Attractiveness Survey Portugal 2024 allows for interesting conclusions surrounding Portugal's institutional policies to attract FDI and also the location of those in flows. The country stands out as its policies encourage investments in R&D and innovation, with supportive government programs that facilitate the path for entrepreneurship and a workforce characterized by high educational standards. This contributes to make Portugal the 7th European country with the most FDI projects, with 77% of investors expecting Portugal's attractiveness to improve over the next three years, compared to only 49% in 2021 and 84% planning to establish or expand operations in Portugal over the next year in comparison to just 72%, on average, in European countries.

Looking into regional concentration, in 2023, 80% of FDI projects were concentrated in the Lisbon area and Northern Portugal, which remain the top destinations despite an 18% decline in total FDI projects compared to 2022. Lisbon and Porto alone account for 97 and 46 FDI projects respectively, with Braga at a distant third place with only 7 projects.

Actual investment flows and perceived investment attractiveness do not always tell the same story, and this divergence is itself analytically informative. Central Portugal surpassed the North to become the second most attractive region for investment after the Lisbon area, a result that is particularly surprising given that the North includes the Porto Metropolitan Area and was traditionally the second-ranked region. Within the North, Santo Tirso, a small municipality located inside the Porto Metropolitan Area, emerged as the third most attractive Portuguese city in perceived investment appeal through targeted local policies and close collaboration with regional development associations. This case is instructive precisely because it demonstrates that proactive place-specific governance strategies can generate significant gains in investor perception even within a metropolitan area whose broader regional performance is relatively weak, suggesting that the institutional capacity of individual actors within a governance structure matters as much as the

structure itself.

The FDI data reinforces the conclusions drawn from the QoG and PRR analyses. The concentration of actual investment flows in Lisbon and Porto confirms the agglomeration dynamics identified in the literature review, while the underperformance of the North in perceived attractiveness relative to Central Portugal, despite hosting a metropolitan area, suggests that formal institutional status does not automatically translate into effective governance or enhanced competitiveness. Braga's position as third city by actual FDI projects, combined with its relatively modest perceived attractiveness score, points to a credibility gap between the region's economic potential and its capacity to signal that potential to external investors, one that more coordinated governance could plausibly help close.

Taken together, the evidence presented in this section reveals a dual challenge facing the Minho region. The economic indicators examined in the first part of the section document a territory that is growing and converging towards the national average, with Cávado recording one of the strongest improvements in GDP per capita relative to the national mean between 2016 and 2021, yet one that remains significantly below the performance of the two existing metropolitan areas in wages, output per capita, and investment attraction. The comparison between AM Porto and non-metropolitan regions of similar economic weight further suggests that metropolitan status alone does not guarantee superior economic performance, pointing instead to the governance capacity and institutional resources associated with that status as the critical differentiating factors.

The three institutional capacity indicators examined in the second part of the section reinforce this picture. Northern Portugal ranks modestly and unstably in perceived governance quality relative to other Portuguese regions. The PRR execution data shows that the municipalities most likely to constitute a future Minho Metropolitan Area receive reasonable funding allocations but deploy them below the regional average, with considerable internal variation pointing to a fragmented institutional landscape. The FDI data confirms that Braga, despite being the third city in the country by actual investment projects, underperforms in perceived attractiveness relative to its economic weight, suggesting a credibility gap that more coordinated governance could plausibly address.

Across both dimensions, the evidence converges on the same conclusion: the Minho region possesses the demographic dynamism and economic potential to develop into a

third economic pole for the Portuguese economy, but its institutional framework remains insufficiently coordinated to translate that potential into sustained convergence. Before turning to the empirical strategy designed to test whether metropolitan area status can help close this gap, the following section examines in greater detail the territorial and functional characteristics of the Minho region, assessing the extent to which it already meets the conditions necessary for a viable metropolitan governance structure.

3.4 Minho's Metropolitan Area

This project aims to contribute to the economic literature on metropolitan governance systems, with the Minho region as a particular case study, as while the Minho region exhibits many of the functional characteristics associated with metropolitan areas, this subsection argues that institutional constraints may significantly limit the economic impact of any metropolitan designation under the current Portuguese governance framework.

In the run-up to the 2025 local elections a major topic of debate in the Minho region was whether granting the region legal metropolitan status could contribute to its economic and social development. The Minho region contains Portugal's two largest cities outside of the Lisbon and Porto metropolitan areas, Braga and Guimarães, which strengthens the regions claim to be the country's third-largest metropolitan area.

Braga, a city historically shaped by the influence of the Catholic Church, has evolved into a culturally vibrant and socially dynamic territory, partly sustained by recent immigration flows that have reshaped its demographic profile. The municipality has experienced sustained demographic growth (+6,52%, 2011-2021) contrasting with national decline (-2.07%) and the decrease registered in both the Porto Metropolitan Area (-1,32%) and the Lisbon Metropolitan Area (-1,71%)(INE, 2023).

Taken together, these contrasting dynamics suggest a reconfiguration of Portugal's urban hierarchy, where medium-sized cities such as Braga are gaining demographic prominence, potentially reflecting shifting residential preferences, housing pressures in larger metropolitan areas, and broader territorial redistribution trends.

In the literature review, studies that yielded a positive correlation between population density and wages in the Netherlands and France are highlighted. It is argued that the metropolitan area legal status could be a factor that helps generate gains of agglomeration,

attracting foreign investment, creation of corporations and migration of skilled labor. Despite this, the literature review led to an emphasis on place specific policies, making it imperative to look into regional characteristics of the Minho region in order to seriously consider the Metropolitan Area as a policy option.

The first conceptual challenge in defining a Minho Metropolitan Area is determining its territorial scope. Recently, representatives from the five largest cities in Minho: Viana do Castelo, Barcelos, Vila Nova de Famalicão, Braga, and Guimarães, met to discuss the issue, making it plausible that at least these five cities would form part of such a metropolitan structure (RUM, 2026).

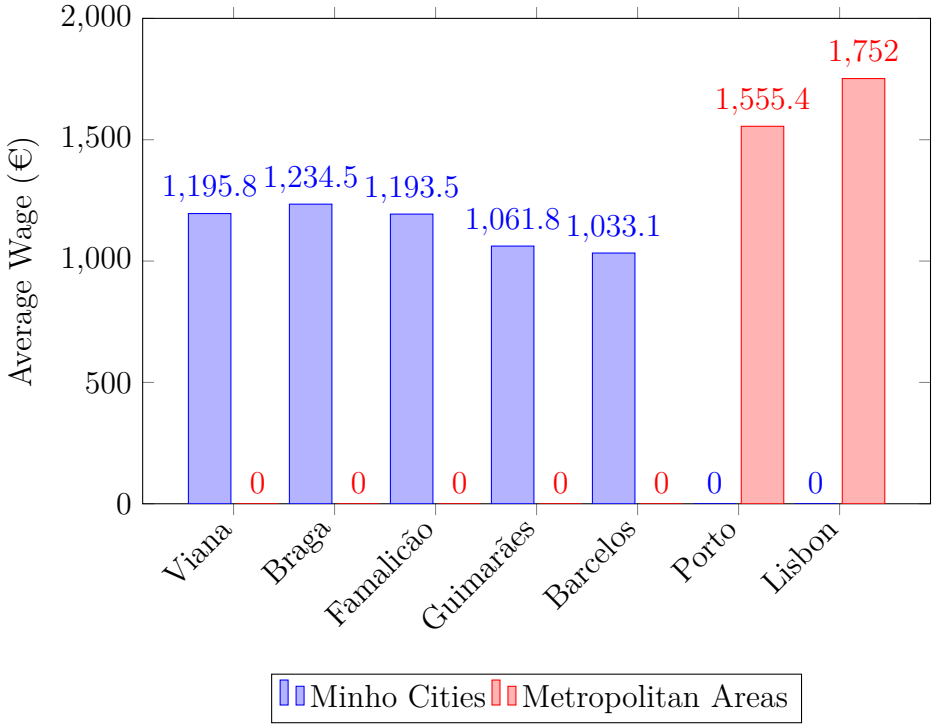


Figure 5: Average wages across selected Portuguese cities. Own elaboration using data Gabinete de Estratégia e Estudos (nd) and (Transparência, nd)

Figure 1 compares the average wage levels across these five cities, using Porto and Lisbon as benchmarks as the central cities of Portugal's metropolitan areas. Braga, the largest city in terms of population, shows slightly higher wage levels than the others, although the difference is relatively small when compared with Viana do Castelo and Vila Nova de Famalicão (slightly above 3%). In contrast, the gap with Barcelos, the city with the lowest wage level among those analysed, reaches 19.5%, indicating a significant disparity, particularly given their geographic proximity.

When comparing Braga with the aforementioned metropolitan capitals, significant

disparities emerge. The average wage in Braga is 26% lower than in Porto and 42% lower than in Lisbon.

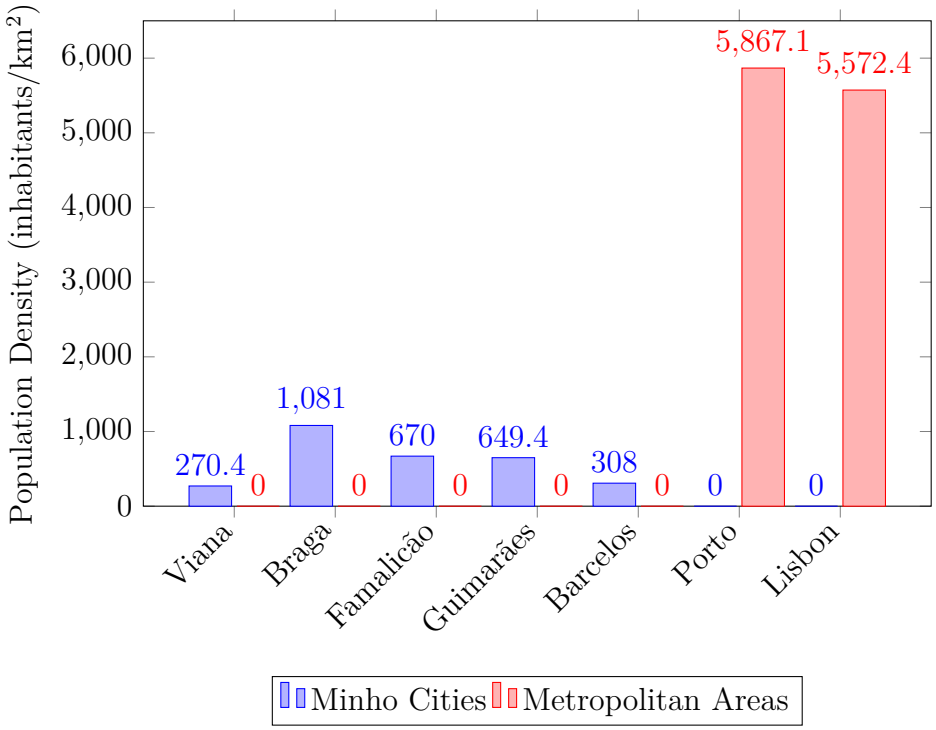


Figure 6: Population density across selected Portuguese cities

In figure 2, that analyses the disparities in population density across the selected cities the differences are much starker.

When comparing the cities within Minho, Braga stands out as the most developed urban center, occupying a central position relative to the municipalities of the district, strengthening its polarizing role and positioning it as a potential urban center, with its strategic relevance reflected in a population density significantly higher than that of its counterparts (61.3% higher than Vila Nova de Famalicão, which has the second-highest density).

Despite this, Braga is nowhere near the levels of Porto and Lisbon with these cities registering levels of density 442% and 415% higher, respecitively. Interestingly, Porto and Lisbon do not adhere to the literature notions of agglomeration effects on wage as Porto has a higher population density than Lisbon, yet its average wage is 12.6% lower.

Looking into the density levels we can derive if the region fits the requirements of a functional urban area (FUA). According to the OECD definition of FUAs, they are composed by a cluster of densely populated grids (> 1500 people/sqkm) with a total population of 50000 people or more, while a city is composed by the areas in which more

than half the residents live in the urban centers. It is also important to check whether two or more cities belong to the same polycentric functional urban area (if 15% or more of the population of a different city commutes to work in another's city center). To top it off it is necessary to define the commuting zones which are the local areas that surround the city and from which 15% or more of the population commute to work in the city (OECD,2020)

The indicators produced by the Portuguese National Statistics Institute (INE) for Cities and Urban Areas confirm that Braga is a FUA, in which the municipality itself constitutes the urban core, while the wider functional area also includes the neighboring municipalities of Vila Verde and Amares, located to the north of Braga.

Guimarães and Viana do Castelo are also classified among the 16 FUAs identified in Portugal. However, both display relatively limited commuting areas. In the case of Guimarães, the FUA incorporates only one additional municipality, Vizela. Famalicão and Barcelos, two municipalities with a large area are not included, despite its proximity to both Braga and Guimarães.

This confirms that Minho meets the technical definition of a functional urban area, but functional integration alone does not guarantee economic outcomes without institutional coordination. Historically, there has been a regional divide between Braga and Guimarães, highlighted by the fact that both are in different CIMs for political reasons which hampers common projects. However, the new configuration of public office could minimize those issues.

A limited railway connectivity between Minho's main cities represents one of the biggest constraints to the regions economic development, highlighted by the fact that none of the five main urban centers is rail-connected to all others, which restricts labour market pooling, effective density, and agglomeration economies. Enhanced regional governance through metropolitan status could address this issue by facilitating coordinated transport investments and integrated public transit networks, making it one of the key arguments in favor of the reform.

A further structural challenge concerns the institutional consequences of creating a Minho Metropolitan Area for the municipalities that would not be incorporated into it. The three existing CIMs that cover the Minho territory, Alto Minho, Cávado, and Ave, currently serve a combined population of 1,086,512 inhabitants, of whom 692,756 reside

in the five largest cities. If a metropolitan area were to extract only these five urban centres, the residual CIMs would be left governing a combined population of approximately 393,756 inhabitants, composed exclusively of small, low-density municipalities with reduced political leverage. The case of Esposende is particularly illustrative of the geographic challenge this could produce, as the city would find itself institutionally isolated between the Atlantic coast and the Porto and Braga metropolitan areas, belonging to a weakened CIM while being functionally integrated into an urban corridor it would have no formal governance role in shaping.

The experience of comparable European metropolitan reforms suggests that this boundary problem is not insurmountable but requires deliberate institutional design. The Górnoslsko-Zaglbiowska Metropolia in Poland, discussed in greater detail in section 3.6, incorporated 41 municipalities from the outset precisely to avoid the fragmentation of the surrounding institutional landscape, recognising that a metropolitan area whose boundaries are drawn too narrowly risks displacing rather than resolving the coordination failures it is intended to address. Expanding the Minho Metropolitan Area to incorporate the full territorial extent of the three CIMs would avoid the residual governance problem entirely, producing a metropolitan structure of over one million inhabitants with meaningful demographic and economic weight, comparable to mid-sized European metropolitan areas.

Table 6: Least dense municipality by inter-municipal structure and variation relative to the most populous city in the same structure.

Municipality	Structure	Population Density (inh./km^2)	Gap to most populous city (%)
Arouca	AM Porto	63.6	-9,128.7
Terras de Bouro	Cávado	23.1	-4,587.5
Melgaço	Alto Minho	31.9	-746.9
Vieira do Minho	Ave	55.9	-1,062.5

Own elaboration with data from (Gabinete de Estratégia e Estudos, nd) reports on the individual cities. Population density in inhabitants/km^2. Gap expressed as percentage difference relative to the most populous city in each inter-municipal structure.

However, this approach raises its own trade-offs: a structure of this scale and territorial diversity would encompass municipalities whose economic profiles, population densities, and development trajectories differ substantially, potentially diluting the agglomeration logic that justifies metropolitan governance in the first place and creating internal coordi-

nation challenges of a different kind. As shown in table 7, the existing CIMs already contain municipalities whose population density differs dramatically from that of its largest city. Within the Cávado CIM, Terras de Bouro records a population density of only 23.1 inhabitants per km^2, a gap of 4,587.5% relative to Braga. In Ave, Vieira do Minho diverges by 1,062.5% from its most populous counterpart, and in Alto Minho, Melgaço sits 746.9% below the density of the structure's largest city. These figures reveal that the Minho CIMs already govern territories of extraordinary internal diversity, where the most and least dense municipalities occupy entirely different positions in the national urban hierarchy and face fundamentally different development challenges.

Crucially, however, this internal heterogeneity is not a problem unique to the Minho region, nor has it prevented the consolidation of functional metropolitan governance elsewhere in Portugal. Within the Porto Metropolitan Area, Arouca records a population density of just 63.6 inhabitants per km^2, producing a gap of 9,128.7% relative to Porto itself, a figure that substantially exceeds the internal disparities observed within any of the three Minho CIMs. This precedent suggests that territorial heterogeneity alone is not a disqualifying condition for metropolitan governance, and that the challenges it poses are institutional and political in nature rather than strictly geographic.

The regional characteristics and the structural challenges highlighted in this subsection do not in themselves determine whether a Minho Metropolitan Area would produce positive economic outcomes. They do, however, define the conditions under which any such reform would operate, and they underline the importance of moving beyond normative arguments about governance design towards an empirical assessment of what metropolitan status has actually produced in comparable European contexts.

Taken together, the evidence converges on a diagnosis that the Minho region satisfies the functional preconditions for metropolitan governance, as it possesses demographic dynamism, a poly-centric urban structure anchored by two of Portugal's largest cities outside the existing metropolitan areas and a trajectory of convergence towards the national average that suggests genuine economic potential, but Portugal lacks the institutional framework capable of making that status meaningful.

As the analysis of Portugal's existing metropolitan areas documents, the Portuguese governance model has consistently produced metropolitan designations that are ineffective, operating without fiscal autonomy, own revenue, enforcement capacity over inter-

municipal decisions, and without democratic mandates independent of the member municipalities that compose them.

Creating a Minho Metropolitan Area within the current Portuguese institutional framework would therefore risk replicating precisely this pattern: a designation that generates political visibility and symbolic recognition without activating the governance mechanisms through which metropolitan status produces measurable economic outcomes. The functional case for a Minho Metropolitan Area is strong but the institutional case, given the framework within which it would operate, is not strong.

These institutional and territorial challenges in Minho underscore the need for rigorous selection criteria when identifying the treated case for synthetic control analysis. A comparable reform must not only replicate the region's poly-centric nature but also possess substantive institutional capacity, in order to plausibly show an effect larger than the volatility of the outcome variable. It is with these criteria in mind that the following section examines European models of metropolitan governance.

3.5 Metropolitan Governance in Europe

The goal of this subsection is to establish the main metropolitan reforms undertaken in Europe, in order to know if the struggles that Portugal's metropolitan areas face are common, or if, in Europe, metropolitan governance with the required institutional mechanisms to produce meaningful results exist. This analysis will allow for a clear choice on which metropolitan area will be used as the primary treated unit for the quantitative analysis developed in the following section.

While the concept of a metropolitan region emphasizes mainly the significance of an entrepreneurial understanding of regional and local governance, it relates to a variety of constitutional and political objectives that vary from country to country, for this reason, the institutional landscape of metropolitan governance across Europe is characterized by extraordinary diversity in the forms that governance structures take, the competences they exercise, the financial resources at their disposal, and the democratic legitimacy they command. Despite this diversity, three recurring tensions run through virtually every reform experience: between formal designation and substantive capacity, between central government control and local autonomy, and between the efficiency gains expected from

coordination and the political resistance generated by institutional consolidation. Before examining reform trajectories in other European countries, it is instructive to reestablish the reference point, presented above, with Portugal's own metropolitan areas, which provide the most direct institutional reference point for any assessment of what metropolitan status has historically produced within the same national governance framework.

Portugal's Metropolitan Areas of Lisbon and Porto were formally established under Assembleia da República (2013) as one of two types of inter-municipal association alongside the CIMs, with areaṫs of 3001 km^2 and 2040 km^2, respectively. As documented in sections 4.1 and 4.4, they share the same legal framework and similar formal competence profiles as the CIMs, with metropolitan areas distinguished primarily by their designation and a marginally broader remit in metropolitan transport and territorial strategy. Critically, neither structure disposes of independent fiscal resources or own revenue, making both structurally dependent on central government transfers. The democratic foundations of the existing metropolitan areas are also limited as they are governed by councils of municipal mayors and presidents of municipal assemblies, meaning that metropolitan governance rests on actors who derive their democratic mandates from their individual municipalities and who tend to prioritize local over metropolitan interests.

The most instructive comparative reference points for understanding what a more substantive form of metropolitan governance might produce are therefore found outside Portugal. Among European countries, France and Italy stand out as the cases most structurally comparable to Portugal for the purpose of this analysis. Both are unitary or quasi-unitary states with historically centralized governance architectures that have undergone sustained metropolitan reform over the past decade; both have assigned formal competences in planning, economic development, and transport to their metropolitan bodies through statutory legislation; and both operate within governance systems where sub-national fiscal autonomy is limited relative to federal or quasi-federal models, creating institutional starting conditions that broadly resemble those of Portugal's own metropolitan governance framework.

Italy formalized its metropolitan governance architecture through Repubblica Italiana (2014), known as the Delrio Law. The Law listed the names of the ten metropolitan cities, Turin, Milan, Venice, Genoa, Bologna, Florence, Rome, Bari, Naples, and Reggio Calabria, and mandated that they would automatically supersede the corresponding

provinces by 1 January 2015, coexisting with all municipalities within their jurisdiction. In terms of competences, metropolitan cities were granted all the administrative functions previously conferred on the provinces they superseded, as well as additional responsibilities ranging from general spatial and strategic planning, promotion of socioeconomic development, misinformation and digitization of the metropolitan area, road network and traffic regulation, and organization and management of services of general interest. On the fiscal dimension, metropolitan cities were expected to inherit the tax revenues through which the superseded provinces were funded, but the precise amount of resources available was never settled, with the government continuing to finance them on the basis of annual ad hoc contributions, meaning that the reform produced a problem of structural underfunding (Boggero, 2016). Furthermore, although metropolitan cities were expected to take on additional tasks relative to the provinces they replaced, their personnel was simultaneously reduced by 30 percent by the same local government reform, creating a structural mismatch between expanded formal mandates and diminished administrative capacity, concluding that metropolitan cities still lack any propulsive thrust and face the risk of being marginalized until a consistent legal framework for their proper funding is laid down.

France undertook a comprehensive overhaul of its metropolitan governance architecture through a trilogy of laws enacted between 2014 and 2015. République Française (2014) introduced the métropole status, reserved for functional urban areas exceeding 400,000 inhabitants, with a mandate to design and conduct projects for economic, ecological, educational, cultural, and social planning and development in order to improve cohesion and competitiveness and contribute to the sustainable and mutually supportive development of the regional territory. République Française (2015) subsequently redistributed competences across territorial tiers, strengthening both the regional level and the metropolitan structures while simultaneously adding a further layer to what critics had long described as France's excessive institutional complexity. As of January 2023, there are 21 métropoles in France, including the three largest metropolitan areas of Paris, Lyon, and Aix-Marseille-Provence, making France the European country with the most developed statutory metropolitan governance framework in terms of the number of formally designated metropolitan authorities. The scale of ambition embodied in this reform was, however, only partially matched by its institutional reality with the the Nantes

metropolitan area, studied in depth by the OECD, illustrating how even in a context of relatively strong metropolitan cooperation, the need to manage relationships across dozens of communes, intermediate bodies, departments, and regions substantially constrains the capacity of metropolitan institutions to exercise their formal planning mandates (OECD, 2017). The problems are most acute in Paris as the Métropole du Grand Paris (MGP) represents the most ambitious and most criticized instance of the French metropolitan reform. After six years of existence, the MGP struggled to assert itself in the exercise of its most strategic missions, with its capacity for action hampered from the outset by the complexity of its institutional and financial organisation. On the fiscal dimension, the MGP's budget appeared significant at 3.47 billion euros in 2020, but this was largely illusory: the metropolitan body redistributed nearly all of its resources to member municipalities as compensation transfers, with its own autonomous budget established at between 50 and 100 million euros since its creation. On democratic legitimacy, municipal mayors were the sole arbiters of territorial and metropolitan policy, creating a shared governance model functioning on the broadest possible consensus which was not conducive to the development of a genuine territorial project (Cour des comptes, 2023). Taken together, the French experience reveals a reform that succeeded in creating a dense and formally ambitious metropolitan governance architecture but whose practical impact has been limited by persistent fiscal dependency on central transfers, democratic structures that empower municipal rather than metropolitan interests, and an institutional landscape so complex that even well-resourced metropolitan bodies struggle to exercise their statutory mandates.

As with Italy, France presents an insuperable methodological obstacle for the quantitative strategy. The simultaneous creation of 21 métropoles across the country under the same legislative framework means that no clean within-country control group exists: the treatment affected urban regions throughout the entire national territory at once, precluding any within-country synthetic control estimation. The combination of substantive governance limitations and the absence of a valid donor pool therefore rules out France, alongside Italy, as a source of treated units for the present analysis.

The remaining three cases, Germany, the Netherlands, and Spain, fail at an earlier stage of the selection process, not primarily on methodological grounds but on the grounds of institutional comparability with Portugal.

Germany occupies a distinctive position in the comparative landscape because its eleven designated European Metropolitan Regions (Europäische Metropolregionen) are not administrative authorities in the conventional sense but rather voluntary cooperative platforms without statutory powers. Decisions within these structures require consensus among participants, and membership is voluntary, meaning that the German model relies on soft governance without formal hierarchy. This design reflects the constraints of the federal system, where the Länder retain primary responsibility for spatial planning and regional development, but it also fundamentally limits the range of policy tools available to metropolitan bodies (Initiativekreis Europäische Metropolregionen in Deutschland, 2024).

Similarly to the German case, the Netherlands provides an example of voluntary metropolitan cooperation operating without statutory backing, with "metropoolregio" bringing together municipalities with a mandate spanning economic development, spatial planning, housing, and mobility. However, the institutional foundations of this cooperation are explicitly informal as the regions have no legal powers, with the cooperation laid down in a common scheme but taking place on a voluntary basis, representing a soft governance model with a metropolitan structure that generates coordination and strategic alignment but cannot enforce collective decisions, levy resources, or exercise statutory competences of its own, making its capacity to produce measurable economic outcomes dependent on the sustained voluntary commitment of its member municipalities.

Spain presents a structurally different case that requires particular caution in comparative analysis. The Spanish system of Autonomous Communities means that metropolitan governance operates at a third tier below regions that already exercise substantial legislative and fiscal powers, fundamentally altering the relationship between metropolitan bodies and the central state, which contrasts with the situation in more centralized unitary states, where metropolitan institutions interact directly with national government and where fiscal resources depend primarily on central-level decisions.

The comparative survey of these five cases and Portugal's own experience allows for the identification of three criteria that should govern the selection of a treated unit for the synthetic control exercise. The first is institutional clarity as the reform must be sufficiently well-defined in time, with a clearly identifiable treatment date, a statutory basis, and a geographical perimeter that allows for the construction of consistent pre- and post-treatment data series. Voluntary cooperation platforms such as those found in

Germany and the Netherlands fail this criterion because the absence of statutory backing makes the precise moment of treatment impossible to identify and the institutional content of the reform too diffuse to generate a detectable economic signal. The second criterion is substantive capacity as the metropolitan structure must dispose of real competences and dedicated fiscal resources that could plausibly affect the regional economic trajectory, rather than serving merely as a coordination forum. France and Italy partially satisfy this criterion at the level of formal competences, but as documented above, fail in practice due to the structural gap between statutory mandates and actual fiscal capacity. The third criteria is uniqueness within the national context: in order to construct a valid synthetic control, the treatment must affect only one region within the country, so that the remaining regions can serve as uncontaminated donor pool units.

Poland and its Górnoslasko-Zaglebiowska Metropolia (GZM) satisfy all three criteria simultaneously and constitute the primary treated unit for the quantitative analysis developed in the following section. The GZM was established under the Act of 9 March 2017 on the Metropolitan Association in the Silesian Voivodeship, with a statutory framework that explicitly emphasizes coordinated action to mitigate inefficiencies arising from the region's historical administrative fragmentation, characterized by numerous independent local governments that had previously resulted in overlapping investments and suboptimal resource use in areas such as infrastructure and planning. The metropolitan association was formally established on 1 July 2017, with the beginning of the implementation of tasks on 1 January 2018, covering 41 municipalities, being the only formal metropolitan area in Poland responsible for spatial planning, public transport, and socio-economic development, meaning that its creation constitutes a singular institutional event within the Polish regional system, leaving all other Polish voivodeships available as an uncontaminated donor pool, a condition that Italy and France do not satisfy. Fiscally, the Metropolis receives 5% of the personal income tax revenues from persons residing in its territory, in addition to a contribution established for the member municipalities, providing it with a dedicated fiscal resource directly linked to the economic performance of its territory that distinguishes it from other countries. On democratic legitimacy, the association is governed by a metropolitan council composed of representatives of member municipalities elected through a proportional system, maintaining a closer link to citizen preferences than the indirect arrangements observed in the other cases. Finally, the GZM

is characterized by a poly-centric structure composed of 41 municipalities of different sizes, population densities, levels of wealth, and development potentials, with a highly urbanized core of 18 municipalities surrounded by 23 municipalities with a lower degree of urbanization, population density, and industrialization.

The GZM, not only passes all three criteria but, crucially, it constitutes a more integrated and institutionally autonomous metropolitan system-characterized by comparatively higher levels of democratic legitimacy and fiscal autonomy than the other cases considered, providing a particularly suitable benchmark for analysis, being the case most likely to generate measurable effects, meaning that a positive conclusion of the analysis could shape up the political discourse behind the institutional framework of metropolitan areas in Europe. Furthermore, its poly-centric structure enhances its relevance as a comparative reference, as it closely mirrors the spatial configuration of the proposed Minho Metropolitan Area.

3.6 The Górnoslasko-Zaglebiowska Metropolia: Context and Institutional Design

In this subsection, a more in-depth look into the GZM will be undertaken, in order to fully understand its demographic and economic framework and what sets it apart from the other examples given. With this goal a prior characterization of Poland's broader sub-national governance architecture is required.

The Republic of Poland operates under a tripartite sub-national governance framework, structured into municipalities (gminas), counties (powiats), and regions (voivodeships). Like Portugal, decentralization is not merely administrative but constitutional, as Article 15 of the 1997 Polish Constitution establishes the municipality as the fundamental unit of local self-government with legislative autonomy over matters of local interest (Art. 94). Historically, the devolutionary trajectory began with the Act on Municipalities (1990), followed by a significant systemic overhaul via the Local Government Organisation Act (1998) (OECD and UCLG, 2022).

A distinctive feature of Poland's sub-national governance that contrasts sharply with the metropolitan structures examined in France, Italy, and Portugal, where governance bodies are composed of actors whose mandates derive from their individual municipalities

rather than from any metropolitan or regional electoral connection, is the democratic basis of all three tiers. Regional councils are composed of members elected by direct universal suffrage, as are county councils and municipal councils, with mayors at the municipal level also directly elected increasing its accountability among its citizens.

The responsibilities assigned to each tier reflect a clear functional logic articulated around territorial scale. Municipalities hold the broadest and most direct service delivery responsibilities: spatial planning, water supply, local roads and public transport, utilities, primary education, primary healthcare, social services, housing, and environmental protection at the local level. Counties are responsible for local issues not ascribed to municipalities, with a more limited role encompassing secondary education, county hospitals, social welfare beyond municipal territorial boundaries, county roads, economic development, and job creation through employment offices. Regions are responsible for issues of regional importance and play a relatively limited role in directly providing public services, with their competences progressively strengthened through decentralization, including regional economic development, employment and labour market policy, regional roads, public transport including regional rail, management of EU structural funds, regional hospitals providing specialized services, and environmental protection at the regional scale.

On the fiscal dimension, the Polish sub-national system displays a structural tension between expenditure weight and revenue autonomy that is directly relevant for contextualizing the GZM's fiscal design. Sub-national government expenditure represents 30.6% of total public expenditure which is above the OECD average of 27.5%, contrasting with Portugal's 15% share, documented in section 4.2. However, despite its decentralization efforts, differences between Polish regions in terms of GDP per capita have increased from 2004 to 2020 with Lubelskie, the poorest region in the country, having a GDP per capita level equivalent to 44% of the GDP per capita in Mazowieckie, the richest region, meaning that Poland has the fifth highest regional economic disparities among 30 OECD countries with comparable data(OECD and UCLG, 2022).

It is precisely this gap between formal decentralization and effective territorial cohesion that motivated the creation of an additional, purpose-built governance tier for Poland's most complex urban territory: the Górnoslasko-Zaglebiowska Metropolia (GZM).

The metropolitan association was formally established on 1 July 2017, with the be-

ginning of the implementation of tasks on 1 January 2018, covering 41 municipalities and differing from traditional Polish governance structures in three primary ways. Firstly, whereas other tiers serve as general-purpose authorities with broad responsibilities, the GZM is a specialized metropolitan association with a mandate strategically limited to spatial planning, socio-economic development, public transport, and regional promotion, aiming specifically to resolve coordination challenges in a complex, poly-centric territory. Secondly, the GZM transcends the typical voluntary nature of inter-municipal cooperation in Poland, as by operating on a dedicated statutory basis, it creates a binding commitment for its 41 member municipalities, providing a level of institutional permanence and stability that voluntary platforms often fail to achieve. Thirdly, the GZM enjoys a unique degree of fiscal autonomy as it is the only inter-municipal entity in the country endowed with a 5% share of local personal income tax revenues, with this dedicated funding mechanism, supplemented by municipal contributions, ensuring that the GZMs financial resources are directly tied to its own economic performance rather than being subject to the discretion of central government transfers (Metropolia GZM, nd).

In terms of territorial characteristics, the GZM constitutes the most urbanised and most densely populated area in the Silesian Voivodeship, making up more than 20% of its surface area at 2,554 km^2 and approximately 50% of the population of the voivodeship at 2.2 million inhabitants. Its distinguishing spatial feature is a poly-centric structure composed of 41 municipalities of different sizes, population densities, levels of wealth, and development potentials, with a highly urbanized core consisting of several municipalities, such as Katowice, Sosnowiec and Gliwice, contrasting with sparser rural towns on the periphery. The economic context within which this governance structure operates is similar to the Minho Area, as traditionally both regions have a strong focus on industry. Nowadays,k a profound structural crisis in Upper-Silesia following 1989, with the collapse of coal mining and heavy industry generated sustained out-migration and demographic decline across the broader Silesian Voivodeship, however, despite this legacy, the GZM area today is in a period of post-industrial transition and generates approximately 8% of Poland's GDP and hosts around 240,000 companies and enterprises.

Unlike the Polish regions, governance of the GZM follows an indirect democratic model, that mirrors the Portuguese structures, as the legislative assembly of the GZM is composed of representatives from its 41 member municipalities and elects the Chair-

man of the Assembly and the Board, including its Chairman and members. The current Chairman of the Assembly is the President of Katowice, reflecting the city's position as the largest and most centrally located member municipality, while the executive board exercises strategic project implementation across the metropolitan territory.

Looking into its budget it is possible to spot a growth tendency that shows the significance of the fiscal instrument highlighted above. In 2018, following the beginning of full implementation the budget amounted to 361 million PLN, almost tripling to over 1 billion PLN in 2019, primarily due to the extension of the GZM's scope of operations to include the organisation of public transport. By 2024, the GZM had reached financial maturity as total planned expenditure stood at approximately 2.3 billion PLN, equivalent to around 534 million euros of which 1.85 billion PLN, approximately 429 million euros, was directed to the organization of public transport.

The "Metropolitan Solidarity Fund" was established within the GZM to promote sustainable development by providing targeted financial subsidies for projects that reduce socio-economic disparities among member municipalities. To facilitate equitable resource distribution, the GZM divided its territory into five distinct sub-regions, each led by a central municipality, those being the Bytomski sub-region, the Gliwicki sub-region, the Katowicki sub-region, the Sosnowiecki sub-region and the Tyski sub-region (Musioł-Urbańczyk and Sorychta-Wojsczyk, 2019).

The GZM thus represents a governance innovation that sits outside Poland's standard three-tier architecture in order to address coordination failures, duplicated investment, and fragmented infrastructure planning across a poly-centric urban territory that could not be resolved within any of the existing tiers acting alone. As Poland's first formally established metropolis, the GZM has pioneered a path that no Polish local government had taken before, which has produced both opportunities, notably high international visibility and active participation in European metropolitan networks, and constraints, including the absence of domestic precedent and the need to negotiate every aspect of metropolitan governance design from scratch. It is precisely this combination of statutory clarity, fiscal substance, poly-centrality, and institutional novelty within a national context that makes the GZM the most appropriate treated unit for the synthetic control analysis that follows.

Chapter 4

Methodology

This dissertation adopts a mixed-methods research design, combining a qualitative analytical framework with a quantitative causal estimation strategy. The two components are sequential as the qualitative analysis serves to establish the institutional, territorial, and political context within which the quantitative estimation is situated, ensuring that the causal claims produced by the synthetic control method are grounded in a substantive understanding of the governance reforms under study and the conditions under which they were implemented.

4.1 Qualitative Component

The qualitative component of this dissertation serves two closely related purposes. First, it establishes the institutional, territorial, and political context within which metropolitan governance reform must be understood in Portugal and second, it identifies the comparative case that will underpin the quantitative analysis, ensuring that the selection of the treated unit is grounded in substantive and methodological criteria rather than convenience. This component is designed to support the dissertations broader causal strategy, as the qualitative analysis provides the institutional basis for defining the treatment, assessing comparability across cases, and clarifying the conditions under which metropolitan status may plausibly affect economic performance.

The analysis focuses on mapping Portugal's governance framework, mainly using law-decrees, drawing on academic literature and data from Eurostat's Metropolitan database, it examines how different European states structure sub-national governance, how fiscal authority is distributed across levels of government and the different levels of regional inequality across the EU countries, and analyses Portugal's regional economic disparities,

using data from the Portuguese office of Strategy and Studies and utilizing indicators such as governance quality, public investment execution, and foreign direct investment as proxies for institutional capacity.

The analysis then focuses on the Minho region, assessing its territorial and institutional characteristics and its suitability for metropolitan governance. Finally, it compares European metropolitan reforms, using document analysis from several countries, to derive criteria for case selection and justifies the choice of the GZM as the treated unit, highlighting its institutional capacity, defined competences, and poly-centric structure.

Taken together, the six parts of the qualitative component establish the analytical foundations for the quantitative estimation. By mapping Portugal's governance framework, situating it in the European context, documenting regional disparities and institutional differences, evaluating the specific characteristics of Minho, identifying the criteria that a treated case must satisfy, and justifying the selection of the GZM, the qualitative analysis defines both the policy problem and the empirical parameters of the dissertation.

Its role is therefore twofold. Substantively, it clarifies why metropolitan governance reform may matter for regional development. Methodologically, it ensures that the synthetic control design is built on a case that is institutionally meaningful and comparable in a way that supports credible causal inference. This makes the quantitative analysis not simply an exercise in estimation, but the final step in a broader research design grounded in institutional and territorial analysis.

4.2 Quantitative Component

4.2.1 Selection of Treated Case

The selection of the treated case is a critical step in the empirical strategy, as the validity and interpretability of the synthetic control estimates depend on the suitability of the reform under analysis. In this dissertation, the Górnoslasko-Zaglebiowska Metropolia (GZM) is chosen as the treated unit due to its relevance as a recent and clearly defined example of metropolitan governance reform within a European context.

The GZM constitutes an appropriate case for three main reasons. First, the reform is precisely timed, with its formal establishment in 2017, allowing for a clear distinction between pre- and post-treatment periods. Second, the metropolitan structure was

endowed with a set of institutional competences and governance mechanisms that go beyond the symbolic designation observed in the Portuguese case, making it suitable for assessing whether metropolitan status with substantive capacity can generate measurable economic effects. Third, the GZM exhibits a poly-centric urban structure, composed of multiple medium-sized cities rather than a single dominant core, which enhances its comparability with the Minho region discussed in previous sections.

While this subsection outlines the rationale for selecting the GZM as the treated case, a more detailed discussion of its institutional design, governance structure, and economic characteristics is provided in Sections 4.5 and 4.6. These sections establish the extent to which the GZM satisfies the criteria required for a credible comparative case and clarify why it constitutes a relevant benchmark for evaluating the potential impact of metropolitan governance reforms in the Portuguese context.

4.2.2 Data Description

A key methodological challenge in implementing this analysis lies in the territorial definition of the treated unit as the GZM is composed of 41 municipalities that roughly correspond to five NUTS III regions and, in order to ensure comparability, the constituent NUTS III regions of the GZM were aggregated into a single unit. The analysis of GZM's documentation states that the metropolitan area represents roughly 8% of Polish GDP, while the data-merged GZM represented, in 2023 the last year with data available, 7,65% of total GDP, a close estimate. The other possible solution was to use the NUTS 2 that aggregates these five sub-regions along three other NUTS 3 regions, however, data-merging the regions of Katowicki, Gliwicki, Tyski, Bytomski and Sosnowiecki was methodologically necessary because the NUTS 2 region (Slaskie) that englobes the GZM is composed of 3 additional NUTS 3 regions which are not a part of the metropolitan governance scheme, meaning that merging the data for these five regions corresponds more closely to the territorial scale of the reform under study.

The data used in this dissertation comes from the Statistics Poland (Gówny Urzd Statystyczny) (nd). The donor pool consists of the 15 Polish NUTS 2 regions excluding Slaskie. These units are used because they are more comparable to the merged treated unit than individual NUTS 3 regions would be, as once the five NUTS 3 units are combined, the treated case operates at a scale that is closer to NUTS 2 in terms of territorial coverage,

economic size, and administrative relevance, meaning that using NUTS 2 regions improves substantive comparability and helps ensure that the synthetic control is built from units that resemble the treated region in scale and economic structure.

Data was extracted for three outcome variables: GDP per capita, average wage, and investment per capita, which capture complementary dimensions of regional economic performance and allow the dissertation to assess whether metropolitan status has different effects on output, earnings, and investment. Data was also extracted for the predictor set of population density, unemployment rate, and the aforementioned variables when they are not used as outcomes, creating a panel data set, complying with synthetic control requirements, covering the period from 2007 to 2024, allowing for ten years of pre-treatment period from 2007 to 2016, with the exception of the Investment model where 2007 was excluded for lack of data availability. The post-treatment period begins in 2017, which corresponds to the formal creation of the GZM, and extends to 2024, with the exception of the GDP model where 2024 was excluded for lack of data availability.

Variable	Obs	Mean	Std. Dev.	Min	Max
ID	288	8.50	4.62	1	16
Year	288	2015.50	5.20	2007	2024
GDP per capita	272	47527.65	18873.06	21829	142761
Population density	288	135.91	99.53	55.8	508.3
Average wage	288	4434.07	1553.10	2372.82	10018.71
Unemployment rate	288	9.74	4.17	2.8	21.6
Investment per capita	272	4064.85	1943.79	1404	13734

Table 7: Descriptive statistics of the dataset (values expressed in current PLN).

The descriptive statistics indicate substantial heterogeneity across the regional sample, which is precisely what makes the synthetic control design appropriate. Expressed in current PLN, GDP per capita, investment per capita and wages exhibit wide dispersion, while population density, and unemployment also vary considerably across regions, confirming that the donor pool includes units with markedly different economic profiles and levels of development.

Because the values are expressed in current prices, they should be interpreted as nominal levels rather than real purchasing-power-adjusted measures. Even so, the table provides a useful snapshot of the scale and distribution of the variables used in the analysis, and it reinforces the need for a method that can construct a credible counterfactual from a structurally diverse set of regional observations.

To strengthen the credibility of the results, the dissertation will also include robustness checks. In-space placebo tests are especially important because they show whether the gap for the treated unit is unusually large relative to the gaps obtained when the same procedure is applied to control regions. If similar gaps appear frequently in placebo units, the estimated effect is less convincing. In-time placebo tests are also useful because they check whether a comparable gap appears when the treatment is artificially assigned to a pre-treatment year, meaning that if no such gap appears before 2017, that supports the interpretation that the observed post-treatment divergence is linked to the reform itself. A leave-one-out exercise, in this case can further test whether the reform produced any spillover effect for its border regions, increasing the credibility of the analysis.

Overall, the quantitative strategy is designed to provide a credible estimate of the economic consequences of metropolitan area status by combining a well-defined treatment, a carefully constructed donor pool, and a series of validation checks that test whether the observed post-treatment gap is both robust and unusually large.

4.2.3 Testable Hypotheses and Model Specification

The empirical strategy of this dissertation is guided by a set of testable hypotheses derived from the literature on metropolitan governance and agglomeration economies. As discussed in previous sections, the theoretical expectation is that metropolitan institutional arrangements can enhance economic performance through improved coordination, increased scale, and stronger agglomeration effects. However, the extent to which these mechanisms translate into measurable outcomes depends on the institutional capacity and policy instruments associated with metropolitan status.

To evaluate these mechanisms empirically, the analysis focuses on three outcome variables that capture distinct but complementary dimensions of regional economic performance: GDP per capita, average wages, and investment per capita. These variables allow for the testing of the following hypotheses:

- H1: The creation of a metropolitan area increases GDP per capita relative to the counterfactual trajectory.
- H2: The creation of a metropolitan area increases average wages relative to the counterfactual trajectory.

- H3: The creation of a metropolitan area increases investment per capita relative to the counterfactual trajectory.

Under these hypotheses, the expected empirical pattern is a positive and sustained divergence between the observed outcomes of the treated unit and those of its synthetic counterpart in the post-treatment period, since the treated unit possesses the institutional backing and dedicated financial mechanisms that would justify the impact of a metropolitan reform. Conversely, the absence of such divergence, or the presence of a negative gap, would be interpreted as evidence against the hypothesis that metropolitan status produces immediate economic gains.

To test these hypotheses, the dissertation employs the synthetic control method (SCM). Let $i = 1$ denote the treated unit (the Górnolsko-Zagbiowska Metropolia, GZM), and let $i = 2, \ldots, 16$ denote the set of 15 control regions in the donor pool. Let Y_{it} represent the observed value of the outcome variable for region i at time t, where $t = 1, \ldots, T$.

Following the potential outcomes framework, the observed outcome for the treated unit can be decomposed as:

$$Y_{1t} = Y_{1t}^N + \alpha_{1t} D_t$$

where Y_{1t}^N denotes the potential outcome in the absence of treatment, D_t is a binary indicator equal to 1 for $t \geq 2017$ (post-treatment period) and 0 otherwise, and α_{1t} represents the treatment effect at time t.

Since Y_{1t}^N is unobserved after treatment, it must be approximated. The synthetic control method constructs an estimate of this counterfactual as a convex combination of control units:

$$\hat{Y}_{1t}^N = \sum_{j=2}^{J+1} w_j Y_{jt}$$

where the weights w_j satisfy:

$$w_j \geq 0 \quad \text{and} \quad \sum_{j=2}^{J+1} w_j = 1$$

The weights are chosen to minimize the distance between the treated unit and the synthetic control in the pre-treatment period, both in terms of outcome trajectories and

predictor variables. Formally, let X_1 denote a vector of pre-treatment characteristics of the treated unit and X_0 the corresponding matrix for the donor pool. The optimal weights W^* are obtained by solving:

$$W^* = \arg\min_W (X_1 - X_0 W)' V (X_1 - X_0 W)$$

where V is a diagonal matrix that assigns relative importance to each predictor in achieving a good pre-treatment fit.

The estimated treatment effect at each point in time is then given by:

$$\hat{\alpha}_{1t} = Y_{1t} - \hat{Y}_{1t}^N$$

This expression corresponds to the gap between the observed outcome of the treated unit and that of its synthetic counterpart.

The interpretation of $\hat{\alpha}_{1t}$ depends on its sign, magnitude, and persistence. A positive and sustained value of $\hat{\alpha}_{1t}$ after 2017 would be consistent with the hypotheses that metropolitan governance improves economic performance. A negative or statistically unremarkable gap would instead suggest that metropolitan status does not generate the expected gains, at least within the time horizon considered.

Importantly, the validity of this identification strategy relies on the assumption that, in the absence of treatment, the treated unit would have followed the trajectory of its synthetic counterpart. This assumption is partially testable through the quality of the pre-treatment fit, which serves as a key diagnostic for the credibility of the counterfactual.

Finally, the model is estimated separately for each outcome variable. This allows the analysis to capture potentially heterogeneous effects of metropolitan governance across different dimensions of economic performance, rather than imposing a uniform impact across all outcomes.

4.2.4 Synthetic control

Establishing causality when attempting to measure economic impact of a metropolitan reform is challenging because regions that receive metropolitan status are not randomly selected and are likely to differ from other regions in terms of pre-treatment growth, institutional capacity, and political relevance, meaning that a simple before-and-after

comparison would therefore confound the effect of the reform with pre-existing regional characteristics.

To address this problem, the dissertation employs the synthetic control method, following the framework developed by Abadie and Gardeazabal (2003) and further discussed in Abadie (2021) . Synthetic control is a comparative case study approach that constructs a weighted combination of untreated units in order to reproduce as closely as possible the pre-treatment trajectory of the treated unit with the resulting synthetic unit functioning as a counterfactual, representing the path the treated region would likely have followed in the absence of the intervention.

The method is particularly suitable for this dissertation for three reasons. First, the intervention is applied to one aggregate territorial unit rather than to a large sample of observations, which fits the core use case of synthetic control. Second, the method does not require the strong parallel trends assumption that underpins Difference-in-Differences designs. Third, synthetic control gives greater weight to pre-treatment fit, which is crucial when the objective is to build a credible counterfactual for a single treated case.

The method relies on several important requirements. The treatment must be clearly timed and well-defined, the donor pool must consist of untreated units, the treated unit should not anticipate the intervention in a way that affects pre-treatment outcomes, and sufficient pre- and post-treatment data must be available, in addition, the treatment effect must be large enough relative to the volatility of the outcome variable to be detectable. These conditions are central to the validity of the design and shape how the results should be interpreted.

Compared with Difference-in-Differences, synthetic control is the more appropriate strategy for this dissertation as DiD relies on the assumption that treated and control units would have followed parallel trends in the absence of treatment, which is difficult to justify in a setting where the treated region is a merged metropolitan area and the controls are economically and institutionally distinct regions. Synthetic control avoids this limitation by constructing a comparison unit tailored to the treated case rather than assuming that all untreated units provide equally valid comparisons. In that sense, DiD is simpler, but SCM is more credible for this application.

Chapter 5

Empirical Results

Having established the methodological framework in the previous section, this section applies the synthetic control method to evaluate the economic impact of metropolitan governance reform in a comparable European context with the objective of estimating whether the creation of a metropolitan institutional structure produces measurable effects on key economic indicators, thereby providing an empirical benchmark for assessing the potential impact of a similar reform in the Minho region.

5.1 Pre-Treatment Trends

This section begins the quantitative analysis by examining the evolution of key economic indicators in the treated unit, the GZM, in comparison with national trends in Poland. The metropolitan authority was formally established in 2017, providing a clear intervention point that allows for the distinction between pre-treatment and post-treatment dynamics.

The selection of outcome variables is guided by both the theoretical framework outlined in the literature review and the expected economic channels through which metropolitan governance may affect regional performance: average wages, GDP per capita, and investment per capita. Average wages capture labour market outcomes and reflect the extent to which agglomeration economies translate into higher productivity and earnings for workers. GDP per capita provides a broader measure of economic output and regional prosperity, encompassing both labour productivity and structural economic change. Investment per capita, in turn, serves as a forward-looking indicator, reflecting the ability of a region to attract and mobilize capital, which is central to long-term growth dynamics and closely linked to institutional capacity and governance quality. Taken together,

these three variables allow for a multidimensional assessment of economic performance, covering income, output, and capital accumulation.

Figures 7 to 9 present the evolution of average wages, GDP per capita, and investment per capita in the GZM relative to the Polish national average in the ten year pre-intervention period of 2007 to 2016, with the exception of Investment per capita where 2007 was excluded for lack of data availability. This normalization allows for a clear visualization of relative growth dynamics, highlighting whether the treated unit diverges from or converges towards national trends over time.

From a methodological perspective, the examination of pre-treatment trends is a critical step in assessing the validity of the empirical strategy. The synthetic control method relies on the assumption that, in the absence of treatment, the trajectory of the treated unit would have followed a path similar to that of a weighted combination of control units. While this assumption cannot be tested directly, descriptive evidence on the evolution of the outcome variables prior to 2017 provides an important diagnostic tool, in particular, the presence of broadly parallel trends between the GZM and the national aggregate in the pre-treatment period would support the credibility of the identification strategy, whereas significant divergence could indicate underlying structural differences that need to be accounted for in the construction of the synthetic control.

At the same time, it is important to emphasize that the descriptive patterns presented in this subsection do not allow for causal interpretation. Any observed divergence between the GZM and national trends following the establishment of the metropolitan authority may reflect a range of factors unrelated to the reform itself, including macroeconomic conditions, national policy changes, or sector-specific shocks, as such, the analysis presented here should be understood as a preliminary exploration of the data, designed to motivate and inform the causal estimation strategy implemented in the following section.

The figures reveal, first, that across all three indicators, the GZM consistently outperforms the national average in terms of levels, as reflected by index values above 100 throughout the entire period, suggesting that the metropolitan area entered the reform period as a structurally stronger economic region, characterized by higher wages, higher output per capita, and greater investment intensity than the national average.

Second, despite this level difference, the growth trajectories of the GZM and Poland appear broadly parallel in the pre-treatment period, particularly for average wages and

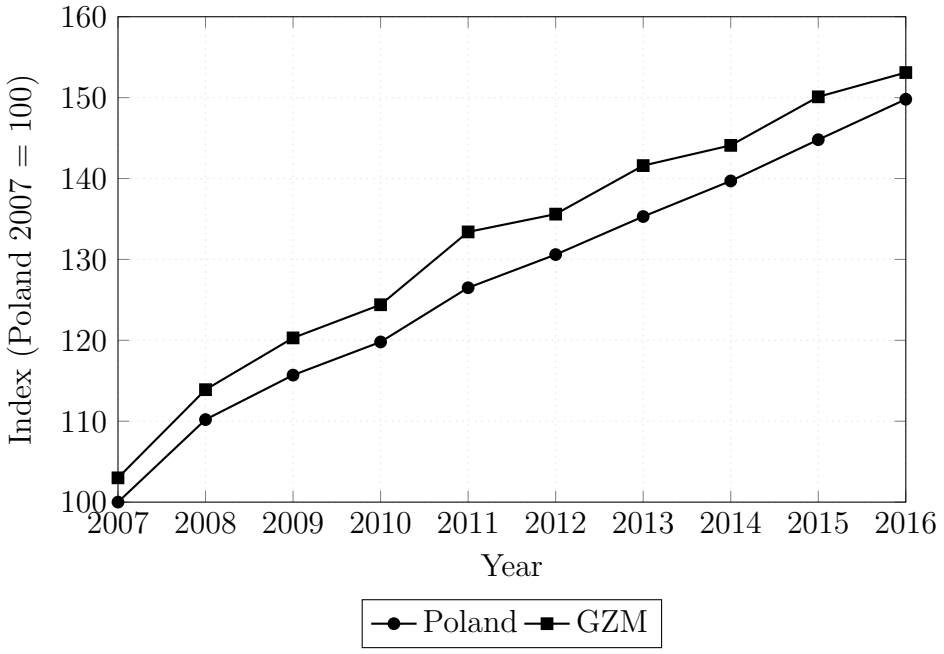


Figure 7: Evolution of average wages (index, Poland 2007 = 100)

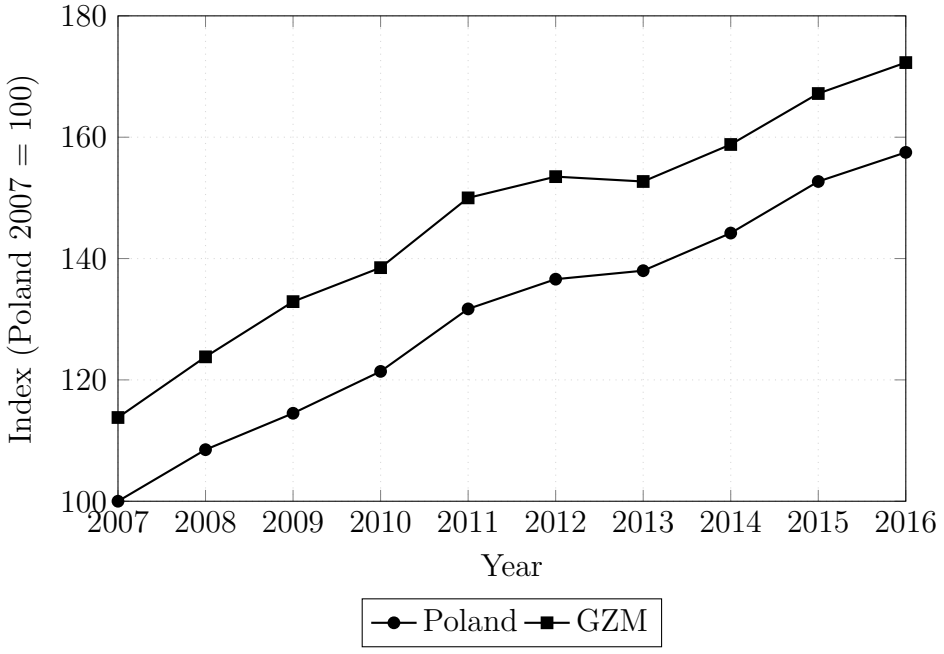


Figure 8: Evolution of GDP per capita (index, Poland 2007 = 100)

GDP per capita, as both indicators exhibit steady and sustained growth between 2007 and 2016, with no clear evidence of divergence prior to the establishment of the metropolitan authority in 2017. This parallel evolution is a key empirical observation, as it suggests that the GZM does not have any unique regional characteristics that could compromise the validity of the methodology, thereby strengthening the credibility of the synthetic control approach used in the following section.

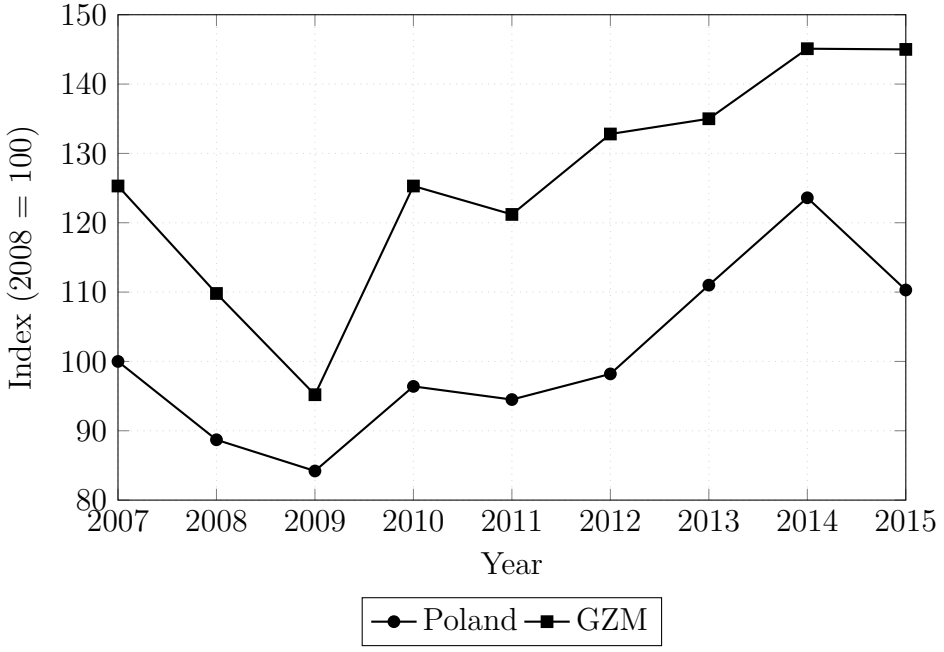


Figure 9: Evolution of investment per capita (index, 2008 = 100)

A slightly different pattern emerges in the case of investment per capita, which displays greater volatility over time, reflecting the cyclical nature of investment dynamics, however, even in this case, the GZM maintains a consistently higher level of investment relative to the national average and follows a broadly similar cyclical pattern, with a decline following the global financial crisis and a gradual recovery in subsequent years.

This combination of superior pre-treatment levels and parallel trends permits credible synthetic replication, meaning that any statistically significant post-2017 divergence can thus be plausibly attributed to metropolitan governance reform rather than unobserved regional idiosyncrasies.

5.2 Pre-Treatment Fit

Before interpreting the post-treatment dynamics, it is necessary to assess whether the synthetic control provides a credible approximation of the treated unit in the pre-intervention period. In the synthetic control framework, the quality of the causal estimate depends fundamentally on the ability of the weighted combination of control regions to reproduce the trajectory of the treated unit before the reform and although it does not prove identification, it is a necessary condition for the post-treatment comparison to be meaningful. Since the donor pool is restricted to Polish NUTS II regions, institutional comparability

is improved, although the range of possible counterfactual combinations is narrower than in a broader cross-country design.

Region (NUTS II)	Weight	Selected
DOLNOSLASKIE	0.346	Yes
KUJAWSKO-POMORSKIE	0.000	No
LUBELSKIE	0.000	No
LUBUSKIE	0.000	No
LÓDZKIE	0.000	No
MALOPOLSKIE	0.389	Yes
MAZOWIECKIE	0.265	Yes
OPOLSKIE	0.000	No
PODKARPACKIE	0.000	No
PODLASKIE	0.000	No
POMORSKIE	0.000	No
SWIETOKRZYSKIE	0.000	No
WARMINSKO-MAZURSKIE	0.000	No
WIELKOPOLSKIE	0.000	No
ZACHODNIOPOMORSKIE	0.000	No

Table 8: Synthetic control weights for average wages.

Region (NUTS II)	Weight	Selected
DOLNOSLASKIE	0.000	No
KUJAWSKO-POMORSKIE	0.000	No
LUBELSKIE	0.000	No
LUBUSKIE	0.000	No
LÓDZKIE	0.000	No
MALOPOLSKIE	0.659	Yes
MAZOWIECKIE	0.341	Yes
OPOLSKIE	0.000	No
PODKARPACKIE	0.000	No
PODLASKIE	0.000	No
POMORSKIE	0.000	No
SWIETOKRZYSKIE	0.000	No
WARMINSKO-MAZURSKIE	0.000	No
WIELKOPOLSKIE	0.000	No
ZACHODNIOPOMORSKIE	0.000	No

Table 9: Synthetic control weights for GDP per capita.

The distribution of weights across donor regions, highlighted in tables 7 to 9, reveal a highly selective construction of the synthetic control as, in all three specifications, only a small subset of regions receives positive weights, while the majority of the donor pool is assigned a weight of zero. This is consistent with the objective of the synthetic

Region (NUTS II)	Weight	Selected
DOLNOSLASKIE	0.668	Yes
KUJAWSKO-POMORSKIE	0.000	No
LUBELSKIE	0.000	No
LUBUSKIE	0.000	No
LÓDZKIE	0.000	No
MALOPOLSKIE	0.174	Yes
MAZOWIECKIE	0.158	Yes
OPOLSKIE	0.000	No
PODKARPACKIE	0.000	No
PODLASKIE	0.000	No
POMORSKIE	0.000	No
SWITOKRZYSKIE	0.000	No
WARMINSKO-MAZURSKIE	0.000	No
WIELKOPOLSKIE	0.000	No
ZACHODNIOPOMORSKIE	0.000	No

Table 10: Synthetic control weights for investment per capita.

control method, which seeks the optimal convex combination of units that minimizes pre-treatment prediction error rather than averaging across all available regions.

For average wages, the synthetic control is composed of three donor units, with positive weights assigned to regions Dolnoslaskie (0.346), Malopolskie (0.389), the biggest weight, and Mazowieckie (0.265). For GDP per capita, the synthetic control is more concentrated as only two donor units receive positive weight: Malopolskie , with a weight of 0.659, and Mazowieckie, with a weight of 0.341. For investment per capita, the synthetic control once again draws on three donor units. Dolnoslaskie receives the dominant weight (0.668), while Malopolskie, and Mazowieckie receive smaller but still meaningful weights of 0.174 and 0.158, respectively.

A striking feature of the results is the consistent importance of Malopolskie and Mazowieckie, which receive positive weights across all three outcome variables, suggesting that these regions provide the closest empirical approximation to the treated unit across the selected predictors and pre-treatment outcome dynamics.

At the same time, the role of Dolnoslaskie varies across specifications as it receives a substantial weight in the case of wages and becomes the dominant contributor in the investment specification, but is entirely excluded from the GDP per capita synthetic control. This variation reflects differences in how closely each region matches the treated unit along specific outcome dimensions, highlighting the importance of estimating separate synthetic controls for each variable rather than imposing a common weighting structure.

Importantly, the concentration of weights in a small number of regions does not undermine the validity of the synthetic control, only indicating that a limited subset of regions provides relevant information for constructing a credible counterfactual with the exclusion of the remaining regions reflecting their inability to improve the pre-treatment fit, rather than a limitation of the method.

Outcome	Mean gap	Mean absolute gap	RMSPE	MAPE (%)
Average wages	-0.13	42.18	52.70	1.10
GDP per capita	-8.73	1043.36	1149.28	2.27
Investment per capita	36.43	188.73	211.92	4.25

Table 11: Pre-treatment fit statistics for the synthetic control estimates. Mean gap refers to the average difference between treated and synthetic series in the pre-treatment period. RMSPE denotes the root mean squared prediction error, and MAPE the mean absolute percentage error.

To complement the donor weights, Table 10 reports simple measures of pre-treatment fit for each outcome variable. Three statistics are used: the mean gap between the treated and synthetic series, the mean absolute gap, and the root mean squared prediction error (RMSPE). Since the outcomes are measured in different units and scales, the mean absolute percentage error (MAPE) is also reported to facilitate comparison across variables.

The results indicate that the pre-treatment fit is strongest for average wages with a mean gap of essentially zero (-0.13 PLN), a mean absolute gap of only 42.18 PLN, and a RMSPE of 52.70 PLN. In percentage terms, the MAPE is just 1.10%, indicating that the synthetic control tracks the wage trajectory of the GZM very closely before the reform, which is an excellent fit and provides a strong basis for interpreting post-treatment deviations.

The fit for GDP per capita is slightly weaker in absolute terms, but still very strong as the mean gap is -8.73 PLN, indicating almost no systematic bias, while the mean absolute gap is 1,043.36 PLN and the RMSPE is 1,149.28 PLN. Given the magnitude of GDP per capita values in the sample, the MAPE of 2.27% suggests that the synthetic control reproduces the treated unit with a high degree of accuracy.

Investment per capita presents the weakest pre-treatment fit of the three outcomes, which is unsurprising given the greater volatility of investment series, even so, the fit remains acceptable for the purposes of the analysis. The mean gap is 36.43 PLN, the mean absolute gap is 188.73 PLN, the RMSPE is 211.92 PLN and the corresponding

MAPE is 4.25%, which is higher than for wages and GDP per capita but still sufficiently low to support the use of the synthetic control as a counterfactual benchmark.

Overall, the pre-treatment diagnostics support the credibility of the empirical strategy as the synthetic control reproduces the trajectory of the treated unit particularly well for average wages and GDP per capita, while the fit for investment per capita, though less precise, remains reasonable given how cyclical investment behavior is. These results imply that any sustained divergence between the observed and synthetic series after 2017 can be interpreted as suggestive evidence of treatment effects, albeit with greater caution in the case of investment.

5.3 Post-Treatment Effects

Having established that the synthetic control provides a credible approximation of the treated unit in the pre-treatment period, the analysis can now turn to the post-2017 evolution of average wages. The wage series provides the clearest and most stable evidence among the three outcome variables examined in this chapter. Figures 10 and 11 compare the observed evolution of average wages in the GZM with that of the synthetic control and present the corresponding treatment gap over time.

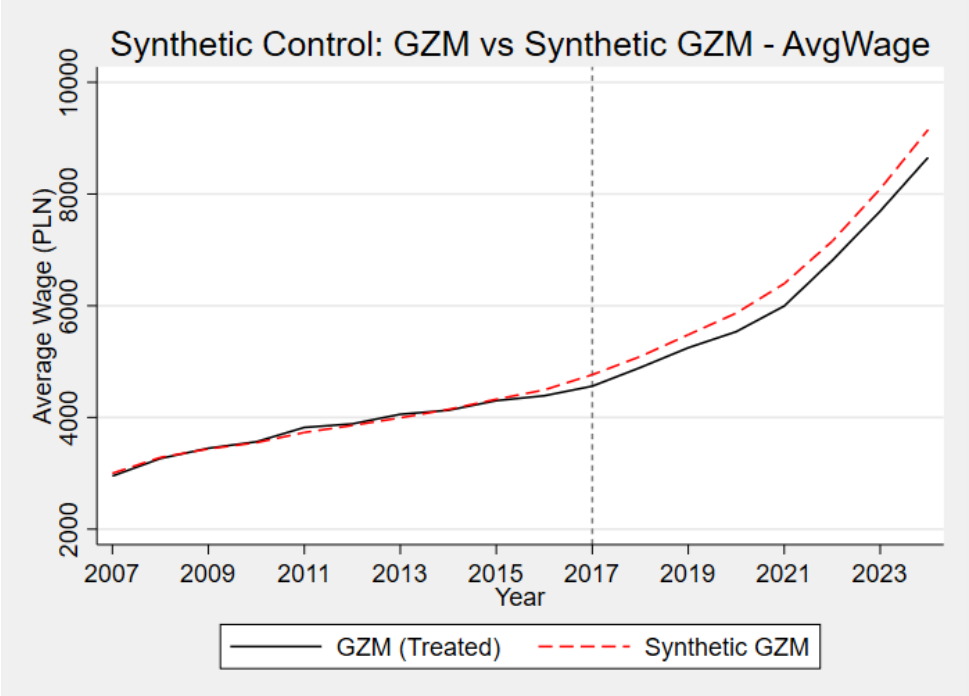


Figure 10: Average wages: GZM vs synthetic control

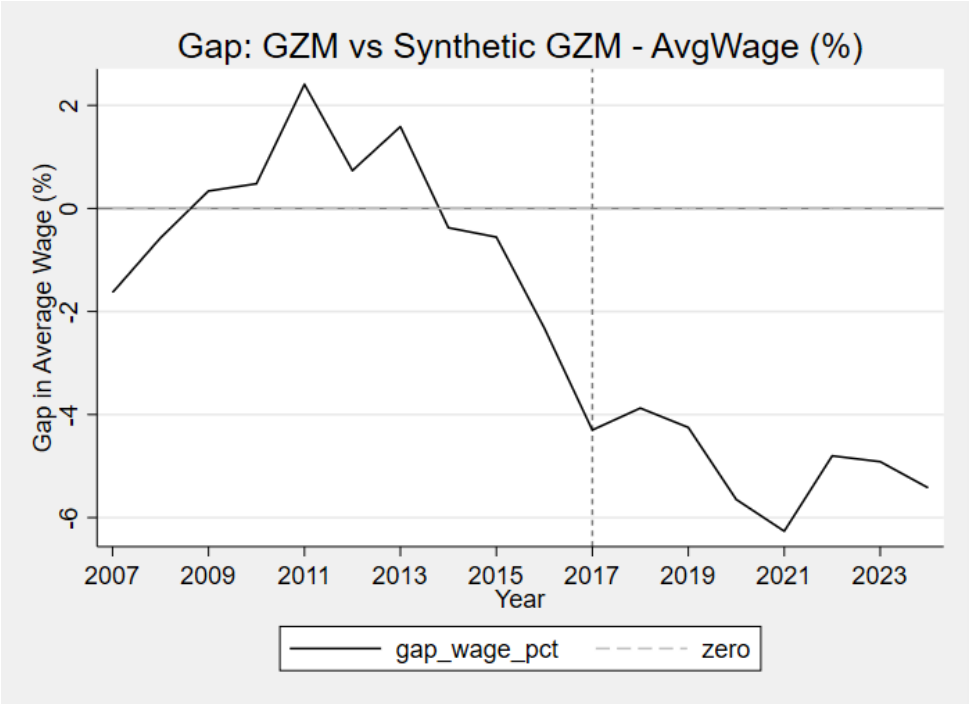


Figure 11: Treatment gap: average wages

In the pre-treatment period, the synthetic control tracks the treated unit closely, although the GZM alternates between small positive and negative deviations relative to the synthetic benchmark, these remain limited in magnitude and show no strong systematic pattern. Between 2007 and 2013, the gap oscillates around zero, at times becoming moderately positive, suggesting that wage dynamics in the GZM were broadly comparable to those of the weighted donor combination selected by the algorithm, supporting the conclusion reached in the previous subsection that the pre-treatment fit for wages is particularly strong.

The post-treatment pattern is much more striking as, Starting in 2015 and becoming more pronounced after 2017, the gap, which is measured in percentage with the formula

$$\text{Gap } (\%) = \frac{Y_t^{\text{treated}} - Y_t^{\text{synthetic}}}{Y_t^{\text{synthetic}}} \times 100$$

turns decisively negative and remains negative throughout the remainder of the sample, meaning that average wages in the GZM grow more slowly than in the synthetic control after the metropolitan reform. The negative divergence becomes more pronounced over time until 2021, when the treated region registers wage values 6% below the synthetic counterfactual. By 2024 this value recovers slightly but is still pronouncedly negative at

a negative gap of over 5%

This is a particularly important result because wages are one of the main channels through which agglomeration economies are expected to materialize. A central argument in the metropolitan governance literature is that stronger regional coordination can improve transport integration, reduce fragmentation, support strategic planning, and create the conditions for productivity-enhancing agglomeration effects, meaning that if these mechanisms were operating strongly in the case of the GZM, one would expect wage growth to at least match, and ideally exceed, that of the synthetic control. The evidence instead points to the opposite conclusion.

The persistence of the negative post-treatment wage gap suggests that the metropolitan reform did not generate observable labour market gains over the period considered. This does not necessarily imply that the reform was economically harmful in an absolute sense, since wages in the GZM continue to rise over time in nominal terms, instead implying that wage growth in the treated region was weaker than would have been expected on the basis of the counterfactual trajectory, therefore, the metropolitan reform is not associated with a wage premium.

Among the three outcomes analyzed in this dissertation, this is the strongest result against the hypothesis of short-run positive economic effects from metropolitan status. Unlike GDP per capita, where the negative divergence later narrows, or investment, where the effect changes sign, the wage series displays a sustained and cumulative negative gap, despite showing weak signs of a slight convergence, which makes it the most convincing indication that institutional change alone did not produce the type of labour market improvements often associated with metropolitan integration.

A plausible interpretation is that the formal creation of a metropolitan authority was not accompanied by a sufficiently large improvement in the mechanisms that shape wage dynamics, such as labour market integration, transport coordination, business upgrading, or knowledge spillovers. It is also possible that any benefits of coordination were too weak to offset broader structural constraints affecting the region but, whatever the underlying mechanism, the empirical pattern is that relative to its synthetic benchmark, the GZM did not experience a post-2017 acceleration in wage growth.

Figures 12 and 13 compare the observed trajectory of GDP per capita in the GZM with that of its synthetic counterpart and display the corresponding treatment gap.

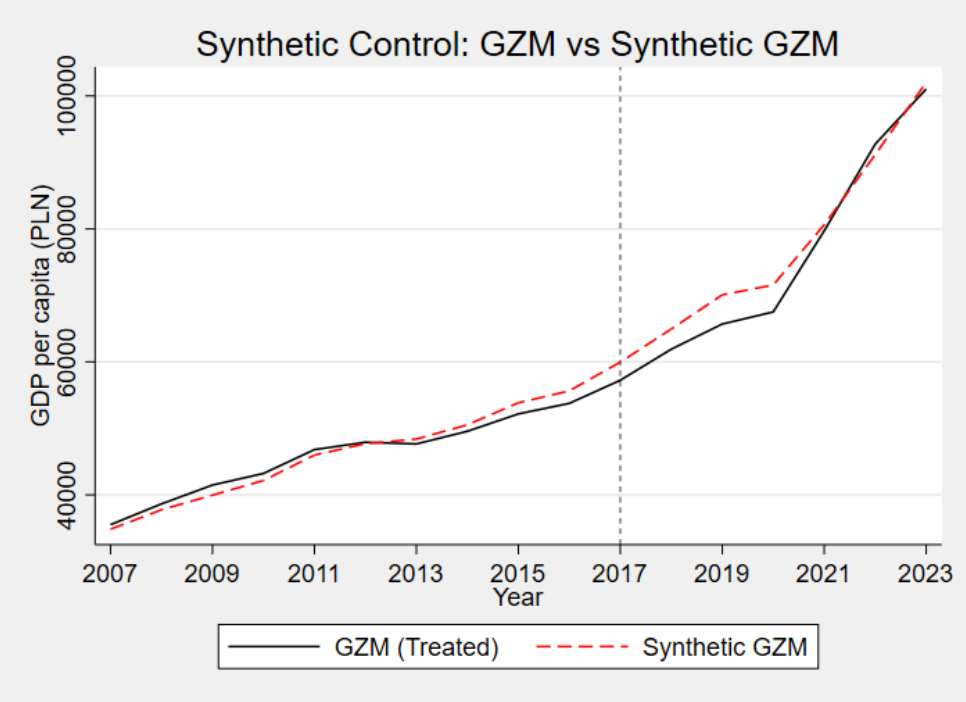


Figure 12: GDP per capita: GZM vs synthetic control

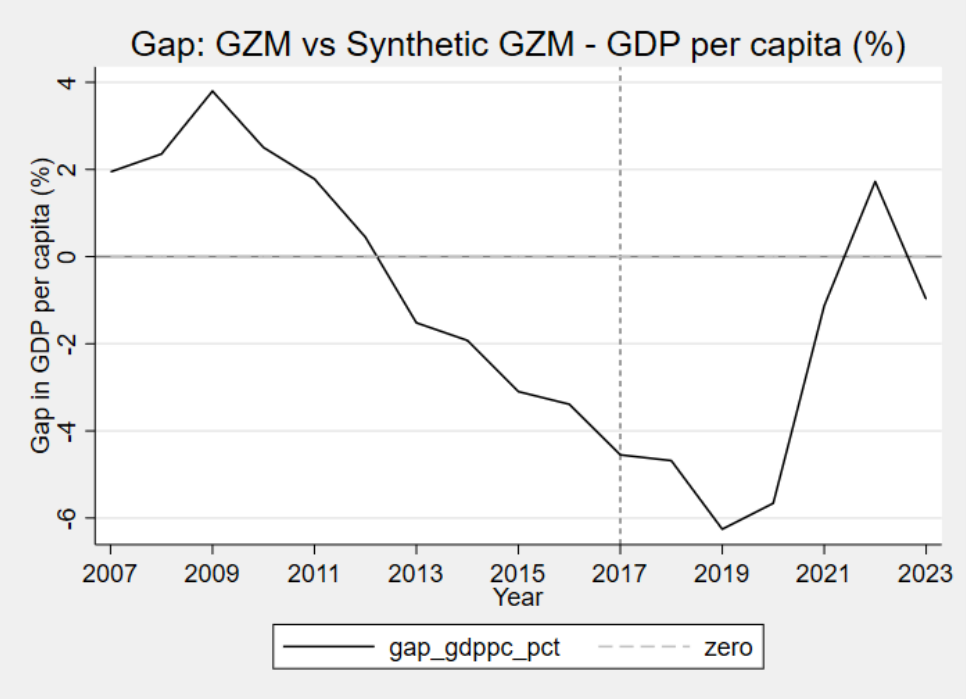


Figure 13: Treatment gap: GDP per capita

The pre-treatment period shows a reasonably close correspondence between the treated unit and the synthetic control, although the gap is not constant and fluctuates over time, these fluctuations remain within a relatively narrow band when compared with the scale of the outcome variable. In the earlier part of the sample, the GZM tends

to perform slightly above the synthetic control, registering, in 2009, a value almost 4% bigger than the counterfactual. From 2010 onwards, a reversal occurs with the gap turning negative, in 2013, before the formal introduction of treatment, registering a negative gap of approximately 3.5% This pre-treatment deterioration is important to note, as it suggests that the treated unit was already entering the reform period with some relative loss of momentum compared to its synthetic counterpart, even though the overall fit remains sufficiently good for the synthetic control to provide a useful benchmark.

Following the creation of the metropolitan authority in 2017, the gap becomes more strongly negative with the magnitude of this underperformance increases substantially until 2019, when the gap falls to approximately 6%, indicating that GDP per capita in the treated region was substantially below the level predicted by the counterfactual.

From 2020 onwards, however, the negative effect weakens as the gap narrows noticeably in 2021 and turns positive in 2022, with a value between 1.5% and 2% suggesting that the GZM temporarily overtakes its synthetic counterpart. By 2023, the gap becomes negative again, though smaller in magnitude than during the period of 2013-2020, indicating that the post-treatment effect on GDP per capita is not stable over time, instead, it is characterized by an initial period of relative underperformance followed by partial recovery and substantial volatility in the later years of the sample.

Substantively, these results do not support the view that metropolitan governance reform generates an immediate and sustained increase in regional output per capita, if anything, the evidence points in the opposite direction during the first years after treatment. At the same time, the later recovery suggests that any negative effect was not permanent and may have reflected transitional adjustment costs, delays in policy implementation, or broader macroeconomic shocks rather than a permanent deterioration in economic performance.

A further consideration is that GDP per capita is a broad aggregate outcome that may respond only gradually to institutional reform and that, even if metropolitan coordination improves the allocation of public resources or the strategic capacity of the region, such gains may take several years to be reflected in output data. The instability of the post-2020 pattern also suggests caution in interpretation, particularly given the possibility that the COVID-19 shock and the subsequent recovery may have influenced regional trajectories in ways not directly related to metropolitan governance.

Taken together, the results for GDP per capita point to a limited and non-linear effect of the reform, as the evidence is inconsistent with a clear metropolitan premium in the short to medium term. Rather than a sustained post-treatment improvement, the observed trajectory suggests a period of relative underperformance followed by incomplete and unstable convergence back towards the synthetic control.

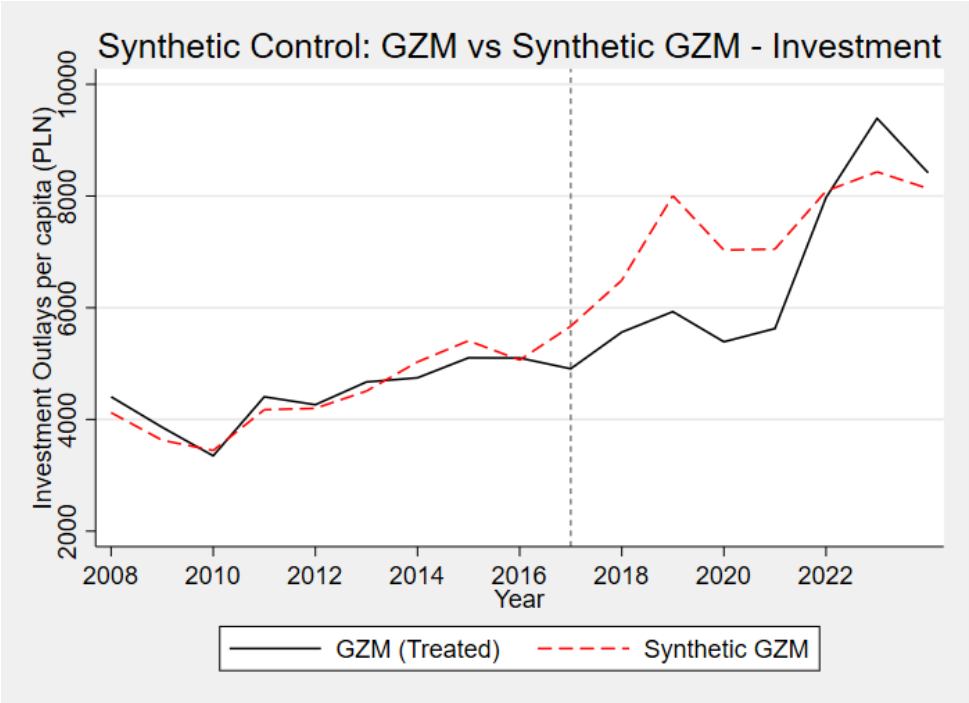


Figure 14: Investment per capita: GZM vs synthetic control

Figures 14 and 15 compare the treated unit with its synthetic counterpart and show the corresponding treatment gap over time, regarding investment per capita.

The results for investment per capita are more complex than those obtained for GDP per capita and average wages as, even before treatment, the investment series displays more pronounced fluctuations than the other two outcomes, which is consistent with the inherently cyclical nature of investment behaviour. The pre-treatment fit is therefore weaker than for wages and GDP per capita, although still acceptable according to the diagnostic statistics reported above, which means that the post-treatment results for investment should be interpreted with greater caution.

The post-treatment pattern begins with a clear deterioration. From 2017 onwards, the GZM falls below the synthetic control, and this negative gap widens sharply up to 2019 when the gap reaches roughly 25%, indicating that, in the first years following the establishment of the metropolitan authority, investment activity in the treated region

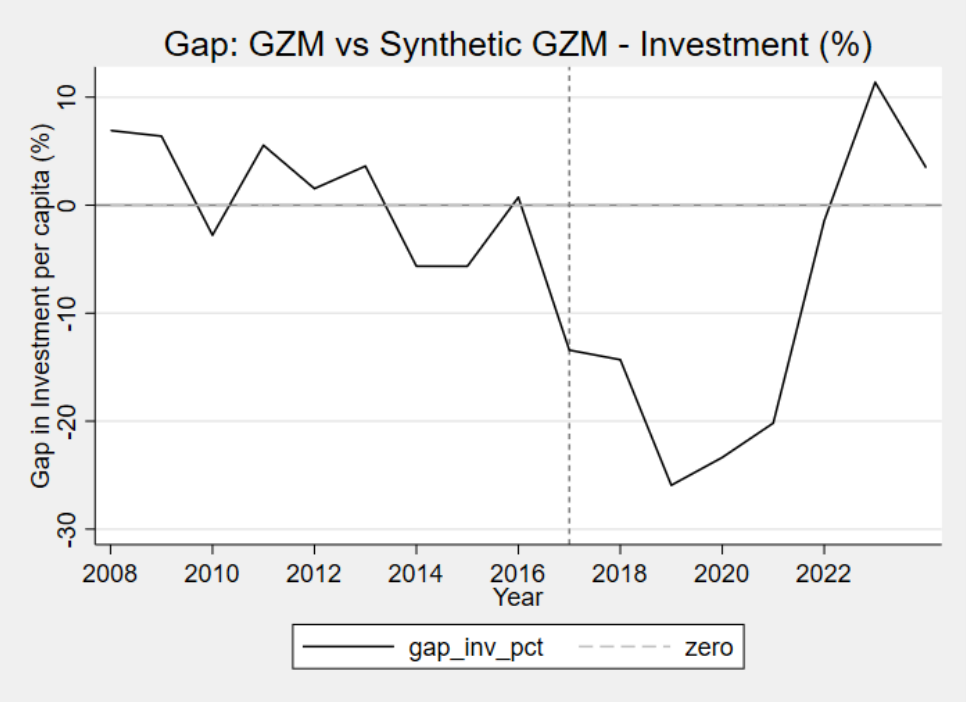


Figure 15: Treatment gap: investment per capita

underperformed relative to the counterfactual.

However, unlike the wage series, the investment gap does not remain persistently negative as, from 2020 onwards, the trajectory changes direction with the gap narrowing in 2021 and then turning clearly positive in 2022, with the GZM exceeding the synthetic control by over 10%. This positive divergence remains visible in 2023 and 2024, although it moderates somewhat after the initial peak.

This reversal is analytically important as it suggests that the relationship between metropolitan reform and investment may be characterized by delayed adjustment rather than immediate gains. One possible interpretation is that institutional restructuring initially generated uncertainty, coordination costs, or implementation delays that temporarily reduced investment performance, however, over time, the new metropolitan framework may have improved the region's capacity for strategic planning, investment coordination, or capital attraction, eventually producing more favorable outcomes.

At the same time, investment is the outcome for which causal interpretation must be most restrained as the strong post-2021 recovery may be reflecting the influence of broader cyclical forces, post-pandemic recovery dynamics, or sector-specific investment shocks. Because investment is more volatile and more sensitive to short-term fluctuations than wages or GDP per capita, the observed positive divergence cannot be interpreted as

conclusive evidence of a structural metropolitan effect without further robustness analysis.

The investment results therefore occupy an intermediate position within the broader empirical findings of the dissertation. They do not support an immediate positive impact of metropolitan status in the years directly following the reform, since the initial effect is clearly negative, yet they also differ from the wage results in that the later period shows signs of possible improvement. The most cautious conclusion is that metropolitan governance may have contributed to stronger investment dynamics only with a lag, but that this finding remains provisional and should be interpreted in light of the volatility of the underlying series.

5.4 Robustness Checks

5.4.1 Placebo test in space

To evaluate the robustness of the estimated treatment effects and to assess whether the post-treatment divergences observed in the main analysis may instead reflect random variation, a placebo test in space is implemented. This procedure consists of assigning the treatment to each unit in the donor pool and estimating synthetic controls under the counterfactual assumption that those regions had also been exposed to the intervention in 2017 with the resulting distribution of placebo effects providing a benchmark against which the magnitude and distinctiveness of the estimated effect for the treated unit can be assessed.

The underlying logic is that if the divergence observed for the treated unit is unusually large relative to those obtained for placebo units, this strengthens the interpretation that the estimated effect is not driven by chance, however, if similar or larger divergences are frequently observed among untreated regions, the credibility of a causal interpretation is weakened. Inference is therefore based on the ratio of post-treatment to pre-treatment root mean squared prediction error (RMSPE), which captures the extent to which the fit deteriorates after the intervention relative to the pre-treatment period with an empirical p-value being computed as the proportion of placebo units with an RMSPE ratio equal to or greater than that of the treated unit.

Figures 16, 17, and 18 present the distribution of treatment gaps for all units, where the black line corresponds to the treated unit, GZM, and the grey lines correspond to

placebo estimates for the donor regions.

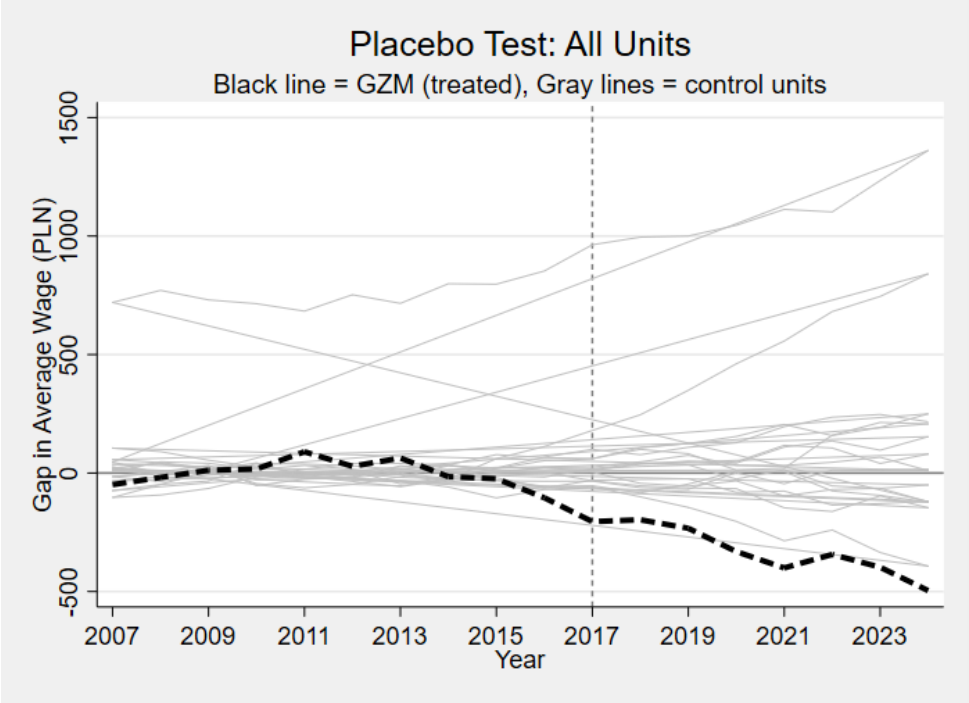


Figure 16: Placebo test for average wages

For average wages, the placebo test provides relatively strong support for the main findings. The treated unit displays a clear, persistent, and progressively widening negative divergence after the intervention, whereas most placebo units fluctuate around zero without exhibiting a comparable sustained pattern. Although a limited number of control regions also show sizeable deviations, the trajectory of the GZM remains among the most pronounced in the donor pool which is confirmed by the RMSPE-based inference, where the treated unit ranks second among all units in terms of the post-treatment to pre-treatment RMSPE ratio, corresponding to an empirical p-value of approximately 0.125 with the ranking remains largely unchanged after restricting the sample to units with acceptable pre-treatment fit, with the p-value remaining close to 0.13. These results indicate that the wage effect is not unique, but still relatively uncommon within the donor pool, reinforcing the interpretation of a meaningful and sustained post-treatment underperformance in wages, although the statistical strength of the result should be described as moderate rather than conclusive.

The placebo evidence for GDP per capita is considerably weaker. Although the treated unit exhibits a negative divergence in the immediate post-treatment period, this pattern is neither persistent nor clearly distinguishable from the distribution of placebo outcomes, as

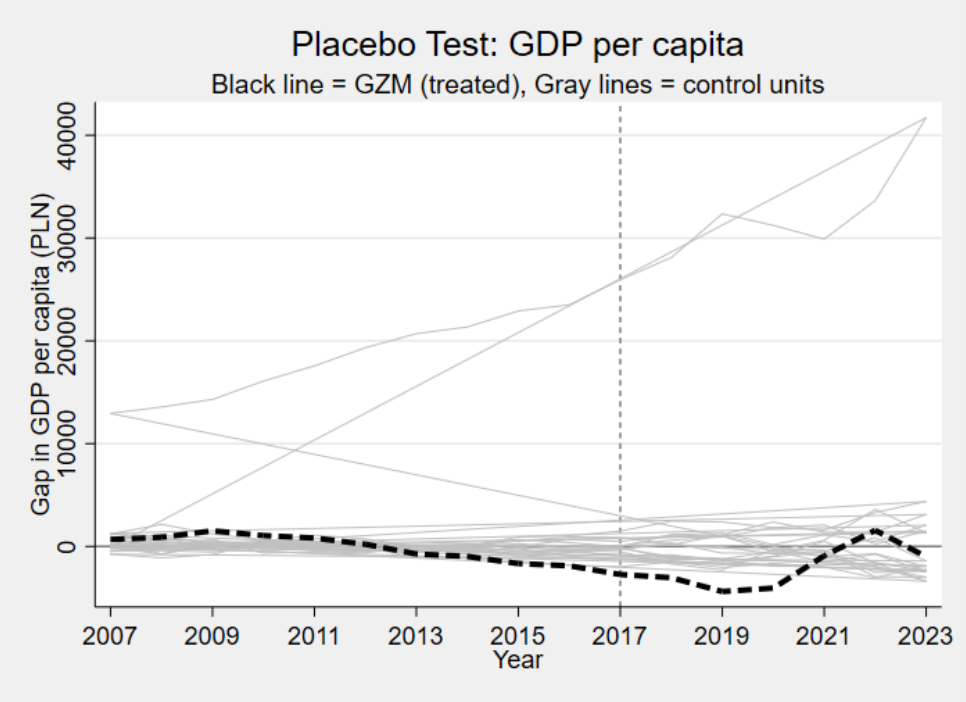


Figure 17: Placebo test for GDP per capita

a substantial number of control units display RMSPE ratios that exceed that of the treated unit. As a result, the GZM occupies a relatively low position in the ranking, approximately 11th out of 16 units, which translates into an empirical p-value of around 0.69, which remains high even after applying the standard filters based on pre-treatment fit, suggesting that the observed deterioration in GDP per capita is not unusual relative to the donor pool and may therefore reflect broader macroeconomic dynamics or region-specific shocks rather than a distinct effect of metropolitan governance reform. Consequently, while the graphical analysis indicates a period of relative underperformance, the placebo test does not provide strong support for a causal interpretation, and the GDP per capita estimates should be treated with caution.

The placebo results for investment per capita present a more nuanced picture, combining relatively strong statistical evidence with a more ambiguous economic interpretation. Visually, the trajectory of the treated unit does not appear as clearly distinguishable as in the wage specification, reflecting both the substantial dispersion of placebo gaps and the inherently volatile nature of investment dynamics. However, when evaluated through the RMSPE ratio, the treated unit emerges as the most extreme observation in the sample, ranking first among all units and yielding an empirical p-value of approximately 0.0625 in the unfiltered specification, when the comparison is restricted to units with acceptable

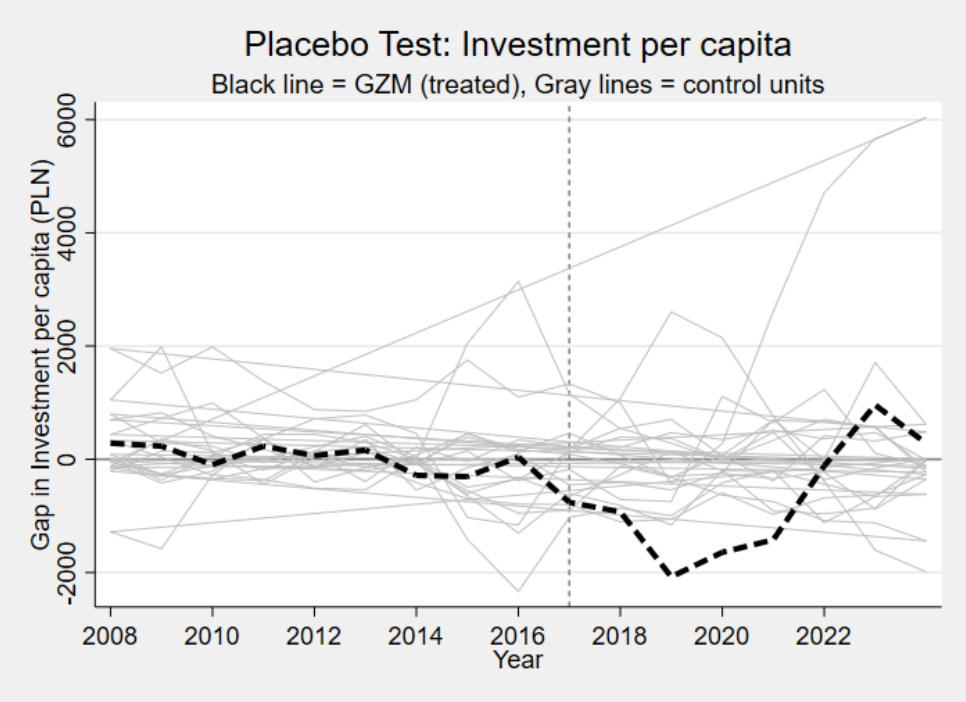


Figure 18: Placebo test for investment per capita

pre-treatment fit, the p-value remains relatively low, ranging between approximately 0.08 and 0.11 depending on the filtering criterion.

This contrast between graphical ambiguity and statistical extremeness is consistent with the cyclical character of investment. The placebo evidence therefore provides comparatively strong statistical support for an effect on investment per capita, although the substantive interpretation remains more complex, given the presence of both an initial decline and a subsequent recovery.

To summarize the placebo-based inference across all outcomes, Table 12 reports the RMSPE ranking of the treated unit and the corresponding empirical p-values.

Outcome	Rank (out of 16)	P-value	Inference strength
Average wages	2	0.125	Moderate
GDP per capita	11	0.69	Weak
Investment per capita	1	0.0625	Relatively strong (statistical)

Table 12: Summary of placebo test results. Rank refers to the position of the treated unit in the distribution of RMSPE ratios, with 1 indicating the most extreme observation.

Overall, the placebo-in-space analysis refines and qualifies the main empirical findings of this chapter. The wage results remain the most compelling from an economic perspective, as they combine a persistent and monotonic divergence with relatively strong,

though not extreme, statistical support. The GDP per capita results are not robust to the placebo test and therefore do not provide strong evidence of a causal effect. In contrast, the investment results display the strongest statistical signal, as the treated unit ranks as the most extreme observation, although their economic interpretation is less straightforward due to the volatility and non-linear dynamics of investment.

Additionally, a in-space robustness test was conducted redefining the treated unit as the full NUTS II region of Slaskie in order to address potential comparability issues between the aggregated GZM (constructed from NUTS III regions) and the NUTS II donor pool. By aligning the territorial level of the treated unit with that of the control regions, this specification tests whether the baseline results are sensitive to the construction of the treated unit.

The results remain broadly unchanged with average wages display a persistent negative gap after 2017, GDP per capita shows a period of underperformance followed by partial recovery, and investment exhibits an initial decline followed by a later positive reversal. Although the distribution of donor weights varies across specifications, the same core regions continue to receive positive weights, indicating stability in the composition of the synthetic counterfactual. The similarity of these patterns confirms that the main findings are not driven by the aggregation of sub-regional data and instead reflect broader regional economic dynamics.

Taken together, these findings highlight the importance of distinguishing between statistical and economic robustness. While the placebo tests identify investment as the outcome with the most extreme relative deviation, the clearest and most interpretable economic pattern emerges in the case of wages, reinforcing the need for a cautious and multidimensional interpretation of the effects of metropolitan governance reform, recognizing that different outcome variables may capture distinct adjustment mechanisms and may respond with varying degrees of immediacy, persistence, and volatility.

5.4.2 Leave-One-Out Analysis

As an additional robustness check, a leave-one-out exercise is conducted by excluding Malopolskie (ID = 7) from the donor pool and re-estimating the synthetic control for all outcome variables which is motivated by two complementary considerations. First, Malopolskie receives a substantial weight in the baseline specifications, particularly in the

wage and GDP per capita models, which raises the possibility that the estimated effects may be disproportionately influenced by a single donor region. Second, Malopolskie is geographically adjacent to the treated unit, which creates the potential for spillover effects and weakens, at least in principle, the assumption that donor regions remain unaffected by the institutional reform.

An additional motivation emerges from the placebo analysis discussed in the previous subsection, as in the wage specification, Malopolskie is the only donor region whose post-treatment RMSPE ratio exceeds that of the treated unit, suggesting that it is an unusually extreme observation within the donor pool. Excluding it therefore provides a demanding test of whether the baseline results depend on the presence of a particularly influential control unit whose dynamics may not be fully representative of the counterfactual trend.

Table 13 reports the redistribution of donor weights after excluding Malopolskie, restricting the display to regions that receive positive weight in at least one specification. The table shows that the synthetic control adapts in a flexible manner to the removal of this donor, particularly in the wage and investment specifications, where new regions such as Podkarpackie, Pomorskie, and Lódzkie enter the synthetic combination. At the same time, the GDP per capita specification becomes even more concentrated, with Dolnoslaskie absorbing nearly the entire synthetic weight, which is itself informative about the structure of the donor pool and the degree to which a small number of comparable regions are capable of reproducing the treated units pre-treatment path.

	Average Wages		GDP per capita		Investment per capita	
Region	Baseline	No Malopolskie	Baseline	No Malopolskie	Baseline	No Malopolskie
Dolnoslaskie	0.346	0.522	0.000	0.974	0.668	0.625
Lódzkie	0.000	0.000	0.000	0.000	0.000	0.203
Malopolskie	0.389	0.000	0.659	0.000	0.174	0.000
Mazowieckie	0.265	0.203	0.341	0.026	0.158	0.125
Podkarpackie	0.000	0.076	0.000	0.000	0.000	0.000
Pomorskie	0.000	0.198	0.000	0.000	0.000	0.047

Table 13: Comparison of donor weights between the baseline and leave-one-out specifications (excluding Malopolskie), including only regions with positive weight in at least one specification.

Figures 19, 20, and 21 present the re-estimated trajectories, while Table 14 compares the post-treatment to pre-treatment RMSPE ratios between the baseline and leave-one-out specifications. Taken together, these results indicate that the main findings are not

driven by the inclusion of Malopolskie, although the magnitude of the effects does change in some cases.

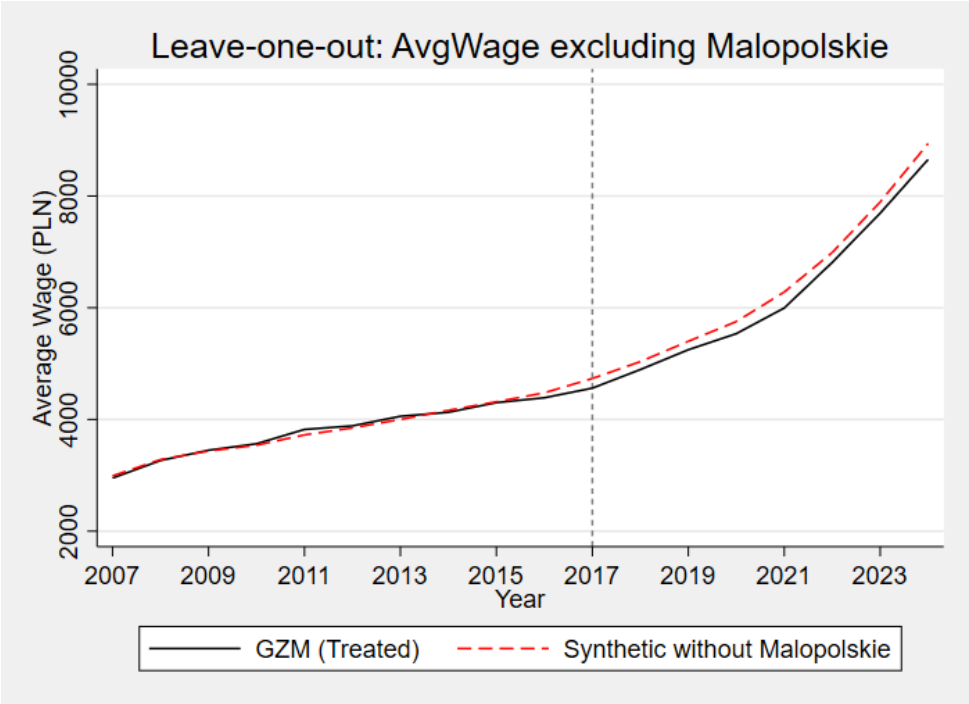


Figure 19: Leave-one-out synthetic control: average wages (excluding Malopolskie).

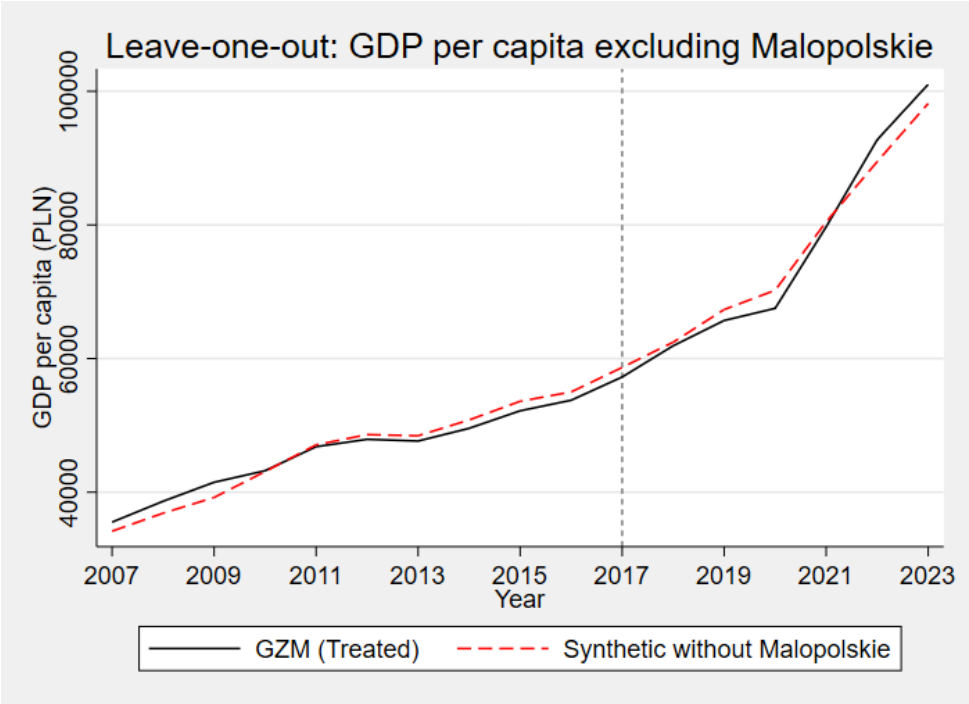


Figure 20: Leave-one-out synthetic control: GDP per capita (excluding Malopolskie).

For average wages, the leave-one-out exercise confirms that the main result is not driven by a single donor region. Although the RMSPE ratio declines from 6.46 to 4.09,

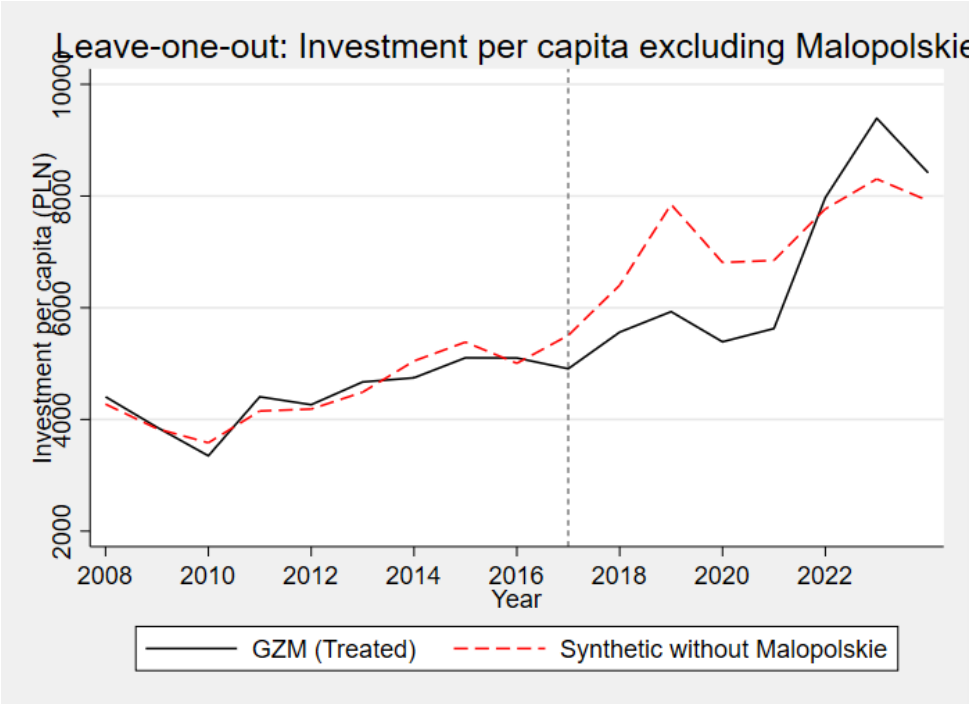


Figure 21: Leave-one-out synthetic control: investment per capita (excluding Malopolskie).

Outcome	Baseline RMSPE Ratio	Excluding Malopolskie	Change (%)
Average wages	6.46	4.09	-36.7%
GDP per capita	2.47	1.66	-32.8%
Investment per capita	5.65	5.55	-1.8%

Table 14: Leave-one-out robustness check excluding Malopolskie. RMSPE ratios (post/pre) for baseline and leave-one-out specifications.

the post-treatment gap remains negative, persistent, and increasingly large over time. The synthetic control continues to track the treated unit closely in the pre-treatment period, and the post-treatment divergence retains the same direction and temporal profile as in the baseline specification, suggesting that the wage effect is robust to the exclusion of a geographically proximate and heavily weighted donor, even if the magnitude of the divergence is somewhat attenuated.

The GDP per capita specification deserves a more nuanced interpretation as, in the baseline results, the post-treatment path for GDP per capita already appeared weaker than that of wages, with the leave-one-out exercise confirming this outcome is the most sensitive of the three to changes in donor composition. After excluding Malopolskie, the RMSPE ratio falls from 2.47 to 1.66, which indicates that the post-treatment deterioration relative to the pre-treatment fit becomes less pronounced, more importantly, the

donor structure changes substantially, with Dolnoslaskie receiving almost the full weight in the synthetic control, suggesting that the counterfactual for GDP per capita is being constructed from a very narrow set of comparable regions. This concentration is not inherently problematic, but it does imply that the GDP specification is more fragile than the others, because the treated unit can only be approximated well by a limited number of donors. Substantively, the result remains consistent with a period of relative underperformance after 2017, followed by partial recovery and later fluctuations, but the evidence does not support a strong or stable treatment effects with the GDP per capita outcome appearing to capture some post-treatment disruption, yet the magnitude and persistence of this pattern are insufficient to support a confident causal interpretation.

By contrast, the investment per capita results are almost unchanged as the pattern of an initial post-treatment decline followed by a pronounced recovery remains visible, and the RMSPE ratio declines only marginally from 5.65 to 5.55 which indicates that the investment specification is highly robust to the exclusion of Malopolskie and, more broadly, that the observed deviation is not the result of a single influential donor. At the same time, the economic interpretation of the investment effect remains more complex, given the volatility of the series and the non-linear shape of the post-treatment path.

Overall, the leave-one-out analysis provides strong evidence that the baseline results are not being driven by a single influential donor region. It also confirms that the wage and investment findings are structurally robust, whereas the GDP per capita result is more sensitive to donor composition and therefore should be interpreted with greater caution which is consistent with the broader empirical findings of the chapter.

5.4.3 Alternative Treatment Timing

As a final robustness check, the treatment year is shifted from 2017 to 2018 and also to an earlier date, 2015. While the 2018 specification accounts for the delayed operational capacity of the metropolitan authority, the 2015 specification is motivated by the visual inspection of the treatment gaps, particularly for average wages and, to a lesser extent, GDP per capita. In both cases, the treated unit begins to exhibit a systematic divergence from its synthetic counterpart prior to the formal establishment of the GZM in 2017. This pattern raises the possibility of pre-treatment dynamics that could reflect early coordination effects, policy anticipation, or structural changes already underway in the

region.

If a similar divergence is observed when treatment is artificially assigned to 2015, this would suggest that the estimated post-2017 effects may partly capture pre-existing trends rather than the causal impact of metropolitan governance. Conversely, the absence of a clear effect under this specification would reinforce the interpretation that the observed post-treatment dynamics are linked to the institutional reform itself.

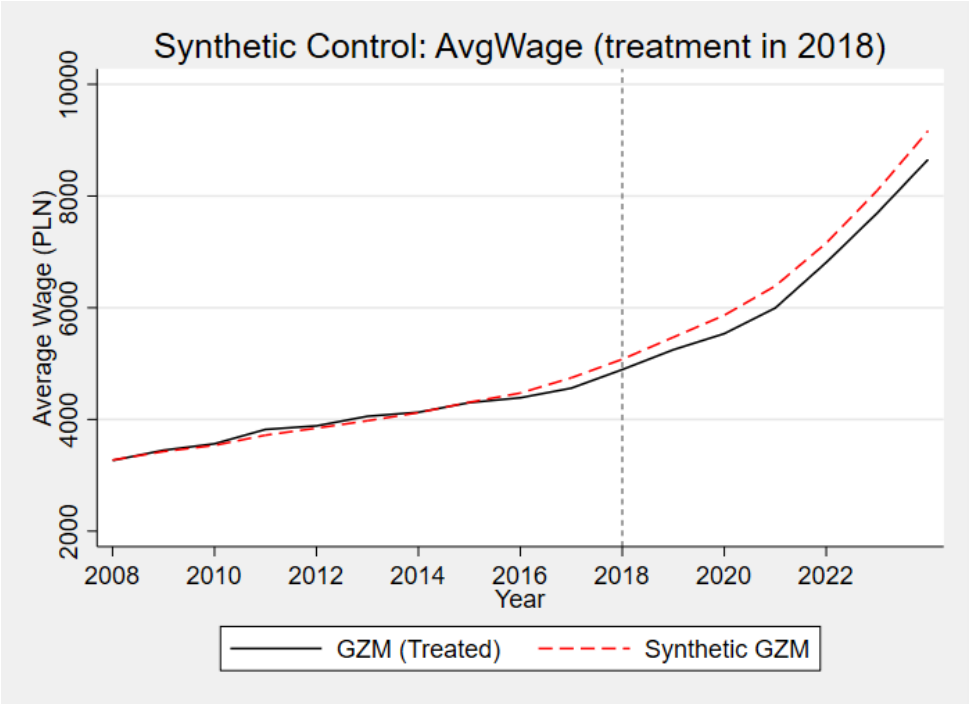


Figure 22: Synthetic control for average wages with treatment year set to 2018.

Figures 22, 23, and 24 present the synthetic control estimates under the alternative 2018 specification. Across all outcomes, the synthetic trajectories closely track the treated unit in the pre-treatment period, confirming that the model retains a satisfactory fit. This is further supported by the stability of donor weights, which remain largely unchanged relative to the baseline specification.

For average wages, the synthetic control continues to rely on Malopolskie (0.500), Mazowieckie (0.282), and Dolnoslaskie (0.218). In the case of GDP per capita, the composition remains identical to the baseline, with Malopolskie (0.671) and Mazowieckie (0.329) fully determining the counterfactual. Similarly, investment per capita continues to be driven primarily by Dolnoslaskie (0.626), with smaller contributions from Malopolskie (0.215) and Mazowieckie (0.159). This stability reinforces the robustness of the counterfactual construction.

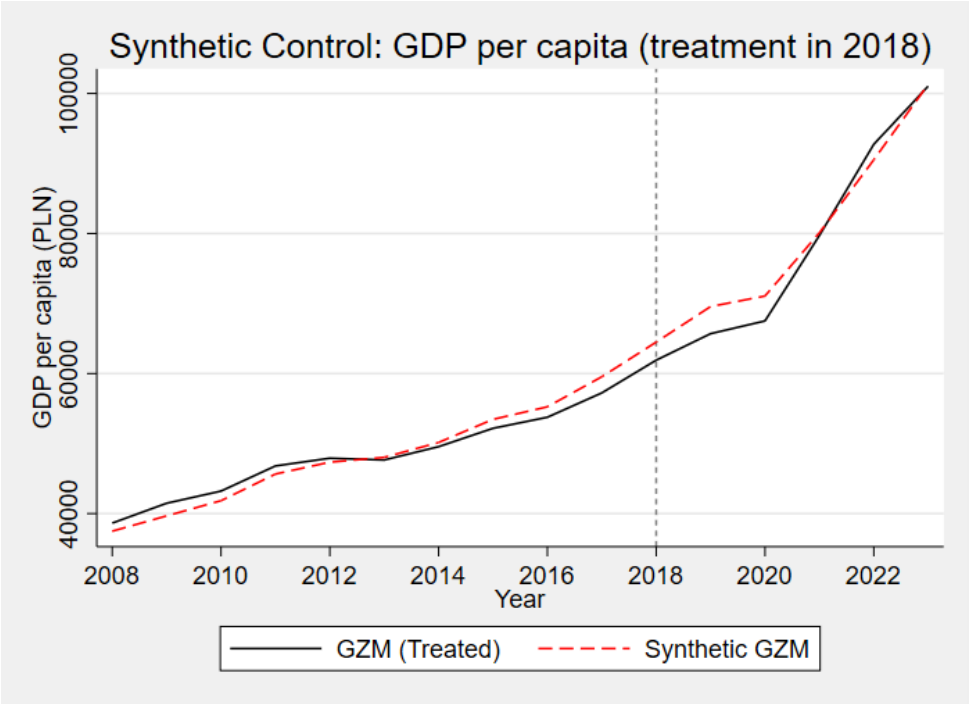


Figure 23: Synthetic control for GDP per capita with treatment year set to 2018.

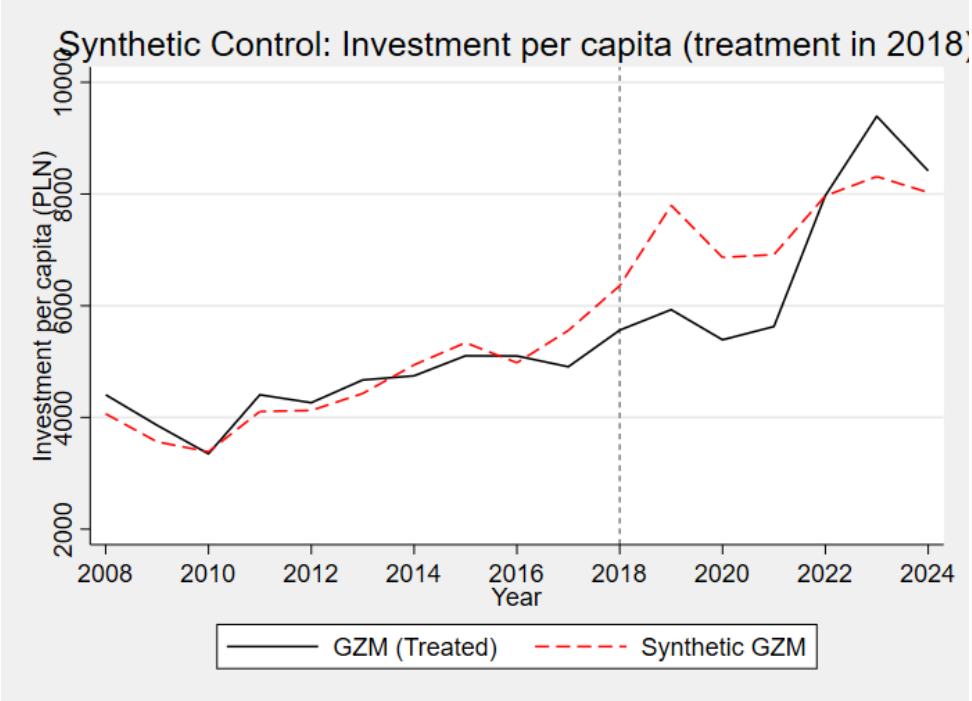


Figure 24: Synthetic control for investment per capita with treatment year set to 2018.

Post-treatment dynamics are also broadly unchanged. For average wages, the gap turns negative immediately after treatment and widens over time, closely mirroring the baseline results. The RMSPE ratio of 4.54 indicates a clear post-treatment divergence, suggesting that the negative wage effect is not sensitive to the precise timing of the reform.

For GDP per capita, the results remain consistent with the baseline pattern, with an initial negative divergence followed by partial recovery and subsequent fluctuations. However, the lower RMSPE ratio (1.92) reflects a weaker structural break and supports a more cautious interpretation.

Investment per capita again exhibits the same non-linear trajectory as in the baseline, with an initial decline followed by a strong recovery and positive divergence in later years. The persistence of this pattern, together with a high RMSPE ratio (5.31), reinforces the interpretation of delayed adjustment dynamics in response to the reform.

The 2015 specification provides an important robustness and falsification exercise for average wages and GDPpc. The same exercise is not extended to investment per capita, as, unlike average wages and, to a lesser extent, GDP per capita, the investment series does not display a clear and systematic deviation from the synthetic control prior to 2017. Instead, it is characterized by higher volatility and cyclical fluctuations that are broadly similar between the treated unit and its synthetic counterpart in the pre-treatment period. As a result, assigning an earlier treatment date would be less informative in this case, since any observed divergence could not be clearly distinguished from normal cyclical variation.

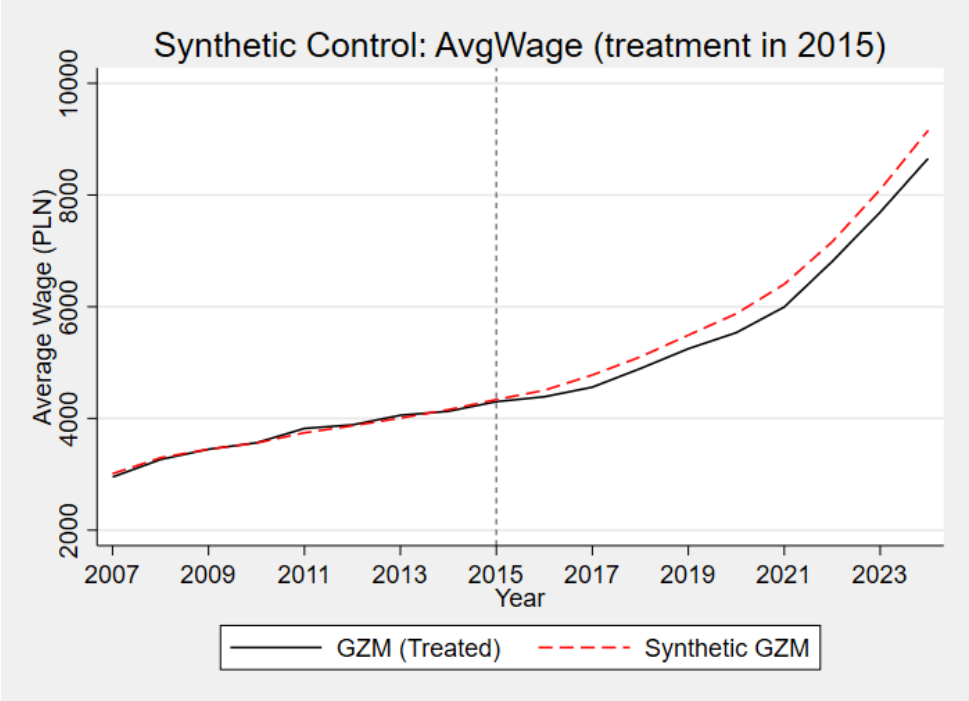


Figure 25: Synthetic control for average wages with treatment year set to 2015.

In the case of average wages, as shown in figure 25 results show a clear and substantial

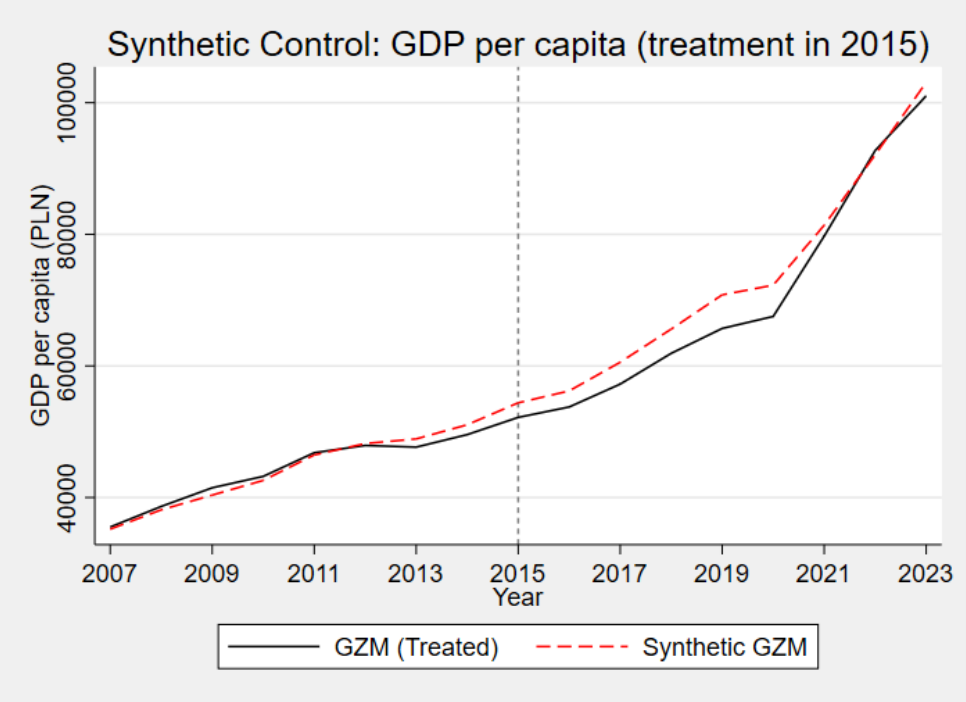


Figure 26: Synthetic control for GDP per capita with treatment year set to 2015.

divergence between the treated unit and the synthetic control even when treatment is artificially assigned to a pre-reform year. The RMSPE ratio reaches approximately 7.46, which is higher than in the baseline specification, indicating a strong deterioration in fit after the placebo treatment date, suggesting that part of the negative wage gap observed after 2017 may reflect pre-existing trends rather than a purely causal effect of metropolitan governance. However, it should be noted that a shorter pre-treatment calibration period tends to produce lower pre-treatment RMSPE values through overfitting, mechanically inflating the ratio independently of any genuine treatment effect.

A similar, though less pronounced, pattern emerges for GDP per capita, as seen in figure 26 The RMSPE ratio is approximately 3.69, indicating a noticeable but more moderate divergence under the 2015 specification. As in the baseline results, the post-treatment trajectory is characterized by an initial period of underperformance followed by partial recovery, suggesting that GDP dynamics were already evolving prior to the formal establishment of the metropolitan authority.

Taken together, these findings indicate that some degree of divergence between the GZM and its synthetic counterpart predates the reform, particularly in the case of wages. This weakens a strictly causal interpretation of the post-2017 effects and suggests the presence of underlying structural dynamics already affecting the treated region. At the

same time, the persistence and amplification of these divergences after 2017, as well as the robustness of the results under the 2018 specification, indicate that the reform may still have contributed to shaping post-treatment outcomes, even if it was not the sole driver of the observed patterns.

5.5 Discussion of Results

The empirical evidence obtained in the previous sections provides only partial support for the hypotheses formulated in the methodology. While the synthetic control estimates and the accompanying robustness checks reveal a coherent set of post-treatment divergences, the direction, timing, and persistence of these effects vary substantially across outcomes, suggesting that metropolitan governance should not be understood as a mechanical source of immediate economic gains, instead pointing to a more differentiated pattern in which the consequences of the reform depend both on the outcome under consideration and on the temporal horizon over which the effects are observed.

In all three specifications, the GZM enters the treatment period as a relatively strong region, with wages, GDP per capita, and investment per capita already above the national average in the pre-treatment period implying that the metropolitan authority was created in an area that already displayed features associated with agglomeration and higher economic performance. At the same time, the pre-treatment trajectories are not identical across outcomes with Wages and GDP per capita exhibiting broadly parallel movement relative to the synthetic control in the years before 2017, although GDP per capita already shows signs of gradual weakening in the later pre-treatment period. Investment per capita is more volatile, which is consistent with the cyclical nature of investment, but even there the synthetic control provides an acceptable counterfactual benchmark. Taken together, these patterns indicate that the post-treatment divergences identified in the main results are unlikely to be explained solely by differences in initial levels, although the GDP per capita series suggests that the treated region may have entered the intervention period with some pre-existing loss of momentum.

The wage results are the most economically striking and the most surprising given the theoretical expectations motivating the dissertation. Hypothesis H1 predicted that the creation of a metropolitan area would increase average wages relative to the counterfactual

trajectory, on the assumption that stronger territorial coordination, better infrastructure integration, and more effective metropolitan governance would support agglomeration economies and translate into higher labour productivity and earnings. Despite this, the empirical results point in the opposite direction with average wages in the GZM tracking the synthetic control closely in the pre-treatment period, but after 2017 the gap turns negative and becomes progressively larger over time, indicating that wage growth in the treated region slows relative to the estimated counterfactual. This pattern is reinforced by the placebo test in space, which shows that the wage gap is not unique but is still relatively uncommon within the donor pool, and by the leave-one-out analysis, which demonstrates that the result does not depend on the inclusion of Malopolskie, the most influential donor in the baseline specification.

Substantively, this suggests that the formal creation of the metropolitan authority was not sufficient to generate visible short-run labour market gains. One possible interpretation is that metropolitan governance alone does not directly affect wages, but rather works only through intermediary mechanisms such as transport integration, business upgrading, labour market matching, or knowledge spillovers, all of which require time to materialize and, in some cases, a much deeper institutional capacity than that provided by formal status alone. Another possibility is that the reform created some initial coordination costs or administrative friction without yet generating compensating efficiency gains. In either case, the wage results do not support H1, and they are best interpreted as evidence that metropolitan status, at least in this case, did not translate into a wage premium over the period observed.

The GDP per capita results are more ambiguous and require a more cautious interpretation. Hypothesis H2 predicted that metropolitan status would increase GDP per capita relative to the counterfactual, reflecting stronger output growth and more efficient regional economic organization. The main synthetic control estimates do not confirm this expectation in a stable way as, although the GZM initially outperforms the synthetic control in the earlier pre-treatment years, the gap narrows and turns negative before treatment, indicating a gradual loss of relative momentum. After 2017, the divergence becomes more pronounced and GDP per capita falls substantially below the counterfactual path, particularly in the years around 2019 and 2020, however, this pattern does not persist uniformly as the gap starts to narrow and becomes positive in 2022, then returning to

negative territory in 2023, which implies that the estimated effect is not monotonic and is therefore difficult to characterize as a clear treatment response. The placebo results also weaken the causal interpretation, since the GDP per capita effect is not unusual relative to placebo regions and thus does not stand out as a distinctive post-treatment deviation. The leave-one-out exercise reinforces this conclusion by showing that GDP per capita is the most sensitive of the three outcomes to donor composition, with the pre-treatment fit and the post-treatment ratio both deteriorating more than in the other specifications.

This pattern suggests that GDP per capita may be too aggregate an indicator to capture the early economic consequences of metropolitan governance reform. Unlike wages, which are more directly linked to labour market conditions, or investment, which may respond to expectations and policy coordination more quickly, GDP per capita reflects a broader combination of productivity, sectoral composition, public expenditure, and external macroeconomic conditions, therefore, it is plausible that any benefits of metropolitan governance would take longer to appear in GDP data, especially if the reform initially generated transitional costs or if the region was already experiencing some relative slowdown before 2017. The evidence does not support H2 in a strong sense, although it does leave open the possibility that a longer horizon might eventually reveal more systematic gains.

Investment per capita occupies an intermediate position between the other two outcomes and is perhaps the most analytically interesting result in the chapter. Hypothesis H3 predicted that metropolitan status would increase investment per capita relative to the counterfactual, on the assumption that stronger coordination and institutional capacity would improve the region's ability to attract and mobilize capital. The baseline results do not show an immediate positive effect, instead, the treated unit falls below the synthetic control in the first post-treatment years, with the gap widening sharply before 2020. This initial decline could be interpreted as an adjustment phase, during which the institutional reform had not yet translated into visible investment gains and may even have temporarily disrupted existing patterns of capital formation. What makes the investment result distinctive, however, is that the gap subsequently reverses and becomes positive in the later years of the sample, suggesting that, unlike average wages and unlike GDP per capita, investment may have responded with a lag.

This interpretation is supported, though not definitively proven, by the robustness

checks. The placebo evidence in space identifies investment as the outcome with the most extreme post-treatment divergence relative to the donor pool, providing comparatively strong statistical support. At the same time, the graphical pattern remains less straightforward than in the wage specification, reflecting the inherently volatile and cyclical nature of investment dynamics. Further support is provided by the alternative territorial specification using the full Slaskie region as the treated unit, which reproduces the same qualitative pattern for all variable specification.

The leave-one-out analysis shows that the result is almost unchanged when Malopolskie is excluded, suggesting that the investment pattern is not driven by a single influential donor region. Similarly, the alternative treatment-year specification, in which 2018 is treated as the starting point, leaves the broad trajectory essentially unchanged, reinforcing the stability of the observed dynamics.

However, the 2015 placebo timing test introduces an important qualification to the interpretation of the results, suggesting that part of the post-2017 divergence, particularly in the case of wages, may reflect pre-existing trends rather than a purely causal effect of metropolitan governance. This does not invalidate the main results, as the divergence becomes larger and more persistent after 2017 and remains robust across other specifications. However, it weakens a strictly causal interpretation and indicates that the reform may have interacted with, or failed to reverse, underlying structural dynamics that were already affecting the region prior to its implementation.

Taken together, these findings suggest that the investment effect is the most statistically robust of the three outcomes, even if its economic interpretation remains more complex due to the presence of both an initial decline and a subsequent recovery.

An important implication of these results is that metropolitan governance effects, if they exist, are unlikely to emerge uniformly across economic indicators with data being more consistent with a staggered adjustment process than with an immediate and synchronized response. Investment appears to be the first variable that may eventually benefit from the reform, but only after an initial period of disruption or delay. GDP per capita responds more slowly and in a less stable manner, which may reflect the fact that it is a broader and more inert aggregate measure. Wages, finally, do not show evidence of improvement within the time horizon of this analysis and instead point to a sustained relative underperformance. This temporal ordering is not a definitive causal law, but it is

a plausible interpretation of the patterns observed in the data, and it is consistent with the idea that institutional reforms often take time to influence economic outcomes, with some channels materializing sooner than others.

The results also highlight the difference between short-run and medium-run effects as despite the post-treatment window observed in this dissertation being long enough to detect clear divergences, it may still be too short to capture the full effects of a governance reform whose economic consequences unfold gradually. This is especially relevant in the case of wages, where labour market adjustments are typically slow, and GDP per capita, where the translation of institutional reform into aggregate output may take several years, however, the evidence available here suggests that, at least within the observed period, such delayed benefits are either limited or incomplete with the strongest case for a lagged effect concerning investment, while the wage results continue to point in the opposite direction.

Overall, the discussion of results leads to three central conclusions. First, H1 is rejected, because wages do not increase relative to the counterfactual and instead show a persistent negative gap. Second, H2 is not supported in a robust way, because GDP per capita exhibits instability, limited persistence, and weak placebo support. Third, H3 receives the most qualified support, since investment eventually improves relative to the synthetic control and the associated robustness checks are comparatively favorable, although the economic interpretation remains cautious. The combined evidence therefore points to a reform that did not generate immediate broad-based gains, but may have created delayed and uneven effects across different outcomes which is consistent with a nuanced reading of metropolitan governance as a potentially important but highly conditional driver of regional development.

5.6 Limitations

While the empirical strategy adopted in this dissertation provides a structured and methodologically grounded framework for estimating the economic impact of metropolitan governance, it is nevertheless subject to a number of limitations that must be explicitly acknowledged in order to ensure a careful and balanced interpretation of the results.

The first and most important limitation concerns the external validity of the findings,

particularly in relation to the Minho context that motivates the broader research question of the dissertation. The quantitative analysis relies on a single treated case, the GZM, which was selected on the basis of clear methodological and substantive criteria, including the existence of a precisely defined treatment date, the presence of meaningful institutional competences, and a poly-centric urban structure that enhances its comparability with the Minho region. However, despite these similarities, the GZM remains embedded within a distinct national institutional framework, characterized by different levels of fiscal decentralization, administrative capacity, and intergovernmental coordination, which imply that the estimated treatment effects cannot be directly transposed to the Portuguese case without qualification. Rather than providing a predictive assessment of what a Minho Metropolitan Area would necessarily produce, the results should instead be interpreted as an indication of the potential magnitude and direction of metropolitan governance effects under conditions in which the institutional design is relatively well-developed, thereby serving as a benchmark against which the Portuguese case can be evaluated.

A second limitation relates to the issue of territorial comparability between the treated unit and the donor pool. The GZM was constructed through the aggregation of five NUTS III regions in order to approximate the institutional scope of the reform, while the donor pool consists of NUTS II regions. This asymmetry raises concerns, as the aggregated GZM represents a relatively dense and urbanized system, whereas many donor regions include more heterogeneous territories with significant rural components.

This concern is partially addressed by the robustness check using the full NUTS II region of Slaskie as the treated unit, which aligns the territorial level of treatment and controls. The results remain qualitatively unchanged, suggesting that the observed dynamics are not driven by the aggregation procedure, reflecting underlying patterns affecting the region as a whole. While this strengthens the credibility of the results, it also implies that the estimates capture wider regional dynamics rather than a fully isolated metropolitan effect.

A further limitation concerns the monetary nature of the variables used in the analysis as all outcomes are expressed in current Polish zloty (PLN), implying that the estimates are based on nominal rather than real values. While the synthetic control framework partly mitigates this issue by focusing on differences between the treated unit and its synthetic counterpart, regional variation in price dynamics may still affect the interpretation

of the results.

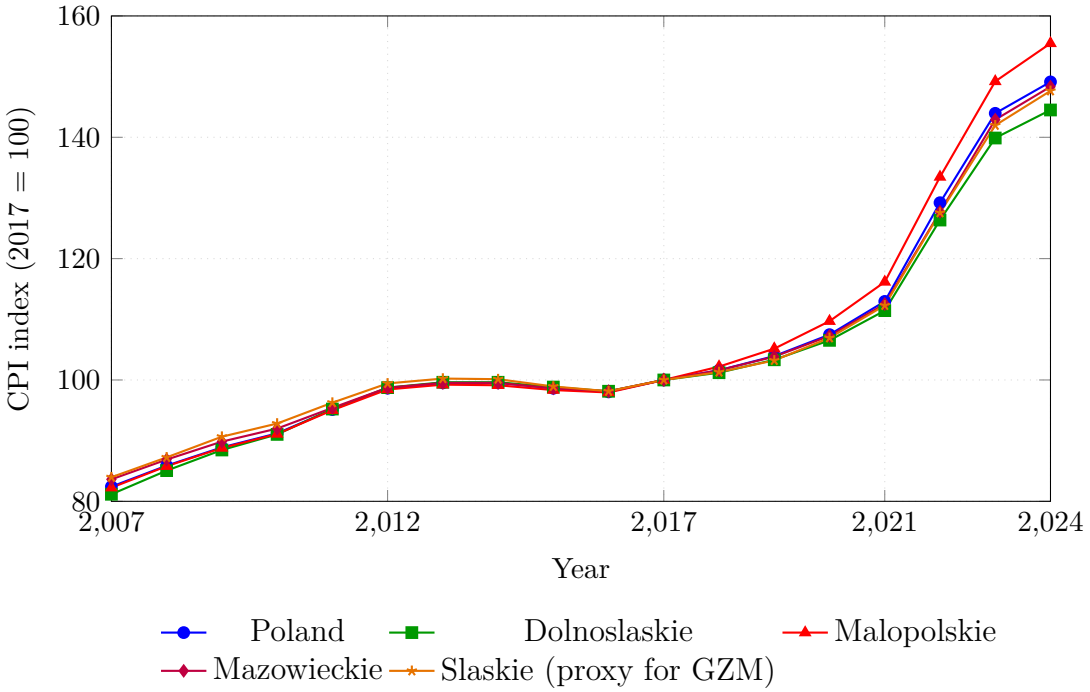


Figure 27: Regional consumer price index (CPI), data from the Polish Local Data Bank rebased to 2017 = 100. Slaskie is used as a proxy for the GZM.

Two strategies are used to limit this concern. First, post-treatment effects are evaluated primarily through percentage gaps, which reduces the influence of common nominal trends. Second, regional inflation patterns were examined using consumer price index data rebased to 2017 = 100. As shown in Figure 27, the inflation trajectory of Slaskie, used as a proxy for the GZM, is broadly aligned with those of the main donor regions, Dolnoslaskie, Malopolskie, and Mazowieckie.

The main divergence arises in Malopolskie, which exhibits higher inflation after 2021, however, this effect is offset by Dolnoslaskie, which displays a lower inflation path, while Mazowieckie remains close to Slaskie. The synthetic counterfactual is therefore not driven by a single high-inflation region, but by a weighted combination in which regional price differences partially offset each other.

Furthermore, the leave-one-out analysis excluding Malopolskie confirms that the main results remain stable, indicating that they are not driven by this specific inflation differential. At the same time, the surge in inflation in 2022 and 2023 warrants additional caution, as part of the observed post-treatment growth may reflect price dynamics rather than real economic improvements.

Overall, while the use of nominal data remains a limitation, the evidence suggests that regional inflation differences are unlikely to account for the main patterns observed in the results.

Finally, the temporal scope of the analysis imposes additional constraints on the interpretation of the results. While the dataset includes a sufficiently long pre-treatment period to construct a credible synthetic counterfactual and extends several years beyond the establishment of the GZM in 2017, the post-treatment window remains relatively limited for capturing the full range of potential long-term effects associated with metropolitan governance reforms, especially in the case of GDP, where data is only available for seven years post-treatment. This limitation is compounded by the presence of significant macroeconomic shocks during the post-treatment period, most notably the COVID-19 pandemic and the Russia-Ukraine war, which affected regional economic dynamics in ways that are not directly related to the institutional reform under study. As a result, some of the observed post-treatment deviations, particularly in more volatile variables such as investment per capita, may reflect broader economic fluctuations rather than the causal impact of metropolitan governance.

Taken together, these limitations do not invalidate the empirical strategy or the results obtained, but they do highlight the importance of interpreting the findings within their appropriate analytical context, therefore the estimates should be understood as contributing to a broader evidence base on metropolitan governance, rather than as definitive or universally generalizable conclusions about the economic impact of such reforms.

Chapter 6

Conclusion

This dissertation set out to examine whether metropolitan governance can constitute an effective institutional mechanism for promoting regional economic development, with a particular focus on its potential relevance for the Minho region in Portugal. By combining a qualitative assessment of governance structures and regional dynamics with a quantitative estimation of causal effects using the synthetic control method, the analysis aimed to move beyond normative arguments about metropolitan status and towards an evidence-based evaluation of its economic implications.

The qualitative component established two central findings. First, it showed that the Minho region satisfies many of the functional conditions typically associated with metropolitan areas, including demographic dynamism and increasing relevance within the national urban system. Second, it demonstrated that Portugals existing metropolitan governance framework is characterized by limited institutional capacity, lacking fiscal autonomy, enforcement mechanisms, and independent democratic legitimacy. Taken together, these findings suggest that while the functional case for a Minho Metropolitan Area is strong, the institutional framework within which such a reform would operate is unlikely, in its current form, to generate substantial economic gains.

The comparative analysis of European metropolitan governance models reinforced this conclusion by highlighting that the economic impact of metropolitan reforms depends critically on their institutional design. In Europe, reforms remain largely symbolic and tend to have limited economic consequences, with the GZM being highlighted as a case-study where metropolitan governance was endowed with dedicated resources and which provided the basis for its selection of as the treated case for the quantitative analysis.

The quantitative results offer a nuanced perspective on the economic impact of metropolitan governance with the synthetic control analysis indicating that the creation of the GZM

in 2017 did not generate strong or immediate positive effects across the three outcome variables considered. For average wages and GDP per capita, the post-treatment trajectories of the treated unit remain broadly aligned with those of the synthetic control, suggesting that metropolitan status did not produce a significant divergence in terms of income or output in the short to medium term. In the case of investment per capita, some divergence is observed, but the results are more volatile and less robust, making it difficult to attribute these changes unambiguously to the reform itself.

These findings carry important implications for the broader research question as they suggest that even in a context where metropolitan governance is institutionally meaningful and supported by dedicated competences and resources, the economic effects of such reforms are neither automatic or immediate. This reinforces the central argument of the dissertation, namely that metropolitan status is not, in itself, a sufficient condition for economic development, instead, its impact depends on a combination of factors, including the quality of governance, the degree of coordination achieved, and the broader economic environment within which the reform takes place.

From the perspective of the Minho region, the implications are particularly clear as the evidence suggests that creating a metropolitan area within the current Portuguese institutional framework would likely produce limited economic effects, as the governance model lacks the mechanisms necessary to translate formal status into effective policy coordination and investment capacity. While metropolitan designation may generate political visibility and symbolic recognition, it is unlikely to deliver substantial economic benefits in the absence of deeper institutional reforms that address the underlying governance constraints identified in the qualitative analysis.

At the same time, the results do not imply that metropolitan governance is irrelevant as a policy tool. On the contrary, they highlight that when properly designed and implemented, it has the potential to improve coordination and support regional development, requiring institutional arrangements that provide real authority, financial resources, and incentives for cooperation across municipalities, as well as the administrative capacity to design and execute coherent development strategies.

Several avenues for future research emerge from this analysis. Extending the time horizon of the empirical analysis would allow for a more comprehensive assessment of long-term effects, particularly in relation to investment dynamics and structural economic

change. Expanding the number of treated cases, particularly if analyzed for a Portuguese metropolitan region or one whose institutional framework works in a more similar manner, would also help address the limitations associated with external validity. Finally, extending the models in order to incorporate more direct measures of governance performance and inter-municipal coordination could provide deeper insight into the mechanisms through which metropolitan reforms affect economic outcomes.

In conclusion, this dissertation contributes to the literature on metropolitan governance in Europe by providing an integrated analysis that combines institutional context, comparative evidence, and causal estimation. Its findings suggest that while the Minho region possesses the structural characteristics required for metropolitan development, the effectiveness of such a reform depends fundamentally on the institutional framework within which it is embedded. Without substantive changes to that framework, metropolitan status risks remaining a largely symbolic designation, with limited capacity to alter the underlying trajectory of regional economic development.

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Part I
Appendices

Appendix A
Empirical results

Table 15: Synthetic Control Results: Average Wage

Year	Treated	Synthetic	Gap (%)
2007	2950.8	2999.7	-1.6
2008	3265.4	3284.1	-0.6
2009	3448.9	3437.3	0.3
2010	3564.9	3547.9	0.5
2011	3821.3	3731.5	2.4
2012	3885.2	3856.8	0.7
2013	4057.3	3994.0	1.6
2014	4128.4	4143.9	-0.4
2015	4301.5	4325.6	-0.6
2016	4388.3	4492.6	-2.3
2017	4560.3	4765.3	-4.3
2018	4893.5	5090.7	-3.9
2019	5248.1	5481.0	-4.3
2020	5536.3	5867.7	-5.6
2021	5995.4	6396.0	-6.3
2022	6811.2	7154.8	-4.8
2023	7694.2	8091.8	-4.9
2024	8657.2	9153.6	-5.4

Table 16: Synthetic Control Results: GDP per capita

Year	Treated	Synthetic	Gap (%)
2007	35515.5	34838.2	1.9
2008	38642.4	37752.8	2.4
2009	41477.6	39959.7	3.8
2010	43214.1	42157.8	2.5
2011	46806.8	45987.6	1.8
2012	47911.9	47699.1	0.4
2013	47657.9	48392.9	-1.5
2014	49558.3	50530.1	-1.9
2015	52180.0	53848.1	-3.1
2016	53760.1	55645.6	-3.4
2017	57235.8	59964.1	-4.6
2018	61909.1	64949.8	-4.7
2019	65694.8	70078.4	-6.3
2020	67515.7	71567.2	-5.7
2021	79714.9	80624.6	-1.1
2022	92738.6	91167.3	1.7
2023	101043.0	102044.7	-1.0

Table 17: Synthetic Control Results: Investment per capita

Year	Treated	Synthetic	Gap (%)
2008	4407	4121.9	6.9
2009	3861	3629.0	6.4
2010	3349	3444.6	-2.8
2011	4406	4174.4	5.6
2012	4264	4199.5	1.5
2013	4671	4507.8	3.6
2014	4746	5030.0	-5.6
2015	5104	5409.8	-5.7
2016	5101	5064.1	0.7
2017	4908	5668.7	-13.4
2018	5563	6491.8	-14.3
2019	5930	8006.1	-25.9
2020	5390	7032.8	-23.4
2021	5628	7050.7	-20.2
2022	7973	8089.7	-1.4
2023	9392	8432.7	11.4
2024	8415	8133.8	3.5

Appendix B
Robustness Checks

Table 18: Placebo Test Results: Average Wage (RMSPE)

Unit	RMSPE (Pre)	RMSPE (Post)	Ratio	Treated
1	52.70	340.58	6.46	1
2	32.78	175.32	5.35	0
3	28.23	72.43	2.57	0
4	37.76	106.54	2.82	0
5	26.76	129.96	4.86	0
6	62.30	166.25	2.67	0
7	55.33	555.04	10.03	0
8	755.23	1109.20	1.47	0
9	32.13	69.87	2.17	0
10	18.64	41.20	2.21	0
11	28.99	68.36	2.36	0
12	26.51	92.83	3.50	0
13	33.64	89.19	2.65	0
14	20.04	39.07	1.95	0
15	66.04	245.56	3.72	0
16	13.48	46.35	3.44	0

Table 19: Placebo Test Results: GDP per capita (RMSPE)

Unit	RMSPE (Pre)	RMSPE (Post)	Ratio	Treated
1	1149.28	2844.06	2.47	1
2	668.94	1623.52	2.43	0
3	482.73	753.68	1.56	0
4	394.58	1315.80	3.33	0
5	533.14	1890.82	3.55	0
6	296.90	1715.37	5.78	0
7	507.32	1849.75	3.65	0
8	18598.54	32184.86	1.73	0
9	480.69	1882.47	3.92	0
10	336.60	1123.81	3.34	0
11	359.51	2303.99	6.41	0
12	505.10	1592.23	3.15	0
13	1254.46	2057.77	1.64	0
14	383.26	1405.82	3.67	0
15	516.96	1205.84	2.33	0
16	511.85	1303.19	2.55	0

Table 20: Placebo Test Results: Investment per capita (RMSPE)

Unit	RMSPE (Pre)	RMSPE (Post)	Ratio	Treated
1	211.92	1198.30	5.65	1
2	671.38	1574.75	2.35	0
3	678.31	621.11	0.92	0
4	307.86	618.46	2.01	0
5	274.73	750.73	2.73	0
6	477.79	894.53	1.87	0
7	236.96	392.29	1.66	0
8	1448.57	3545.60	2.45	0
9	1451.38	590.79	0.41	0
10	319.08	292.79	0.92	0
11	253.73	449.17	1.77	0
12	1189.18	795.56	0.67	0
13	544.39	807.10	1.48	0
14	261.87	412.64	1.58	0
15	217.27	362.67	1.67	0
16	287.73	732.25	2.54	0

Table 21: Synthetic Control Results: Average Wage (Slaskie as Treated Region)

Year	Treated	Synthetic	Gap (%)
2007	2933.3	2976.7	-1.5
2008	3239.1	3253.6	-0.4
2009	3405.2	3404.4	0.0
2010	3528.2	3512.8	0.4
2011	3794.6	3695.0	2.7
2012	3855.3	3821.2	0.9
2013	4022.8	3944.8	2.0
2014	4100.5	4079.3	0.5
2015	4221.5	4275.2	-1.3
2016	4295.3	4437.3	-3.2
2017	4481.6	4710.7	-4.9
2018	4825.3	5052.8	-4.5
2019	5177.9	5453.7	-5.1
2020	5450.9	5859.2	-7.0
2021	5907.8	6374.9	-7.3
2022	6727.6	7161.0	-6.1
2023	7611.4	8104.9	-6.1
2024	8537.5	9189.5	-7.1

Table 22: Synthetic Control Results: GDP per capita (Slaskie as Treated Region)

Year	Treated	Synthetic	Gap (%)
2007	32710	32564.2	0.4
2008	35937	35340.0	1.7
2009	38245	37319.5	2.5
2010	40242	39295.9	2.4
2011	43719	42918.7	1.9
2012	44775	44436.2	0.8
2013	44398	45060.4	-1.5
2014	46434	47128.4	-1.5
2015	49190	50302.9	-2.2
2016	50696	52036.3	-2.6
2017	54151	56088.6	-3.5
2018	58366	60767.3	-4.0
2019	62097	65409.3	-5.1
2020	63439	67030.4	-5.4
2021	73819	75786.0	-2.6
2022	85942	85289.5	0.8
2023	93591	95248.3	-1.7

Table 23: Synthetic Control Results: Investment per capita (Slaskie as Treated Region)

Year	Treated	Synthetic	Gap (%)
2008	3897	3672.9	6.1
2009	3489	3132.0	11.4
2010	3033	2971.1	2.1
2011	3767	3669.9	2.6
2012	3855	3672.9	5.0
2013	4078	3951.6	3.2
2014	4180	4404.1	-5.1
2015	4394	4866.4	-9.7
2016	4375	4455.8	-1.8
2017	4474	4871.9	-8.2
2018	5227	5569.9	-6.2
2019	5693	6642.3	-14.3
2020	5068	5916.3	-14.3
2021	5125	6039.9	-15.2
2022	7053	7092.6	-0.6
2023	8136	7403.7	9.9
2024	7615	7186.6	6.0

Table 24: Synthetic Control Results: Average Wage (Treatment Year Shifted to 2018)

Year	Treated	Synthetic	Gap (%)
2008	3265.4	3273.7	-0.3
2009	3448.9	3425.9	0.7
2010	3564.9	3535.7	0.8
2011	3821.3	3718.8	2.8
2012	3885.2	3844.5	1.1
2013	4057.3	3976.6	2.0
2014	4128.4	4120.9	0.2
2015	4301.5	4307.8	-0.1
2016	4388.3	4473.0	-1.9
2017	4560.3	4745.9	-3.9
2018	4893.5	5077.6	-3.6
2019	5248.1	5471.7	-4.1
2020	5536.3	5865.3	-5.6
2021	5995.4	6388.9	-6.2
2022	6811.2	7157.9	-4.8
2023	7694.2	8097.5	-5.0
2024	8657.2	9167.7	-5.6

Table 25: Synthetic Control Results: GDP per capita (Treatment Year Shifted to 2018)

Year	Treated	Synthetic	Gap (%)
2008	38642.4	37489.6	3.1
2009	41477.6	39671.7	4.6
2010	43214.1	41845.6	3.3
2011	46806.8	45652.8	2.5
2012	47911.9	47343.1	1.2
2013	47657.9	48029.4	-0.8
2014	49558.3	50159.0	-1.2
2015	52180.0	53461.3	-2.4
2016	53760.1	55251.8	-2.7
2017	57235.8	59541.3	-3.9
2018	61909.1	64493.6	-4.0
2019	65694.8	69569.1	-5.6
2020	67515.7	71072.3	-5.0
2021	79714.9	80096.7	-0.5
2022	92738.6	90526.1	2.4
2023	101043.0	101303.3	-0.3

Table 26: Synthetic Control Results: Investment per capita (Treatment Year Shifted to 2018)

Year	Treated	Synthetic	Gap (%)
2008	4407	4066.5	8.4
2009	3861	3563.7	8.3
2010	3349	3385.7	-1.1
2011	4406	4107.0	7.3
2012	4264	4125.7	3.4
2013	4671	4429.3	5.5
2014	4746	4942.3	-4.0
2015	5104	5339.0	-4.4
2016	5101	4979.3	2.4
2017	4908	5557.0	-11.7
2018	5563	6359.1	-12.5
2019	5930	7797.8	-24.0
2020	5390	6866.2	-21.5
2021	5628	6914.8	-18.6
2022	7973	7969.0	0.1
2023	9392	8313.1	13.0
2024	8415	8028.9	4.8

Table 27: Synthetic Control Results: Average Wage (Treatment Year Shifted to 2015)

Year	Treated	Synthetic	Gap (%)
2007	2950.8	3010.5	-2.0
2008	3265.4	3296.4	-0.9
2009	3448.9	3449.3	0.0
2010	3564.9	3559.7	0.1
2011	3821.3	3744.0	2.1
2012	3885.2	3869.3	0.4
2013	4057.3	4006.8	1.3
2014	4128.4	4157.3	-0.7
2015	4301.5	4338.1	-0.8
2016	4388.3	4504.7	-2.6
2017	4560.3	4777.2	-4.5
2018	4893.5	5102.4	-4.1
2019	5248.1	5491.3	-4.4
2020	5536.3	5875.8	-5.8
2021	5995.4	6404.0	-6.4
2022	6811.2	7161.6	-4.9
2023	7694.2	8099.2	-5.0
2024	8657.2	9159.5	-5.5

Table 28: Synthetic Control Results: GDP per capita (Treatment Year Shifted to 2015)

Year	Treated	Synthetic	Gap (%)
2007	35515.5	35189.6	0.9
2008	38642.4	38125.7	1.4
2009	41477.6	40367.7	2.8
2010	43214.1	42600.9	1.4
2011	46806.8	46461.8	0.7
2012	47911.9	48203.4	-0.6
2013	47657.9	48908.0	-2.6
2014	49558.3	51055.8	-2.9
2015	52180.0	54396.0	-4.1
2016	53760.1	56203.3	-4.3
2017	57235.8	60563.1	-5.5
2018	61909.1	65596.2	-5.6
2019	65694.8	70800.0	-7.2
2020	67515.7	72268.4	-6.6
2021	79714.9	81372.4	-2.0
2022	92738.6	92075.7	0.7
2023	101043.0	103095.0	-2.0

Table 29: Synthetic Control Results: Average Wage (Excluding Malopolskie)

Year	Treated	Synthetic	Gap (%)
2007	2950.8	2989.5	-1.3
2008	3265.4	3282.1	-0.5
2009	3448.9	3443.4	0.2
2010	3564.9	3538.6	0.7
2011	3821.3	3723.1	2.6
2012	3885.2	3849.3	0.9
2013	4057.3	3999.8	1.4
2014	4128.4	4164.3	-0.9
2015	4301.5	4315.9	-0.3
2016	4388.3	4477.4	-2.0
2017	4560.3	4732.9	-3.6
2018	4893.5	5035.6	-2.8
2019	5248.1	5399.0	-2.8
2020	5536.3	5751.9	-3.7
2021	5995.4	6281.7	-4.6
2022	6811.2	6988.0	-2.5
2023	7694.2	7894.6	-2.5
2024	8657.2	8940.5	-3.2

Table 30: Synthetic Control Results: GDP per capita (Excluding Malopolskie)

Year	Treated	Synthetic	Gap (%)
2007	35515.5	34162.7	4.0
2008	38642.4	36853.9	4.9
2009	41477.6	39205.4	5.8
2010	43214.1	43087.9	0.3
2011	46806.8	47083.5	-0.6
2012	47911.9	48618.3	-1.5
2013	47657.9	48447.5	-1.6
2014	49558.3	50804.7	-2.5
2015	52180.0	53603.5	-2.7
2016	53760.1	54999.4	-2.3
2017	57235.8	58665.5	-2.4
2018	61909.1	62447.7	-0.9
2019	65694.8	67332.0	-2.4
2020	67515.7	70221.5	-3.9
2021	79714.9	80464.1	-0.9
2022	92738.6	89465.4	3.7
2023	101043.0	98186.9	2.9

Table 31: Synthetic Control Results: Investment per capita (Excluding Malopolskie)

Year	Treated	Synthetic	Gap (%)
2008	4407	4274.9	3.1
2009	3861	3835.0	0.7
2010	3349	3581.9	-6.5
2011	4406	4151.7	6.1
2012	4264	4185.8	1.9
2013	4671	4488.0	4.1
2014	4746	5046.4	-6.0
2015	5104	5385.5	-5.2
2016	5101	5005.0	1.9
2017	4908	5504.6	-10.8
2018	5563	6404.2	-13.1
2019	5930	7850.1	-24.5
2020	5390	6810.7	-20.9
2021	5628	6847.8	-17.8
2022	7973	7768.8	2.6
2023	9392	8305.7	13.1
2024	8415	7916.2	6.3