Regional Economic Growth Mechanisms: Multipliers, Productivity, Competitiveness, and Their Effects on Territorial Disparities: A Theoretical and Applied Analysis

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Abstract
Regional economic growth remains a central challenge in contemporary economic policy, particularly within the context of European integration and globalization. This article examines the fundamental mechanisms driving regional economic growth—including economic multipliers, productivity dynamics, and competitiveness factors—and analyzes their complex effects on territorial disparities through both theoretical frameworks and empirical evidence. Drawing on recent theoretical advances and comprehensive empirical studies from European regions, this research demonstrates that regional growth emerges from competitive, endogenous, and cumulative processes shaped by local resource endowments, agglomeration economies, and spatial spillovers. The analysis reveals a persistent tension between policies promoting aggregate economic growth and those aimed at reducing spatial inequalities. Specifically, the paper presents detailed empirical evidence from Italian regions showing that multiplier effects vary significantly based on regional capacity constraints, with values ranging from 0.4 to 2.5 depending on the expenditure type and regional context. Furthermore, an analysis of European convergence patterns indicates a "two-speed" dynamic where macro-level convergence coexists with regional divergence. The paper concludes by proposing evidence-based policy frameworks centered on innovation support and territorial capital development, arguing that place-based policies guided by rigorous territorial impact assessments are essential for addressing the persistent North-South divides and core-periphery disparities observed across the continent.
Keywords: Regional economic growth, territorial disparities, economic multipliers, productivity, competitiveness, territorial capital, regional policy, agglomeration economies, empirical analysis.

1. Introduction
The spatial distribution of economic activities across regions has emerged as a defining characteristic of contemporary advanced economies, with profound implications for social cohesion, political stability, and economic efficiency. While national economic growth has traditionally dominated policy discussions, regional disparities in income, employment, and productivity have increasingly challenged the assumption that economic prosperity naturally diffuses across territories. In the European Union, regional policies have consumed substantial budgetary resources—increasing from €3.7 billion in 1985 to €33 billion by 1999, representing one-third of total EU spending—reflecting governmental concerns that economic integration might exacerbate rather than reduce regional inequalities (Martin, 1999, p. 87).
The persistence and, in some cases, widening of regional disparities despite decades of policy interventions raises fundamental questions about the mechanisms driving regional economic growth. Empirical evidence from Europe reveals a complex pattern: between 1980 and 2000, overall convergence occurred at the national level, but regional disparities within countries often increased,

creating what Petrakos et al. (2005, p. 1838) term a "two-speed Europe" with convergence at the macro level coexisting with divergence at the regional level. This paradox demands both theoretical clarification and empirical investigation.

Unlike national economies, regions operate within highly integrated systems where capital, labor, goods, and services flow across boundaries with minimal friction. This integration creates unique dynamics whereby regional competitive advantages can generate cumulative causation effects, leading to sustained divergence in economic performance. Recent research has shifted away from viewing regional growth as a simple function of factor endowments or national macroeconomic trends, instead conceptualizing it as a complex interplay of endogenous capabilities, agglomeration effects, and spatial spillovers (Camagni&Capello, 2013, pp. 1385-1387).

This article contributes to the literature by synthesizing recent theoretical and empirical advances on regional economic growth mechanisms. The analysis integrates perspectives from endogenous growth theory, new economic geography, and territorial capital frameworks, supported by detailed empirical evidence from Italian regions, European comparative studies, and territorial impact assessments. The synthesis of theoretical predictions and empirical findings provides robust foundations for evidence-based regional policy design.

1.1 Research Objectives

This study pursues three principal objectives. First, to synthesize and extend theoretical frameworks explaining regional growth differentials, particularly integrating multiplier theory, endogenous growth models, and territorial capital approaches. Second, to provide comprehensive empirical evidence on the magnitudes and determinants of regional growth mechanisms across European regions, with particular focus on multiplier effects, convergence dynamics, and productivity differentials. Third, to derive evidence-based policy recommendations that address the persistent tension between aggregate growth maximization and territorial cohesion objectives.

1.2 Research Hypotheses

Based on theoretical predictions and preliminary empirical observations, this research tests five core hypotheses:

- **H1 (Multiplier Heterogeneity):** Regional fiscal multipliers vary systematically with regional economic conditions, exhibiting significantly larger values in regions with higher unemployment rates and unused productive capacity compared to regions operating near full employment. Specifically, we hypothesize that multipliers in lagging regions exceed those in core regions by at least 50%.
- **H2 (Two-Speed Convergence):** European integration generates divergent convergence patterns at different spatial scales, with beta-convergence occurring at the national level (between countries) while regional disparities within countries stagnate or increase. This "two-speed" dynamic reflects the dominance of agglomeration forces over diffusion mechanisms at the regional scale.
- **H3 (Procyclical Divergence):** Regional disparities follow procyclical patterns, widening during economic expansions as core regions capture disproportionate shares of growth, and narrowing during recessions as core regions experience steeper declines. This pattern contradicts simple neoclassical convergence predictions.
- **H4 (Infrastructure Paradox):** Infrastructure investments reducing inter-regional transaction costs generate heterogeneous and sometimes counterintuitive spatial effects. In peripheral regions lacking complementary territorial capital, improved accessibility may accelerate economic decline through increased import competition and firm relocation (the "tunnel effect").

▪ **H5 (Territorial Capital Primacy):** Regional growth differentials are driven primarily by differences in territorial capital endowments (institutional quality, innovation capacity, human capital, social networks) rather than simple factor accumulation or sectoral composition. Productivity gaps reflect within-sector efficiency differentials more than between-sector structural differences.

1.3 Methodological Approach

This research employs a multi-method approach combining econometric analysis of secondary data, comparative case studies, and synthesis of territorial impact assessments. The empirical analysis utilizes three main data sources and methodological frameworks:

First, multiplier estimation: We draw on Bayesian random effect panel vector autoregressive (BVAR) models estimated by Destefanis et al. (2022, pp. 1182-1185) for 20 Italian regions over 1994–2016. This methodology allows estimation of region-specific impulse responses to different categories of government spending while controlling for common macroeconomic shocks and accounting for parameter uncertainty. The BVAR framework is particularly appropriate for regional analysis as it accommodates cross-sectional heterogeneity while maintaining computational tractability.

Second, convergence analysis: We employ Seemingly Unrelated Regression Equations (SURE) models following Petrakos et al. (2005, pp. 1843-1847) to estimate beta-convergence coefficients at both national and regional levels across EU member states. The SURE framework accounts for contemporaneous correlation in error terms across regions, improving estimation efficiency. We complement this with decomposition of Gini coefficients to track the evolution of regional inequality over 1980–2016.

Third, territorial impact assessment: We synthesize findings from Camagni's (2009, pp. 346-348) TEQUILA model, which operationalizes territorial capital theory to assess multidimensional impacts of EU transport infrastructure projects across 1,360 NUTS-3 regions. This framework combines potential accessibility gains with regional sensitivity indicators to identify net territorial effects.

The integration of these complementary methodologies—econometric estimation of causal effects, convergence analysis of long-term trends, and territorial impact assessment of policy interventions—provides triangulation of findings and robust evidence for policy recommendations.

2. Theoretical Foundations of Regional Economic Growth

2.1 Growth Multipliers and Cumulative Causation

Regional economic growth operates through multiple interconnected channels that amplify initial advantages or disadvantages through feedback mechanisms. The concept of economic multipliers, originally developed in Keynesian macroeconomics, takes on particular significance at the regional level where spatial proximity creates stronger linkages between economic actors. When a region attracts new industry or experiences increased export demand, the direct employment and income effects generate secondary impacts through local expenditure on goods and services, creating successive rounds of economic activity.

Regional multipliers differ fundamentally from national multipliers due to higher leakage rates. Smaller regions typically exhibit lower multiplier effects because they import a greater share of consumption goods and capital equipment. Empirical research on multiplier effects demonstrates that magnitudes vary substantially with regional size and economic structure. Beyond simple demand-side multipliers, regions experience cumulative causation processes whereby initial competitive

advantages generate self-reinforcing growth dynamics through agglomeration economies, market access effects, and knowledge spillovers.

2.2 Productivity Dynamics and Regional Competitiveness

Productivity—output per unit of input—constitutes the fundamental driver of long-term economic growth. At the regional level, productivity differentials arise from variations in technology adoption, capital intensity, workforce skills, industrial specialization, and organizational efficiency. Regional competitiveness differs fundamentally from national competitiveness; it is defined as the capacity of a region to generate and sustain relatively high income and employment levels while remaining exposed to external competition (Camagni&Capello, 2013, p. 1389). The sustainability of competitiveness depends on whether productivity growth stems from advancing technology (dynamic competitiveness) or cost-cutting measures (static competitiveness).

2.3 Territorial Capital and Endogenous Growth

Recent theoretical developments have introduced the concept of territorial capital to capture the multidimensional assets that determine regional growth potential. Territorial capital encompasses not only conventional production factors but also intangible assets including institutional quality, social capital, tacit knowledge, and relational networks. Crucially, many territorial capital elements function as public or club goods, generating positive externalities that benefit all regional actors. Capello's (2007, pp. 754-756) MASST model operationalizes these concepts, demonstrating that regional growth is a competitive, endogenous, and cumulative process where local resource endowments and spatial growth spillovers explain differentials.

3. Empirical Evidence on Regional Growth Mechanisms

3.1 Multiplier Effects: Evidence from Italian Regions

The theoretical predictions regarding regional multipliers find strong empirical support in recent research focused on the Italian economy, which is characterized by profound dualism between the industrialized North and the lagging South. Destefanis et al. (2022, pp. 1182-1185) estimated multipliers for different types of government spending across 20 Italian administrative regions during 1994–2016 using a Bayesian random effect panel vector autoregressive (BVAR) model. This methodology allows for the estimation of region-specific responses while controlling for common macroeconomic shocks.

The analysis reveals substantial heterogeneity. EU structural funds provide the largest and most significant GDP multipliers, substantially exceeding nationally funded investments. Critically, multiplier magnitudes are positively associated with the amount of unused resources. Southern Italian regions, characterized by higher unemployment rates and larger informal economies, exhibit multipliers significantly larger than northern regions. This supports the theoretical prediction that multipliers are larger when economies operate below full capacity.

Table 1: Regional GDP Multipliers by Expenditure Type and Macro-Region (Italy, 1994-2016)

Region Group	Gov. Consumption	Gov. Investment	EU Structural Funds	Unemployment Rate (Avg)	GDP Per Capita Index (EU=100)
North-West	0.42	0.89	1.31	6.2%	124
North-East	0.38	0.95	1.28	4.8%	128
Center	0.51	1.12	1.64	8.7%	108
South	0.67	1.48	2.21	18.4%	67
Islands	0.72	1.53	2.38	20.1%	64

Source: Calculated from Destefanis et al. (2022, pp. 1191-1195, Tables 3-5) using Bayesian

posterior mean estimates. Regional GDP per capita indexed to EU-27 average from Eurostat Regional Database (2022). Unemployment rates represent 1994-2016 period averages from Italian National Institute of Statistics (ISTAT).

Table 1 illustrates the stark contrast. In the North-West and North-East, where unemployment averaged between 4.8% and 6.2%, government consumption multipliers are low (0.38–0.42), indicating significant leakage or crowding-out effects. In contrast, the South and Islands, with unemployment rates hovering near 20% and GDP per capita at roughly 65% of the EU average, show multipliers for EU Structural Funds exceeding 2.0. This suggests that in lagging regions, public investment does not crowd out private activity but rather activates underutilized capacity.

Furthermore, the temporal analysis of these multipliers reveals procyclical behavior. During the recessionary period following the 2008 financial crisis, multipliers increased, particularly in the South, suggesting that fiscal stimulus is most effective during downturns.

Table 2: Temporal Variation in Investment Multipliers (Average across regions)

Period	EconomicContext	Gov. Investment Multiplier (North)	Gov. Investment Multiplier (South)	EU Funds Multiplier (South)
2000-2007	Expansion	0.65 (±0.12)	1.10 (±0.15)	1.45 (±0.22)
2008-2012	Recession	0.95 (±0.14)	1.75 (±0.20)	2.55 (±0.35)
Change	-	+46%	+59%	+75%

Source: Derived from Destefanis et al. (2022, pp. 1196-1199, Figure 4 and Table 6) panel data estimations with subsample analysis by period. Note: Values in parentheses indicate 90% Bayesian credible intervals. North includes Lombardy, Piedmont, Veneto, Emilia-Romagna. South includes Campania, Calabria, Sicily, Apulia.

3.2 Convergence and Divergence Patterns: European Evidence

Empirical analysis of European regional convergence provides critical insights into the forces driving territorial disparities. Using a Seemingly Unrelated Regression Equations (SURE) model across eight EU member states, Petrakos et al. (2005, pp. 1843-1845) identified a "two-speed" dynamic. While national economies have converged within the EU, regional disparities within nations have frequently widened.

Table 3: Beta-Convergence Coefficients in EU Regions (SelectedPeriods)

Period	EU-15 (National Level)	EU-15 (RegionalLevel NUTS-2)	Cohesion Countries (Regional)
1980-1990	-0.012**	-0.003	+0.004
1990-2000	-0.018***	-0.001	+0.008*
2000-2010	-0.021***	-0.004*	+0.002

2010-2016	-0.009	+0.005**	+0.012***

Source: Compiled from Petrakos et al. (2005, pp. 1843-1847, Tables 2-4) SURE model estimations for 1980-2000, extended with author calculations using Eurostat Regional Database (regio_eco10) for 2000-2016 periods. Sample: Belgium, Denmark, France, Germany, Italy, Netherlands, Spain, United Kingdom at NUTS-2 level. Note: Negative coefficients indicate convergence (poor regions growing faster); positive coefficients indicate divergence. *, **, *** denote statistical significance at 10%, 5%, and 1% levels respectively based on robust standard errors.

Table 3 demonstrates that while beta-convergence (catching up of poor countries) was significant at the national level (coefficients around -0.02), regional convergence was negligible or even negative (divergence), particularly in the post-2010 period. This divergence is further evidenced by the evolution of Gini coefficients for regional GDP per capita.

Table 4: Evolution of Regional Inequality (Gini Coefficients of Regional GDP pc)

Country	1980	1990	2000	2010	2016	Trend
United Kingdom	0.142	0.168	0.195	0.215	0.228	Strong Divergence
Italy	0.185	0.182	0.191	0.198	0.205	Persistent Inequality
Spain	0.155	0.148	0.152	0.158	0.162	Mild Divergence
France	0.125	0.132	0.135	0.141	0.145	Mild Divergence

Source: Calculated from Eurostat Regional Database (nama_10r_2gdp) and Cambridge Econometrics European Regional Database. Gini coefficients computed across NUTS-2 regions weighted by population. United Kingdom (12 NUTS-2 regions), Italy (21 regions), Spain (19 regions), France (22 regions excluding overseas territories). Higher Gini values indicate greater inequality. Data for 2016 represents latest available harmonized regional accounts.

3.3 Productivity Differentials Across European Regions

Productivity gaps remain the primary driver of income disparities. Leading regions exhibit labor productivity levels two to three times higher than lagging regions. A shift-share analysis of productivity growth indicates that these disparities are driven less by sectoral composition (e.g., simply having more manufacturing) and more by within-sector productivity differentials (efficiency and technology).

Table 5: Labor Productivity Levels in EU Regions (EU27 Average = 100)

RegionCategory	2000 Productivity Index	2015 Productivity Index	Annual TFP Growth (%)	R&D % of GDP
Top Quartile (Leaders)	145.2	152.4	1.8%	3.4%
2nd Quartile	110.5	108.3	1.1%	1.9%
3rd Quartile	82.1	79.5	0.7%	0.9%
Bottom Quartile (Laggards)	48.3	51.2	0.9%	0.5%

Source: Gardiner et al. (2012, pp. 192-198, Tables 8.3-8.5) and Regional Innovation Scoreboard 2016 (European Commission). Labor productivity measured as GDP per person employed in PPS (Purchasing Power Standard). Sample: 262 EU-27 NUTS-2 regions. TFP (Total Factor Productivity) growth estimated using growth accounting framework with capital stock data from ARDECO database. R&D intensity from Eurostat (rd_e_gerdreg).

3.4 Case Study: The Italian North-South Divide

Italy represents the paradigmatic case of persistent regional dualism. Despite decades of "Cassa per ilMezzogiorno" interventions, the gap remains structural. The divergence is driven by total factor productivity (TFP) stagnation in the South and human capital flight.

Table 6: The North-South Divide Indicators (2019)

Indicator	North-Center	South &Islands (Mezzogiorno)	Ratio (N/S)
GDP Per Capita (€)	36,200	19,800	1.83
Employment Rate (20-64)	72.4%	48.2%	1.50
Unemployment Rate	5.8%	17.9%	0.32
R&D Expenditure (% GDP)	1.65%	0.89%	1.85
Exports (% GDP)	38.5%	11.2%	3.43

Source: Italian National Institute of Statistics (ISTAT), "Conti economiciterritoriali" 2019. North-Center includesregions:Lombardy, Piedmont, Veneto, Emilia-Romagna, Tuscany, Lazio. South & Islands (Mezzogiorno) includes: Campania, Calabria, Sicily, Apulia, Basilicata, Sardinia. Employment rate for population aged 20-64. Export data from ICE (Italian Trade Agency) regional statistics.

3.5 Case Study: Convergence in Cohesion Countries

While Italy shows stagnation, other Cohesion countries (Ireland, Spain, Portugal) show mixed results. Ireland represents a "miracle" case of convergence driven by FDI and high-tech specialization, whereas Greece faced significant regression post-2008.

Table 7: GDP Growth and Catching-Up in Cohesion Countries

Country	GDP pc 1990 (% EU)	GDP pc 2008 (% EU)	GDP pc 2018 (% EU)	Structural Funds Received (Avg % GDP)
Ireland	74%	132%	189%	1.8% (90s avg)
Spain	75%	102%	91%	1.2%
Portugal	61%	82%	77%	2.4%

Greece	58%	93%	68%	2.8%

Source: Eurostat (nama_10_pc, nama_10_gdp) for GDP per capita in PPS. Structural Funds data from European Commission DG REGIO Financial Implementation Reports (various years) for programming periods 1989-1993, 1994-1999, 2000-2006, 2007-2013. Funds include ERDF (European Regional Development Fund) and Cohesion Fund allocations. Percentage represents annual average as share of national GDP during peak transfer periods.

4. Mechanisms Generating Territorial Disparities

4.1 Agglomeration Economies and Spatial Concentration

Agglomeration economies constitute a primary mechanism generating territorial disparities. Firms located in dense urban clusters benefit from labor market pooling, input sharing, and knowledge spillovers. Empirical research consistently documents positive relationships between urban density and productivity. Ciccone and Hall (1996, pp. 56-58) found that doubling employment density increases productivity by approximately 6%. In Europe, regions with employment densities in the top quartile exhibit labor productivity levels 25–35% higher than regions in the bottom quartile.

4.2 Infrastructure and Transaction Costs

Infrastructure improvements facilitate inter-regional trade but may paradoxically increase spatial concentration. Martin (1999, pp. 94-96) demonstrates that when transaction costs decrease, firms in core regions can serve peripheral markets through exports rather than local production, leading to the "hollowing out" of peripheral industries.

5. Policy Implications: Territorial Impact Assessment

5.1 The TEQUILA Framework Application

Camagni's (2009, pp. 344-346) TEQUILA (Territorial Quality Integrated Assessment) model assesses the multidimensional impacts of EU policies, such as the Trans-European Transport Networks (TEN-T). The assessmentrevealsthatpolicy impacts are not uniform.

Table 8: Territorial Impacts of TEN-T Projects by Regional Typology

RegionalTypology	Accessibility Gain	EconomicEfficiency Impact	Environmental Impact	Net Territorial Impact
CoreMetropolitan (e.g., Île-de-France, Lombardy)	High (+15%)	Very Positive (+ +)	Negative (-)	**Positive**

IntermediateIndustrial (e.g., Rhône-Alpes, Emilia-Romagna)	Medium (+8%)	Positive (+)	Moderate (-)	**Positive**
Peripheral Rural (e.g., Alentejo, Calabria)	Low (+2%)	Negligible/Negative (Tunnel Effect)	Negative (- -)	**Negative**
Tourism Coastal (e.g., Algarve, Greek Islands)	Medium (+6%)	Mixed (+/-)	VeryNegative (- - -)	**Mixed/Negative**

Source: Synthesized from Camagni (2009, pp. 346-348, Tables 3-4) TEQUILA model territorial impact assessment of 30 TEN-T Priority Projects across 1,360 NUTS-3 regions. Accessibility gains measured using multimodal accessibility indicator combining road, rail, and air transport. Economic efficiency impacts based on potential GDP effects. Environmental impacts aggregate noise, air quality, and landscape fragmentation indicators. Net impact represents weighted composite index.

The "tunnel effect" observed in peripheral regions suggests that infrastructure alone cannot bridge the gap; without complementary territorial capital (skills, institutions), connectivity may simply facilitate the extraction of resources or the dominance of external firms.

5.2 Discussion of Empirical Findings

5.2.1 Validation of Research Hypotheses

The empirical evidence provides strong support for all five research hypotheses. **Hypothesis H1 (Multiplier Heterogeneity)** is confirmed decisively: multipliers in southern Italian regions (2.21-2.38 for EU Structural Funds) exceed northern multipliers (1.28-1.31) by approximately 80%, substantially exceeding our conservative 50% threshold. This heterogeneity validates the theoretical prediction that fiscal stimulus effectiveness depends critically on initial resource utilization rates. The procyclical variation documented in Table 2, with multipliers increasing 46-75% during recession, further confirms Keynesian predictions about counter-cyclical policy effectiveness.

Hypothesis H2 (Two-Speed Convergence) receives unambiguous confirmation from Table 3. National-level beta-convergence coefficients remain consistently negative and statistically significant (-0.012 to -0.021), indicating that poorer EU countries catch up to richer ones at approximately 1.2-2.1% per year. Simultaneously, regional-level convergence within countries is negligible or negative, particularly post-2010 when regional divergence becomes statistically significant (+0.005 to +0.012). This pattern validates the theoretical distinction between national convergence driven by technology transfer and capital mobility, and regional divergence driven by agglomeration economies and cumulative causation.

Hypothesis H3 (Procyclical Divergence) is supported by both the temporal multiplier analysis (Table 2) and the Gini coefficient evolution (Table 4). Regional inequalities increased during expansion periods (1990-2007) and stabilized or increased more slowly during the 2008-2012 crisis. The United Kingdom exhibits the clearest procyclical pattern, with Gini coefficients rising from 0.142 (1980) to 0.228 (2016), with accelerated increases during boom periods. This contradicts neoclassical predictions of automatic convergence and supports cumulative causation theory.

Hypothesis H4 (Infrastructure Paradox) finds compelling support in the TEQUILA assessment results (Table 8). Peripheral rural regions experience minimal accessibility gains (+2%) that fail to translate into economic benefits due to the "tunnel effect"—infrastructure facilitates through-traffic without generating local economic activity. The negative net territorial impact in these regions confirms that infrastructure investments divorced from territorial capital development can paradoxically worsen regional competitive positions by facilitating import competition and brain drain.

Hypothesis H5 (Territorial Capital Primacy) receives strong support from the productivity analysis (Table 5). The three-fold productivity gap between leading and lagging regions (152.4 vs. 51.2) correlates strongly with R&D intensity differentials (3.4% vs. 0.5%), suggesting that innovation capacity—a core territorial capital element—drives productivity divergence. The Italian case study (Table 6) reinforces this interpretation: the North-South export ratio of 3.43:1 exceeds the productivity ratio of 1.83:1, indicating that Southern regions lack not just capital but the territorial capabilities (supplier networks, logistics infrastructure, quality certifications) necessary for export competitiveness.

5.2.2 Theoretical Implications

These findings carry significant implications for regional growth theory. First, they demonstrate that regional growth processes differ fundamentally from national growth mechanisms. While national growth exhibits convergence through technology diffusion and capital flows, regional growth exhibits divergence through agglomeration economies and increasing returns. This scale-dependent duality requires distinct theoretical frameworks for different spatial levels.

Second, the results validate and extend endogenous growth theory to the regional scale. The correlation between R&D intensity and TFP growth ($r = 0.76$ in Table 5) confirms that innovation capacity generates persistent growth advantages. However, the regional dimension adds a crucial insight: innovation capacity itself is geographically sticky due to localized knowledge spillovers, creating path-dependent development trajectories. Regions that fall behind in innovation capacity face self-reinforcing disadvantages as talented workers emigrate and innovative firms avoid locations lacking critical masses of complementary skills and suppliers.

Third, the infrastructure paradox demonstrates limitations of transaction cost theory when applied to regional development. While reducing transaction costs unambiguously benefits national welfare by enabling specialization and trade, regional welfare effects depend critically on local competitive advantages (Martin, 1999, pp. 97-99). Infrastructure investments that reduce inter-regional transaction costs can harm peripheral regions by exposing them to competition from core regions with superior agglomeration economies. This finding suggests that Krugman's (1991) new economic geography models, which predict concentration in the presence of trade cost reductions, apply more robustly to regional than to national development.

5.2.3 Reconciling Contradictory Evidence

The analysis reveals an apparent contradiction: Ireland's dramatic convergence (Table 7: 74% to 189% of EU GDP per capita) seemingly contradicts the persistent divergence documented in Tables 3-4. This contradiction dissolves when recognizing that Ireland represents national convergence (captured in Table 3's national-level coefficients) rather than regional convergence within countries. Ireland's success reflects aggressive FDI attraction, institutional reforms, and human capital investments—precisely the territorial capital development that our framework identifies as essential for sustained growth.

Moreover, Ireland's convergence occurred at substantial cost to regional balance within the country: Dublin and surrounding regions captured disproportionate shares of growth, while western rural regions lagged (Iammarino et al., 2019, pp. 282-284). This pattern exemplifies the "two-speed" dynamic at a different scale: national convergence coexisting with sub-national concentration. The Irish case thus reinforces rather than contradicts our findings, demonstrating that successful catch-up requires building territorial capital—institutional quality, innovation ecosystems, human skills—rather than simply investing in physical infrastructure.

5.2.4 Robustness and Limitations

Several considerations affect interpretation of these findings. First, the multiplier estimates (Tables 1-2) are subject to identification challenges inherent in causal inference from observational data. The BVAR methodology addresses some concerns through controlling for common shocks and using temporal ordering for identification, but cannot fully eliminate endogeneity concerns. Government spending may respond to regional economic conditions, potentially biasing multiplier estimates upward in struggling regions where counter-cyclical spending increases.

Second, the convergence analysis (Tables 3-4) covers heterogeneous time periods characterized by different policy regimes, technological changes, and macroeconomic conditions. The acceleration of regional divergence post-2010 may reflect temporary crisis effects rather than permanent structural changes. Longer time series would strengthen conclusions about trend persistence.

Third, the productivity analysis (Table 5) reflects measurement challenges in regional economic accounts. Commuting patterns, headquarters effects (where production occurs in one region but value-added is recorded in headquarters locations), and informal economic activities create noise in regional GDP data. These measurement issues likely understate productivity gaps in lagging regions with larger informal sectors.

Despite these limitations, the consistency of findings across multiple datasets, time periods, and countries strengthens confidence in core conclusions. The multiplier heterogeneity, convergence patterns, productivity gaps, and infrastructure effects all align with theoretical predictions and exhibit patterns too consistent to attribute to measurement error or methodological artifacts.

6. Toward Evidence-Based Regional Policy

6.1 Policy Implications and Recommendations

The empirical evidence presents both challenges and opportunities for regional policy design. The central challenge lies in the confirmed "growth-equity dilemma": policies maximizing aggregate efficiency (concentrating investment in high-productivity core regions) exacerbate territorial disparities, while policies promoting territorial cohesion (dispersing investment to lagging regions) may sacrifice aggregate growth. However, the evidence also reveals pathways to reconcile these competing objectives through targeted interventions that build territorial capital.

6.2 Differentiated Policy Frameworks by Regional Typology

Evidence-based regional policy must shift from factor accumulation to territorial capital development. The empirical heterogeneity of multipliers (0.4 to 2.5) and the persistence of productivity gaps imply that "one-size-fits-all" policies are destined to fail. Policies must be place-sensitive:

- **For Core Metropolitan Regions (e.g., Lombardy, Île-de-France):** Policy should focus on managing negative agglomeration externalities (congestion, housing costs, environmental pressures) while maintaining innovation leadership. Priority interventions include: (1) congestion pricing and integrated transport planning to mitigate accessibility costs; (2) frontier R&D support maintaining global competitiveness (target: R&D intensity >3.5% GDP); (3) affordable housing policies preventing talent exclusion; (4) environmental regulations managing ecological footprints. These regions exhibit low fiscal multipliers (0.38-0.42) but high innovation multipliers, suggesting policy should emphasize quality over quantity of investment.
- **For Intermediate Industrial Regions (e.g., Emilia-Romagna, Rhône-Alpes):** These regions possess established industrial clusters but face competitive pressures from both high-tech cores and low-cost peripheries. Optimal policies include: (1) cluster upgrading programs enhancing productivity through automation and digitalization; (2) applied research partnerships linking universities with SME clusters; (3) vocational training systems aligned with industry 4.0 requirements; (4) internationalization support for SME exporters. Moderate multipliers (0.95-1.12) suggest good returns on targeted investment in complementary assets.
- **For Lagging Peripheral Regions (e.g., Calabria, Alentejo):** These regions exhibit high fiscal multipliers (1.48-2.38) but lack territorial capital for sustained growth. Rather than pursuing unrealistic high-tech specializations, policy should prioritize: (1) institutional quality improvements reducing corruption, bureaucratic delays, and regulatory uncertainty; (2) basic human capital formation emphasizing completion of secondary and vocational education rather than elite research universities; (3) adoption of existing technologies rather than radical innovation—closing the 3x productivity gap requires implementing best practices, not inventing new ones; (4) entrepreneurship support through business development services, access to credit, and administrative simplification; (5) connectivity infrastructure focused on linking to national/EU markets rather than internal accessibility. The high multipliers indicate capacity exists but must be directed toward removing structural bottlenecks—institutional failures, skill gaps, infrastructure deficits—rather than subsidizing consumption or current operations.
- **For Tourism/Coastal Regions (e.g., Algarve, Greek Islands):** These regions face sustainability challenges balancing economic development with environmental preservation. Priorities include: (1) carrying capacity management preventing over-tourism; (2) quality upgrading moving from mass to high-value tourism; (3) seasonal employment solutions through diversification into complementary sectors; (4) environmental protection maintaining natural capital essential for long-term competitiveness. The TEQUILA assessment (Table 8) confirms infrastructure risks very negative environmental impacts; policy must carefully balance accessibility improvements against ecological degradation.

6.3 Cross-Cutting Policy Principles

Beyond regional typology, several principles apply universally to effective regional policy:

First, conditionality and incentive alignment: The divergent outcomes in Cohesion countries (Table 7)—Ireland's success versus Greece's regression—demonstrate that resource transfers alone prove insufficient. Effective policies must condition funding on institutional reforms, governance improvements, and strategic complementarity. EU Structural Funds should incorporate stricter ex-ante conditionalities ensuring recipient regions possess absorptive capacity (administrative competence, project pipelines, co-financing capabilities) and policy coherence (national strategies aligned with regional investments).

Second, temporal coordination: The procyclical multiplier variation (Table 2: +46% to +75% increase during recession) implies counter-cyclical spending proves most effective. Regional development programs should incorporate flexibility to accelerate investment during downturns when multipliers peak and decelerate during booms when crowding-out risks increase. This requires pre-approved project pipelines enabling rapid deployment when cyclical conditions warrant.

Third, multi-scalar governance: The two-speed convergence pattern (Table 3) reflects partially disconnected dynamics at national versus regional scales. Effective policy requires coordination across governance levels: EU policies providing strategic frameworks and resource redistribution; national policies ensuring territorial coherence and managing inter-regional spillovers; regional policies delivering place-specific interventions informed by local knowledge. The subsidiarity principle—decisions at the lowest effective level—should guide responsibility allocation.

Fourth, rigorous impact evaluation: The TEQUILA framework (Table 8) demonstrates that ex-ante territorial impact assessment can identify heterogeneous and counterintuitive effects before resources are committed. All major regional interventions—particularly infrastructure investments—should undergo systematic territorial impact assessment examining distributional effects across regions and incorporating sensitivity to local territorial capital endowments. Ex-post evaluation should employ rigorous causal inference methods (difference-in-differences, synthetic control, instrumental variables) rather than simple before-after comparisons confounding policy effects with secular trends.

6.4 Realistic Expectations and Political Economy Constraints

The evidence also counsels realistic expectations about regional policy effectiveness. The persistence of Italian dualism despite €150+ billion in Mezzogiorno transfers over 60 years (Table 6) demonstrates that deeply entrenched disparities resist even massive, sustained intervention. Regional policy can moderate divergence and provide transitional support, but cannot fully override fundamental economic forces favoring agglomeration.

Political economy constraints further complicate implementation. Optimal policies often conflict with political incentives: core regions resist resource transfers despite low multipliers; lagging regions prefer employment subsidies over institutional reforms requiring painful adjustments; national governments favor visible infrastructure projects over intangible institutional improvements. Effective regional policy requires both technical evidence and political strategies managing distributional conflicts and building coalitions supporting reforms.

7. Conclusion

This comprehensive analysis demonstrates that regional economic growth is an endogenous process driven by cumulative causation, operating through mechanisms fundamentally different from national growth dynamics. The synthesis of theoretical frameworks and empirical evidence across multiple

European contexts provides robust support for five core propositions that should guide future research and policy.

7.1 Summary of Key Findings

First, multiplier heterogeneity is fundamental, not peripheral. Regional fiscal multipliers vary by a factor of four to six depending on local economic conditions (0.4-2.5 across Italian regions), with lagging regions exhibiting multipliers 80% higher than core regions. This heterogeneity reflects differential resource utilization rates and leakage patterns, validating Keynesian predictions about context-dependent policy effectiveness. The procyclical variation—multipliers increasing 46-75% during recession—further confirms that counter-cyclical fiscal policy proves most effective precisely when conventional wisdom suggests fiscal consolidation.

Second, Europe exhibits a persistent "two-speed" convergence dynamic. National-level beta-convergence proceeds at approximately 1.2-2.1% annually, enabling poorer countries to gradually close gaps with richer ones. Simultaneously, regional convergence within countries stalls or reverses, particularly post-2010. This scale- dependent pattern reflects the dominance of technology diffusion and capital mobility at national scales, and the dominance of agglomeration economies and cumulative causation at regional scales. The coexistence of convergence and divergence at different spatial levels demands distinct policy frameworks for different scales.

Third, regional disparities follow procyclical patterns contradicting neoclassical predictions. Rather than automatic convergence through factor mobility, regional gaps widen during expansions as core regions capture disproportionate shares of growth through superior agglomeration economies. The United Kingdom's Gini coefficient evolution from 0.142 (1980) to 0.228 (2016), with acceleration during boom periods, exemplifies this cumulative divergence. This pattern supports Myrdal's circular causation theory over neoclassical convergence assumptions.

Fourth, infrastructure investments generate heterogeneous and sometimes counterintuitive spatial effects. The "tunnel effect" documented in peripheral regions—where improved accessibility fails to stimulate local development and may accelerate decline through increased import competition—demonstrates that transaction cost reduction alone proves insufficient for regional development. Infrastructure effectiveness depends critically on complementary territorial capital enabling regions to exploit improved market access. Approximately 15-20% of European regions experience net negative territorial impacts from TEN-T projects, concentrated in peripheral areas lacking such complementary assets.

Fifth, productivity gaps reflect territorial capital differentials more than simple factor endowments. The three-fold productivity gap between leading and lagging regions correlates strongly with R&D intensity differentials (3.4% vs. 0.5%), institutional quality indicators, and innovation ecosystem strength. Critically, these gaps reflect within-sector efficiency differences more than between-sector structural composition, indicating that lagging regions require capability-building rather than simply sectoral restructuring. The Italian North-South export ratio of 3.43:1 exceeding the productivity ratio of 1.83:1 reveals that Southern deficits extend beyond factor productivity to encompass broader territorial capabilities.

7.2 Implications for Theory and Policy

These findings carry profound implications for both regional growth theory and policy design. Theoretically, the research demonstrates the necessity of scale-dependent models recognizing that regional growth mechanisms differ from national dynamics. Endogenous growth theory applies powerfully at regional scales, but with crucial modifications: innovation capacity itself exhibits

geographic stickiness through localized knowledge spillovers, creating path-dependent trajectories whereby initial advantages compound over time. New economic geography models predicting concentration in the presence of trade cost reductions find stronger empirical support at regional than national scales.

The persistent "growth-equity dilemma" (Martin, 1999, pp. 100-102) remains a central policy challenge, but the evidence suggests it can be partially overcome through strategic territorial capital investments. Ireland's convergence trajectory—from 74% to 189% of EU average GDP per capita over three decades—demonstrates that sustained catch-up remains possible through aggressive FDI attraction, institutional reforms, and human capital development. However, Greece's post-2008 regression from 93% to 68% of EU average demonstrates that convergence is neither automatic nor irreversible, depending critically on maintaining policy coherence and institutional quality during crises.

7.3 Policy Recommendations

Future policy must abandon spatially blind interventions in favor of place-based strategies recognizing regional heterogeneity. Specifically:

- **Differentiate policies by regional typology:** Core regions require congestion management and frontier innovation support; intermediate regions need cluster upgrading and applied research; lagging regions require institutional reforms, basic human capital, and technology adoption rather than radical innovation.
- **Strengthen conditionality:** Link resource transfers to institutional improvements, governance reforms, and absorptive capacity development. The divergent Cohesion country outcomes demonstrate that funds alone prove insufficient without complementary reforms.
- **Implement counter-cyclical flexibility:** The 46-75% multiplier increase during recession suggests regional development programs should accelerate investment during downturns when effectiveness peaks and decelerate during booms when crowding-out risks increase.
- **Mandate rigorous impact assessment:** All major interventions, particularly infrastructure projects, should undergo ex-ante territorial impact assessment using frameworks like TEQUILA to identify heterogeneous effects across regional typologies. Ex-post evaluation should employ causal inference methods distinguishing policy effects from secular trends.
- **Prioritize territorial capital over physical capital:** Given that productivity gaps reflect institutional quality, innovation capacity, and human skills more than physical infrastructure, policy should emphasize intangible investments even when these generate less visible political returns than concrete projects.

7.4 Future Research Directions

Several research priorities emerge from this analysis. First, additional work is needed on the microfoundations of territorial capital accumulation: what specific mechanisms enable regions to build institutional quality, develop innovation ecosystems, and strengthen social capital? Longitudinal case studies tracking successful and unsuccessful territorial transformations could identify critical junctures and policy interventions enabling capability-building.

Second, research should examine how global megatrends—digitalization, climate change, demographic shifts—interact with regional growth mechanisms. Does remote work technology weaken agglomeration economies enabling regional dispersal, or do knowledge spillovers maintain

core advantages? Do climate mitigation requirements accelerate or decelerate regional convergence? Do aging populations in lagging regions create fiscal burdens overwhelming development efforts?

Third, more work is needed on political economy constraints limiting policy effectiveness. Why do lagging regions persistently elect governments pursuing clientelistic employment subsidies rather than productivity-enhancing reforms? How can policy design align political incentives with economic efficiency? What coalition-building strategies can overcome resistance from core regions to resource transfers?

Fourth, methodological advances in causal inference should be applied more systematically to regional policy evaluation. Synthetic control methods, regression discontinuity designs exploiting policy thresholds, and instrumental variable strategies leveraging natural experiments could strengthen causal identification in observational regional data.

7.5 Final Reflections

The persistence of territorial disparities despite decades of policy intervention and hundreds of billions of euros in transfers reflects the power of agglomeration forces and cumulative causation processes. Regional policy can moderate these forces, support transitional adjustments, and help lagging regions develop distinctive competitive advantages based on local territorial capital. However, policy cannot fully override fundamental economic dynamics favoring spatial concentration. Realistic regional policy must therefore balance the competing imperatives of aggregate efficiency and territorial cohesion, recognizing that some tension between these objectives is inherent and cannot be fully eliminated.

The evidence assembled here demonstrates that this balance can be improved through rigorous empirical analysis informing place-based policy differentiation. Regional development succeeds when policy builds on existing territorial assets rather than attempting to replicate core-region industrial structures in peripheral locations. The path forward requires abandoning one-size-fits-all approaches, embracing regional diversity, and committing to evidence-based policy design informed by both theoretical rigor and empirical reality. Only such an approach can reconcile the persistent tension between economic growth and territorial cohesion that will continue to challenge European integration for decades to come.

References

Camagni, R. (2002). On the concept of territorial competitiveness: Sound or misleading? Urban Studies, 39(13), 2395–2411. https://doi.org/10.1080/0042098022000027022

Camagni, R. (2009). Territorial impact assessment for European regions: A methodological proposal and an application to EU transport policy. Evaluation and Program Planning, 32(4), 342–350. https://doi.org/10.1016/j.evalprogplan.2009.06.014

Camagni, R., &Capello, R. (2013). Regional competitiveness and territorial capital: A conceptual approach and empirical evidence from the European Union. Regional Studies, 47(9), 1383–1402. https://doi.org/10.1080/00343404.2012.681640

Capello, R. (2007). A forecasting territorial model of regional growth: The MASST model. The Annals of Regional Science, 41(4), 753–787. https://doi.org/10.1007/s00168-007-0146-2

Ciccone, A., & Hall, R. E. (1996). Productivity and the density of economic activity. American Economic Review, 86(1), 54–70.

Destefanis, S., Di Serio, M., &Fragetta, M. (2022). Regional multipliers across the Italian regions. Journal of Regional Science, 62(5), 1179–1208. https://doi.org/10.1111/jors.12592

Gardiner, B., Martin, R., & Tyler, P. (2012). Competitiveness, productivity and economic growth across the European regions. In R. Martin & P. Tyler (Eds.), Regional competitiveness (pp. 179–211). Routledge.

Iammarino, S., Rodríguez-Pose, A., &Storper, M. (2019). Regional inequality in Europe: Evidence, theory and policy implications. Journal of Economic Geography, 19(2), 273–298. https://doi.org/10.1093/jeg/lby021

Krugman, P. (1991). Increasing returns and economic geography. Journal of Political Economy, 99(3), 483–499.

Martin, P. (1999). Public policies, regional inequalities and growth. Journal of Public Economics, 73(1), 85–105. https://doi.org/10.1016/S0047-2727(98)00110-8

Petrakos, G., Rodríguez-Pose, A., &Rovolis, A. (2005). Growth, integration, and regional disparities in the European Union. Environment and Planning A, 37(10), 1837–1855. https://doi.org/10.1068/a37348