

# ABSTRACTS

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**Wellbeing  
and Sustainability:  
Regional Science  
Discussions at the  
Earth's Core**

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# **ABSTRACTS**

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## A SYSTEMIC AND TEMPORAL ANALYSIS OF THE IMPACT ON REGIONAL DEVELOPMENT OF THE OIL AND GAS SECTOR: THE CASE OF SERGIPE, BRAZIL

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### Abstract

Despite the energy transition process, oil and its derivatives remain the primary energy source. Petroleum exploration generates substantial revenues for producing regions through taxes and royalties. In Brazil, Oil and Gas (O&G) production is geographically concentrated in coastal states, including Sergipe, which accounted for nearly 20% of onshore oil production in the 2000s. Although Sergipe's offshore ultra-deepwater reserves were recently discovered, onshore production has sharply declined since 2014. Promising prospects exist for Sergipe's O&G sector, driven by Petrobras's 2024–2028 Strategic Plan and the SEAP project, involving investments of over US\$5 billion to expand the national gas supply. Expected production exceeds 1 billion barrels of oil equivalent, potentially strengthening local production chains and boosting higher value-added, technologically intense goods and services. An important aspect to highlight regarding oil and gas production fields—not limited to the case of Sergipe—is the so-called “natural decline” in production. After several years of operation, it is expected that output will reach a peak, followed by a continuous downward trend. Oil companies typically invest in technologies to delay or mitigate these declines; however, they cannot be entirely avoided, as oil and gas are exhaustible and therefore non-renewable natural resources. This study provides a systemic and temporal evaluation of Sergipe's oil and gas sector, emphasizing its economic role and local knowledge integration. We uniquely combine interregional input-output matrices for 2011 and 2018 with Investment Absorption Matrices to analyze sectoral linkages and investment impacts. Key indicators include output, income, and investment multipliers, linkage indices, and structural decomposition analysis. Despite a production decline, the sector maintains significant demand-side intersectoral connections, though local input shares and investment impacts remain low. Interregional spillovers have increased, highlighting challenges in strengthening local supply chains. Structural decomposition shows sector output changes driven mainly by final demand shifts, with negative effects from household consumption and exports. Our findings emphasize the need for coordinated public policies to enhance local content and capitalize on offshore oil and gas exploration opportunities in Sergipe. This integrated methodological approach offers new insights for regional economic development strategies. From a policy perspective, the findings emphasize the urgency of promoting local content through targeted incentives, technical education aligned with the sector's needs, and enhanced collaboration between firms, research institutions, and government agencies. Programs such as Rede Petrogás could be instrumental in fostering innovation and productive densification. Considering the SEAP project, expected to begin operations in 2028, the strengthening of local production chains becomes even more critical. SEAP offers a unique opportunity to reverse past trends of external dependence and to build a more integrated, innovation-driven O&G ecosystem in the state.

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## LONG-TERM IMPACT OF TERRITORIAL DIVISION ON MUNICIPAL POVERTY

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### Abstract

In various regions around the world, territorial reorganizations have been promoted through the division and creation of administrative units as mechanisms to improve local development and political representation. This study evaluates the long-term consequences of regional separations in Colombia by comparing municipalities that remained in their original departments with those that joined newly created ones. Using historical data on regional divisions, we implement a geographic regression discontinuity design in which each municipality's distance to the separation boundary serves as the running variable, and we complement this with an instrumental-variables strategy that exploits quasi-random variation in subsequent separations induced by the experimental and short-lived administrative reorganization. The results show no robust evidence of significant long-term effects of separation on municipal poverty: point estimates are small in magnitude, and instrumental-variables specifications, despite strong first-stage relevance, likewise yield statistically insignificant impacts.

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## STAYING IN POWER: HOW DOES POLITICAL CONTINUITY SHAPE DEBT?

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### Abstract

This paper investigates the relationship between political continuity and public municipal debt in Colombia, highlighting how political cycles influence fiscal behavior at the subnational level. Unlike national cycles, local political dynamics, marked by consecutive electoral victories of the same party, significantly impact fiscal policy and debt accumulation. Using a Kink Regression Discontinuity design, we explore the effects of these electoral outcomes on public financial debt. Our findings reveal that municipalities governed by the same party or coalition across successive elections exhibit a 0.25% increase in debt levels for every percentage point increase in their election win margin. This trend becomes more pronounced over time, with debt levels peaking in election years. The robustness of our results is confirmed through various bandwidths and placebo tests, which include random shuffling of electoral outcomes and reassignment of electoral results from different years. Our study contributes to the understanding of how political stability or continuity can shape fiscal outcomes at the regional level, a topic that has received limited attention in the political economy literature.

## ADMINISTRATIVE CULTURE AND INNOVATION IN THE PUBLIC SECTOR – THE ISRAELI CASE

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### Abstract

This study explores the interface between administrative culture and innovation in Israel's public sector through a qualitative analysis of 36 interviews with managers and professionals in local and national public organizations. The research aims to understand how cultural characteristics, such as hierarchy, informality, trust, and structural centralization, shape public organizations' capacity to promote and implement innovation, particularly digital innovation.

The research question asks: How does Israel's administrative culture, characterized by informality and flexibility, influence the promotion of public sector innovation?

Thematic analysis identified four interrelated dimensions:

**Collaborative Innovation** – Cross-departmental collaboration mitigates rigid hierarchies, creating “collaborative hierarchy” that enables knowledge flow and shared responsibility within bureaucratic frameworks. **Informality** – Functions as a paradoxical force: personal networks and informal ties facilitate information access, flexibility, and creative problem-solving, yet may also foster bias, inequality, and lack of transparency. **Trust** – Built through incremental, small-scale successes that create a “domino effect” of confidence and engagement; premature failures, however, undermine legitimacy for change. **Structural Barriers** – Centralization, conservatism, and lengthy procedures reinforce a risk-averse identity, framing innovation as a threat rather than an opportunity. Findings reveal that innovation in Israel's public sector occurs not despite informality but through it. Informal negotiation, personal relationships, and improvisation serve as mechanisms of administrative entrepreneurship within centralized structures. Yet, unregulated informality may reproduce inequalities and weaken institutional fairness.

Theoretically, the study contributes a cultural-administrative perspective on public sector innovation, framing informality as a distinct cultural category that can both enable and constrain change. The findings suggest that successful innovation does not require dismantling bureaucracy, but rather strategic navigation of its cultural and structural dynamics—building trust through small wins, legitimizing experimentation, and fostering participatory dialogue within bureaucratic systems.

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## LONG-DISTANCE TRAILS AS VECTORS FOR LOCAL DEVELOPMENT: EVIDENCE FROM BRAZILIAN COMMUNITIES

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### Abstract

This article investigates the impacts of long-distance trails on the generation of formal employment in Brazilian municipalities. Recognized as green infrastructures that link nature tourism, environmental conservation, and local economies, trails have been promoted as instruments for sustainable territorial development, but they still lack empirical verification in Brazil. To fill this gap, a quasi-experimental strategy combining Propensity Score Matching (PSM) and linear regressions (OLS) was adopted, using data from the 2022 Demographic Census, the 2017 Agricultural Census, and RAIS (Annual Social Information Report) from 2023. The results reveal that municipalities with trails show statistically significant increases in formal employment in the accommodation, food service, recreation, and culture sectors, even after controlling for socioeconomic and environmental variables. The findings confirm that trails function as vectors for decentralized economic revitalization, reinforcing their relevance as public policy capable of reconciling biodiversity conservation and income generation at the local scale.

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## THE ROLE OF UNCERTAINTIES IN REGIONAL DEVELOPMENT

**Balázs György Forman**

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### Abstract

The role of uncertainties, risks, expectations, and unforeseen phenomena is increasing in the development of regions. We select only a few of the many rapidly changing phenomena of our time. We examine the consequences of increasing financial risks on the development of regions. According to our assumption, if global financial market interest rates increase, then less developed and/or regions struggling with open or hidden structural problems will only receive loans and external resources with an increasing risk premium. The higher risk premium reduces the probability of return and the net present value of investments financed from loans. The decreasing probability of return reduces the value of private investments financed on a market basis. In the long run, the lower investment level will lead to a decline and stagnation of economic development. In the event of an unexpected and large interest rate increase, indebted and underdeveloped countries may even find themselves facing immediate bankruptcy (Hungary in 1982). In the case of slower interest rate increases, the decline can be a long-lasting process (Greece between 1982 and 1999). But we can also find positive and negative examples of the opposite. The sustained decrease in interest rates after the introduction of the euro led to the development of bubble economies in the southern European countries belonging to the Economic and Monetary Union, such as in Ireland between 2000 and 2008.

## INTERNAL MIGRATION AND THE LABOR MARKET IN NORTHEASTERN MEXICO: IMPACTS ON WELL-BEING AND SOCIAL MOBILITY

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### Abstract

Internal migration in Mexico is a structural phenomenon rooted in persistent regional inequalities in employment, income, and living conditions. In the northeastern region, population inflows from southern and central states have intensified with the expansion of industrial hubs, the consolidation of the automotive, metalworking, and mining sectors, and greater integration into export markets. These processes have reshaped the region's economic and demographic structure, generating notable patterns of labor mobility. Nonetheless, the links between internal migration, labor market insertion, and household well-being remain insufficiently examined from a regional and quantitative perspective, particularly at the subnational level. The core problem addressed in this research is the persistence of well-being gaps and limited social mobility opportunities between internal migrants and non-migrants. Although migration is often assumed to improve living conditions, evidence reveals that migrants disproportionately occupy precarious labor market segments characterized by high informality, low wages, job instability, and restricted social protection. These conditions reproduce vulnerability, especially among youth, women, and individuals with low educational attainment. Furthermore, the spatial concentration of migrants in metropolitan peripheries suggests patterns of residential segregation that constrain access to urban services, transportation, and better-quality employment. The general objective of this study is to analyze the impact of internal migration on the well-being and social mobility of workers in the northeastern region by evaluating their labor insertion trajectories and socioeconomic conditions. Specifically, the study seeks to: (i) compare income levels, employment stability, and access to social security between internal migrants and non-migrants; (ii) identify differences in occupational and intergenerational mobility; and (iii) estimate the effect of migratory status on multidimensional well-being indicators, controlling for sociodemographic and territorial factors. A quantitative strategy will be implemented based on microdata from national surveys and administrative records. Primary sources will include the National Occupation and Employment Survey (ENOE), the Intercensal Survey, the Population and Housing Censuses, and the National Self-Reported Well-Being Survey (ENBIARE), which provides key subjective and objective well-being indicators. The period of analysis will cover 2010–2020, with the study population defined as individuals aged 15 to 65 residing in the northeastern region. Internal migrants will be identified as those currently living in the state but residing in another federal entity five years prior. Methodologically, the research will employ descriptive statistics and econometric modeling. First, an exploratory characterization of migrant and non-migrant populations will be conducted using variables such as education, gender, age, economic sector, formality status, labor income, and access to social security. Subsequently, multivariate regression models will be estimated, including Mincer-type wage equations (OLS) and logit/probit models to evaluate the probability of formal employment and access to labor benefits. The combination of labor market indicators from ENOE and well-being measures from ENBIARE will allow a comprehensive assessment of the socioeconomic implications of internal migration in the region.

## CHARACTERIZATION OF DAILY MOBILITY AND EMPLOYMENT SUBCENTERS IN THE SALTILLO METROPOLITAN AREA THROUGH SPATIAL ANALYSIS

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### Abstract

This study aims to analyze in greater depth the patterns of daily mobility, both work-related and student-related, in the Saltillo Metropolitan Area (ZMS), with a strong emphasis on identifying and characterizing employment subcenters that shape the spatial and functional organization of the city. The central problem lies in the fact that the current public transportation system does not adequately respond to actual mobility demand. This situation is largely due to the limited understanding of how economic, educational, and service activities are spatially distributed, as well as the lack of comprehensive information about the daily movement patterns of the population. As a result, this knowledge gap restricts territorial planning, complicates infrastructure decision-making, and reduces the efficiency of the transportation system, leading to longer trips, higher costs, and diminished quality of life.

The theoretical framework adopts the notion of daily mobility as a direct expression of the relationship between urban spatial organization, access to employment opportunities, and the geographic distribution of essential services. The location of housing, the proximity or distance to workplaces and educational centers, the quality and availability of transportation options, and the historical decisions that shaped urban expansion all play a decisive role in producing daily mobility flows. The concept of employment subcenters is also incorporated, referring to urban nodes that, while not part of the traditional historic or administrative core, concentrate a significant number of jobs and generate substantial travel demand. These subcenters may emerge along specialized industrial corridors, consolidated or expanding commercial areas, or peripheral residential developments that have integrated diverse economic activities.

The proposed methodology includes a detailed spatial analysis of daily mobility flows using georeferencing techniques, origin-destination characterization, and criteria related to urban density and accessibility. Through this approach, it becomes possible to detect, delineate, and classify the employment subcenters within the ZMS. This analytical process will highlight strategic areas where interventions in public transportation, road infrastructure, non-motorized mobility, or demand-management strategies are most urgently needed.

Finally, based on this characterization, the study proposes a set of strategies aimed at reorganizing the transportation system according to actual mobility demand. The goal is to promote a more accessible, equitable, and sustainable mobility framework that reduces travel times, improves connectivity between key areas, and enhances regional economic competitiveness. Altogether, this research seeks to provide technical tools that guide public investment toward areas of greatest impact, strengthening urban planning efforts, transportation efficiency, and local economic development.

# THE PARADOX OF CULTURAL GROWTH: CO-EVOLUTION OF CULTURAL GENES, INNOVATION NETWORKS, AND KNOWLEDGE TRAPS IN CHINA

Mingxia He

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## Abstract

This paper revisits Joel Mokyr's "Culture of Growth" hypothesis through the lens of regional science, revealing a critical finding: the "Cultural Paradox of Growth." We argue that the same evolutionary mechanisms that initially foster a dynamic market for ideas can inadvertently lead to a "knowledge trap" of innovation stagnation in the long term.

Utilizing a balanced panel of 285 Chinese cities from 2018 to 2020 and a unique "cultural gene" dataset derived from internet search behavior, we establish and operationalize an H-B-F (Diversity-Bridging-Filtering) theoretical framework to analyze this paradox.

Our spatial econometric analysis (SDM) and network simulations yield three major paradoxes, challenging the "more diversity is better" orthodoxy in economic geography:

1. The Diversity Paradox: Cultural diversity facilitates innovation only up to a clear, endogenous threshold (e.g., around CCDI  $\approx 0.45$  for high-bridging cities), beyond which cognitive overload sets in, and innovation declines. We demonstrate that network bridging mechanisms elevate this optimal threshold, while strong filtering mechanisms lower it.
2. The Spillover Paradox: We identify significant negative spatial spillovers where hyper-diverse innovation hubs, due to their strong filtering capabilities, disproportionately drain innovation resources (talent and capital) from neighboring cities, leading to regional disparities.
3. The Evolution Paradox: Network analysis (ERGM) shows that regional innovation networks exhibit strong administrative and cultural homophily. These networks tend to self-organize into high-filtering clusters, effectively locking cities into suboptimal, path-dependent growth trajectories, making it difficult to escape the knowledge trap.

These findings suggest that regional policy should pivot its focus from pure agglomeration to enhancing network Connectivity (Bridging) and optimizing Filtering to manage cultural heterogeneity effectively and promote sustained, balanced regional development.

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**EDUCATION, HERITAGE AND CITY**

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**Abstract**

The imperative to build an inclusive, resilient city suggests that spatial planning be conceived as a political and institutional action, capable of triggering structural transformations and sustainable development. This understanding supports and expands the role of the community as an active subject in innovation in the creation of cities. It is, therefore, necessary and urgent to study and promote Governance as a structuring foundation for urban and educational life, as a relationship among the university, cultural and environmental heritage, and city development.

Universities play the role of fostering complex thinking and investing in a more egalitarian world by operating beyond global common sense, supporting the construction of hypotheses for new futures without environmental cost, and valuing territory as a space of learning and cultures, including issues of climate and environmental change.

In this regard, the notion of heritage in its symbolic and material value must become more complex and relational, encompassing expanded approaches, incorporating immaterial, social, and environmental dimensions, and revealing its potential in the friction between formal heritage and contemporary practices of use, thus providing a basis for thinking about architectural and urban design. In this way, the project takes as imperatives the aggregation of shared life as hypotheses of affinity between action and critique, as a legitimate expression of a pluralistic condition, and to advancing wellbeing and Sustainability.

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## POPULATION AND EMPLOYMENT DYNAMICS IN A FAST-GROWING ECONOMY: EVIDENCE FROM CHINESE PREFECTURAL REGIONS

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### Abstract

This paper investigates the relationship between population and employment across prefectural regions of China over two time periods (2002 – 2010 and 2010 – 2019) by using regional adjustment models to evaluate whether the two collocate. Do jobs follow people in China in addition to the other way around? The findings illustrate that this pattern of migration—common in advanced economies, like those of America and Europe—has recently started to emerge there. But there is a notable shift between the two time periods: there is no evidence of bidirectional growth in the first period but solid evidence of it in the second period. These findings are important because they are the first to reveal that this pattern of migration is emerging in China, plus they illustrate the growing influence of human capital. The latter result is uncovered by disaggregating basic and non-basic employment, under the assumption that many of the jobs in the latter require high-skilled labor. Finally, the findings suggest that the importance of foreign direct investment has declined over time, while that of fixed asset investment has grown.

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## THE EFFECT OF CSR ON FIRM PERFORMANCE. THE ROLE OF FIRMS' ECONOMIC CONTEXT

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### Abstract

Innovation is a necessary condition for a firm to achieve a competitive advantage. However, a firm's behaviour differs depending on its goals, its own situation, and the context in which it operates. In this sense, innovation can affect a firm's performance in different ways, explaining the heterogeneity found in previous studies.

One of the main objectives of public agencies is to reconcile business efficiency with social and environmental principles. The global market is moving towards ecological awareness, distributive justice, technological innovations, and the adoption of international indicators. In this sense, companies have been required to implement corporate social responsibility (CRS) activities, both from a legal perspective and due to market pressure.

These practices influence the entire value chain, fostering a balance between corporate interests, societal expectations, and the expectations of its stakeholders. Specifically, practices range from ensuring fair and decent working conditions to reducing waste, water, and energy consumption, as well as protecting the environment and ensuring transparency throughout the supply chain. Incorporating CSR represents a great opportunity for companies around the world. Not only does it improve corporate image and stakeholder relations, but it can also increase motivation, productivity, and talent retention. However, the behaviour of companies depends not only on their objectives, but also on the environment in which they operate and the pressures coming from their competitors, customers, and suppliers. Consequently, this study aims to contribute to examining the relationship between firms' SCR orientation and their performance paying attention to the role played by the regional and sectorial level.

## ROAD REVIVAL AND UNAVOIDABLE DEFORESTATION: EVIDENCE FROM THE NEW DEAL FOR PAPUA, INDONESIA

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### Abstract

Halting deforestation is a major global concern, alongside the closely intertwined challenges of mitigating climate change and controlling global infectious diseases, such as the ongoing COVID-19 pandemic. Despite this urgency, deforestation in developing tropical countries has increased dramatically over the past two decades. Moreover, remaining forested areas are increasingly threatened by large-scale infrastructure development, particularly major road construction projects (Balboni, Berman, Burgess, & Olken, 2022).

This paper advances the literature by examining the inherent trade-off between forest depletion and highway construction. A key empirical challenge is the potential endogeneity of highway placement. Highway construction represents a costly public investment, and locations expected to generate greater economic or political returns are therefore more likely to be prioritised. Of particular relevance in our context, policymakers may target agriculturally productive regions, even though agricultural expansion often entails forest clearing. This overlap complicates efforts to disentangle the direct effects of highway construction from those of agricultural activity.

To address these concerns, we exploit arguably exogenous variation in the timing and spatial placement of the Trans Papua Highway induced by the introduction of the 2007 New Deal Policy for Papua and subsequent policy packages. Recognising that completion of the Trans Papua Highway was a first-order determinant of regional development, the government launched the New Deal Policy in 2007 and implemented multiple follow-up initiatives to accelerate its construction. Within 14 years of the policy's introduction, nearly 34% of new highways were added to the existing network of 4,330 km.

We compile an annual unbalanced panel dataset covering Papua's villages from 2001 to 2018 and employ a dynamic difference-in-differences (DiD) strategy to estimate the causal impact of highway construction on forest loss and to explore underlying mechanisms. Our results show that the staggered rollout of the Trans Papua Highway under and after the New Deal Policy led to a substantial increase in forest loss in newly connected villages—by an average of 19.61%. Event-study estimates indicate that these effects persist for up to three years following highway construction. The findings are robust to controls for aggregate trends and potential confounding effects of the PNPM Mandiri Respek community-driven development program, adjustments for negative-weight concerns in two-way fixed-effects regressions, sensitivity tests for the parallel-trends assumption, and additional controls for observable characteristics.

Finally, our canonical DiD estimates suggest four potential mechanisms through which highway construction exacerbates deforestation: (i) increased household firewood consumption, (ii) higher rates of internal migration, (iii) expanded conversion of land to non-agricultural uses, and (iv) the development of local markets.

## IS IT A CURSE OR BLESSING TO HAVE A RESOURCE-RICH NEIGHBOUR? THE CASE OF GAS EXTRACTION IN INDONESIA

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### Abstract

Recent empirical studies have provided new insights into the causal relationship between natural resources and economic development. First, analyses of the economic impacts of natural resource extraction have increasingly shifted from macro-level approaches—such as cross-country models pioneered by Sachs and Warner (1995)—to micro-level, within-country analyses that focus on more specific geographic areas. This shift reflects a growing interest in assessing the local economic consequences of resource extraction. Second, researchers now commonly employ more disaggregated data to estimate the impacts of particular types of natural resources, including mineral and energy resources. Black et al. (2005) were among the earliest contributors to this strand of the literature, using coal as a proxy for natural resource extraction. Finally, there is a growing emphasis on analysing spillover effects—also referred to as indirect effects—of natural resource extraction, encompassing both industrial and geographic spillovers.

This study contributes to the literature by providing additional empirical evidence on the causal relationship between a specific natural resource and local economic outcomes using disaggregated data. Specifically, it examines the local economic impacts of Indonesia's gas boom during the period 2004–2015 at the district level. Unlike most previous studies, this paper focuses on the effects of gas extraction on neighbouring economies rather than on producing areas themselves. This empirical setting exploits a government intervention introduced in 2005 that redistributed gas rents from extraction activities to sub-national governments, namely provinces and districts. Under this revenue-sharing scheme, all districts located within gas-producing provinces—including non-producing districts—receive a share of gas revenues.

We employ a panel difference-in-differences (DID) approach to assess the impact of gas windfalls on neighbouring district economies. The results reveal a statistically significant negative effect of gas windfalls on neighbouring districts. Non-gas-producing districts in gas-rich provinces that receive higher gas revenues exhibit lower GDP per capita than comparable districts in gas-poor provinces. These findings suggest that proximity to gas-rich neighbours may constitute more of a curse than a blessing. Furthermore, the analysis uncovers substantial regional heterogeneity: the negative effects are statistically significant only for non-gas-producing districts in Java, and not for those outside Java. The study also documents temporal heterogeneity, indicating that the adverse local economic effects of gas windfalls emerge in the long run rather than in the short run. Finally, the results show that gas windfalls are associated with a statistically significant increase in poverty—measured either by the poverty rate or the number of individuals living below the poverty line—while no significant effect is detected on household expenditure.

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## MĀORI SOCIAL CAPITAL AND REGIONAL WELLBEING IN AOTEAROA NEW ZEALAND

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### Abstract

Social capital has long been recognised as a determinant of wellbeing, yet its conceptualisation and measurement have been dominated by Eurocentric frameworks. For Māori in Aotearoa New Zealand, such frameworks may only partially capture the relational and cultural dimensions that underpin collective wellbeing. This paper develops an emerging framework for understanding and measuring Māori social capital from within a te ao Māori perspective. Drawing on Te Kupenga data, the study examines both traditional and Māori-specific indicators of social capital and their relationship to wellbeing. The results highlight the importance of whanaungatanga, mana, and cultural participation as central to Māori social infrastructure, while raising questions about the applicability of Western constructs. The research contributes to an evolving discourse on indigenous social capital and its implications for policy, measurement, and Māori economic development at the regional level.

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## CULTURAL CONNECTEDNESS AND ECONOMIC RESILIENCE: INVESTIGATING THE ROLE OF TE REO MĀORI PROFICIENCY AMONG MIGRANT COMMUNITIES IN AOTEAROA NEW ZEALAND

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### Abstract

As the migrant population of Aotearoa New Zealand grows as a share of the national population, understanding the factors that shape migrants' economic resilience becomes increasingly important. This study examines whether te reo Māori proficiency is associated with economic resilience and social capital formation among migrant communities of different tenures of residence in Aotearoa. This framing positions Indigenous language proficiency not just as symbolic, but as a potentially strategic resource that may foster migrant adaptation, confer social legitimacy, and enhance integration.

Economic resilience is defined here as migrants' capacity to mobilise resources that sustain financial stability over time. We adopt an evolutionary perspective, which conceptualises resilience as a dynamic process of adaptation and transformation, extending beyond recovery to pre-shock equilibrium. This approach is particularly relevant to migrant populations, whose settlement trajectories often require continuous adaptation to changing social, economic, and institutional conditions. In this context, resilience encompasses the capacity to acquire new skills, cultivate diverse networks, and draw upon multiple forms of capital – economic, social, and cultural – to navigate and thrive in their new environment.

Using nationally representative data from the New Zealand General Social Survey (collected 2016, 2018, 2021 and 2023; N = approx. 28,600 for the full sample), we focus on overseas-born respondents and model economic-resilience outcomes. A quasi-experimental design enables us to mitigate selection bias by constructing counterfactual comparisons between migrants with similar demographic, socioeconomic, and migration-related characteristics but differing levels of te reo Māori proficiency. Economic resilience is measured through three self-reported indicators: income adequacy, experiences of financial strain, and bill-payment difficulties. Further, social capital is measured through self-reported sense of belonging, generalised trust, institutional trust, and perceived social support. While prior research has explored the effects of migration and broader settlement experiences on Māori communities, little attention has been given to the reciprocal dimension – specifically, how engagement with Māori culture influences migrants' economic and social outcomes.

## INBOUND TOURISM AND TOURISTS' PREFERENCES FOR ACCOMMODATION QUALITY

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### Abstract

Given the substantial contribution of tourism to exports and economic development in destination economies, governments and tourism-related businesses have actively implemented policies and promotional campaigns to attract international tourists. However, the global expansion of international tourism demand has increasingly resulted in overtourism, prompting many destinations to shift their policy focus from expanding the number of inbound tourists to enhancing the quality of tourism experiences. The effectiveness of this quality-oriented strategy critically depends on the extent to which foreign tourists value the quality of tourism services. Despite its importance, existing studies have not rigorously quantified tourists' preferences for quality, nor have they systematically examined the determinants of cross-country heterogeneity in such preferences. Using detailed microdata from Japanese accommodation sector, specifically the Accommodation Travel Statistics Survey and the Economic Census for Business Activity, this study quantifies foreign tourists' preferences for accommodation quality by country of origin and investigates the factors underlying cross-country differences in these preferences. We estimate a logit demand model following Berry (1994) and Khandelwal (2010). The residuals from the estimated demand equation capture tourists' perceived quality of individual accommodations, and dividing these residuals by the estimated price coefficient yields tourists' willingness to pay (WTP) for accommodation quality. While conventional quality indicators such as star ratings are not consistently available across countries or regions, our approach can be applied whenever accommodation demand data are available, making it broadly applicable across diverse settings. To assess the validity of the constructed WTP measure as an indicator of accommodation quality, we examine its relationship with observable accommodation attributes commonly associated with quality. The results show that WTP is higher for resort hotels and full-service hotels and lower for economy hotels. In addition, WTP is positively associated with a higher share of full-time permanent employees, the availability of online booking services, and affiliation with hotel chains. These patterns are consistent with conventional perceptions of accommodation quality, suggesting that the estimated WTP provides a reasonable and informative quality measure. We then compare the WTP for accommodation quality between foreign and domestic (Japanese) tourists. The results indicate that while foreign tourists exhibit a degree of price sensitivity similar to that of domestic tourists, they place significantly greater importance on accommodation quality. In other words, foreign tourists are more willing to accept higher prices in exchange for higher-quality accommodations, as the associated utility gains outweigh the additional costs. This tendency is particularly pronounced among tourists from countries with higher per capita income levels but weakens as the geographic distance from Japan increases. These findings suggest that shifting tourism policies from quantity-based to quality-based strategies may be less effective in destinations that primarily attract tourists from high-income but geographically distant countries. Instead, targeting tourists from geographically closer countries, even those with relatively lower income levels, may be a more effective approach. Our results provide policy-relevant insights for governments and tourism-related businesses by identifying source countries whose tourists exhibit stronger preferences for accommodation quality.

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## SOCIO-ENVIRONMENTAL VULNERABILITY AND CLIMATE DISASTERS IN THE METROPOLITAN REGION OF PORTO ALEGRE: EVIDENCE FROM A MULTIVARIATE SPATIAL ANALYSIS

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### Abstract

This article investigates the allocative inefficiencies generated by socio-spatial segregation and their implications for differential exposure to climate disasters in the Metropolitan Region of Porto Alegre (RMPA). Starting from the recognition of market and state failures in the provision of housing and infrastructure, we apply spatial econometric methods (SAR and SEM models) and cluster analysis (bivariate LISA) to measure the association between social vulnerability, racial composition, and the territorial concentration of environmental risks. The results reveal an extreme concentration of negative externalities in peripheral territories occupied by low-income and Black populations with a Global Moran's I for disasters of 0.965 ( $p < 0.001$ ) — one of the highest values ever reported in the applied urban economics literature. The spatial econometric modeling confirms strong spatial dependence ( $\rho = 0.907$ ), indicating that risk operates as an interdependent regional phenomenon. We conclude that the spatial distribution of climate risk reflects not only natural conditions but a suboptimal equilibrium resulting from historical dynamics of segregation and public underinvestment, with clear implications for designing evidence-based spatial policies for housing, infrastructure, and risk management.

## REGIONAL LABOR FORCE PARTICIPATION AND EMPLOYMENT STRUCTURE IN ECUADOR: CYCLICAL DYNAMICS AND DETERMINANTS

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### Abstract

This paper analyzes regional labor dynamics in Ecuador, focusing on labor force participation and the sectoral composition of employment over the business cycle. Ecuador represents a particularly case for regional science, as it combines persistent territorial inequalities with a labor market characterized by high informality and major macroeconomic and institutional transformations during the last two decades. While national-level indicators suggest improvements in labor outcomes, a regional perspective reveals that these changes have been highly uneven across space.

Using microdata from ENEMDU survey for the period 2000–2018, this study conducts a subnational analysis across provinces and urban–rural areas, disaggregating by employment category—formal and informal employment, and self-employment. This allows the identification of pronounced regional heterogeneity in labor force participation and employment structures that remains concealed in aggregate national analyses. A central empirical finding of the paper is that the observed reduction in labor informality and the expansion of formal wage employment during the study period are not territorially neutral. On the contrary, improvements in labor formality are highly concentrated in the urban areas of Ecuador’s largest and most economically dynamic provinces, particularly Pichincha, Guayas, and Azuay. In contrast, rural areas and smaller, less developed provinces exhibit persistently high levels of informal wage employment and self-employment, with limited progress in formalization. This spatially uneven process of labor formalization highlights the existence of strong urban and regional biases in labor market adjustment and institutional effectiveness. Methodologically, the paper combines two complementary approaches. First, a Shapley–Shorrocks decomposition is applied to quantify the relative contribution of educational attainment, age structure, household material conditions, and region-specific factors in explaining regional disparities in labor force participation and employment composition. The results show that education and household conditions play a key role in explaining participation outcomes, particularly among women, while region-specific characteristics are especially important in explaining informal wage employment and self-employment. These findings reinforce the idea that structural and territorial factors strongly condition labor market outcomes beyond individual characteristics. Second, the paper examines the cyclical behavior of labor market indicators using provincial-level panel data models. The results indicate that labor force participation, particularly among women, exhibits countercyclical behavior, providing evidence in favor of the added worker effect in a developing-country context. Formal wage employment is found to be strongly procyclical, expanding during economic upturns and contracting during downturns, whereas informal wage employment displays clear countercyclical dynamics, consistent with the traditional segmented labor market view. Self-employment shows limited and heterogeneous responses to the business cycle, suggesting that its role as a refuge sector varies significantly across regions. By explicitly integrating the regional and urban–rural dimensions, this paper contributes novel evidence to the literature on labor markets in developing economies. It shows that aggregate improvements in labor formality may mask persistent and spatially concentrated inequalities, with formalization processes benefiting primarily large urban centers. These findings underscore the importance of place-based labor and social policies aimed at reducing informality beyond major metropolitan areas and addressing the structural disadvantages faced by smaller provinces and rural regions.

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## THE CULTURAL EVOLUTION OF ALGORITHMIC DECISION-MAKING: INSTITUTIONAL FILTERING AND BEHAVIORAL PERSISTENCE IN CHINESE FINANCIAL NETWORKS

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### Abstract

Within the framework of regional innovation networks, the rise of quantitative investing represents a major cultural shift in financial decision-making, moving from human intuition toward algorithmic logic. This study examines institutional filtering—the ability of formal models to reduce irrational biases—by looking at calendar effects in Chinese quantitative funds from 2011 to 2019. While proponents argue that this "technological culture" uses diversity to avoid emotional mistakes, our analysis shows a paradox: calendar effects (at the end of months, quarters, and years) in quantitative funds are actually much stronger than those in traditional funds during bear markets. Specifically, we find evidence of strategic "holdings markup" at year-ends, where algorithms follow human-led price manipulation to boost net asset values (NAVs). Our findings suggest that without strong regulation, algorithmic innovation may "evolve" to exploit market gaps rather than fix them. We conclude that knowledge creation in digital finance does not automatically improve through technology alone; instead, better algorithmic transparency is needed to ensure that technology works alongside institutional integrity.

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## IDENTIFYING GATEKEEPERS IN THE ALLOCATION OF PUBLIC FUNDS: A SPATIAL ECONOMETRIC ANALYSIS

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### Abstract

This paper investigates the political economy of discretionary public resource allocation in developing countries, using novel spatial econometric techniques applied to Chile. We examine how political intermediaries influence the distribution of infrastructure development funds, with significant implications for allocative efficiency and local development outcomes. Our key methodological innovation redefines spatial proximity by incorporating political dimensions into spatial weight matrices, allowing us to identify the role of different political actors in resource allocation. Using data from two discretionary infrastructure programs (PMB and PMU) in 2012, we exploit a unique identification strategy: during this period, right-wing municipalities had lower poverty rates while a right-wing government was in power, allowing us to separate political alignment effects from poverty-targeting.

Our results reveal that senators, rather than local authorities, act as primary gatekeepers in discretionary fund allocation, with the indirect political-spatial effect being 62% larger than the direct municipal effect. This finding persists after controlling for poverty, population size, and electoral competition. A placebo test using formula-based transfers (FCM) confirms that these political-spatial effects are specific to discretionary programs. The misallocation of development resources through political intermediation represents a significant efficiency loss: aligned municipalities receive 31,010 pesos per capita more than non-aligned ones, regardless of development needs. These findings have important implications for institutional design in developing countries with centralized fiscal systems, suggesting that political intermediation in resource allocation may undermine development objectives and perpetuate spatial inequalities.

## MINING WINDFALLS AND LOCAL FISCAL BEHAVIOR IN UNITARY STATES: REASSESSING THE FLYPAPER EFFECT UNDER NON-MATCHED GRANTS SCHEME

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### Abstract

The flypaper effect—the tendency of intergovernmental transfers to increase subnational spending more than equivalent increases in private income—remains strong even in highly centralized systems where its conventional fiscal mechanisms should be attenuated. In unitary countries such as Chile, where municipalities lack tax autonomy and depend heavily on central transfers, mineral-based windfalls reshape local incentives in ways that diverge from federal contexts. While these windfalls are intended to strengthen municipal autonomy, they may also erode tax effort, heighten dependence on transfers, and induce inefficient or politically motivated spending (Caselli and Michaels 2013; Brollo et al. 2013).

This paper revisits the flypaper effect in Chile by exploiting exogenous variation from mining windfalls driven by global copper prices and geological conditions. Such shocks allow us to isolate causal effects while avoiding the endogeneity intrinsic to politically allocated grants. Because municipalities cannot adjust tax rates, we focus on alternative channels—reduced tax collection effort, political incentives, and institutional frictions—that may sustain the flypaper effect in centralized systems.

A distinctive contribution is the incorporation of municipal political structure into the analysis. We examine whether fiscal responses vary with council configuration using the Herfindahl–Hirschman Index (HHI) of ideological concentration, Mayoral Strength (MS), Mayoral Majority (MMaj), and Mayoral Distance (MD). These indicators capture political cohesion, alignment, and opposition, allowing us to assess whether political environments condition spending reactions to windfalls.

Using dynamic and spatial econometric models, results reveal a large and robust flypaper effect: each additional dollar of windfall revenue increases municipal spending by roughly US\$1, even after accounting for spatial dependence. The findings offer policy insights for resource-rich unitary countries seeking to balance redistribution with accountable local fiscal governance.

## THE ROLE OF AGRIFOOD COOPERATIVES IN ADDRESSING SOCIO-ECONOMIC AND ECO-SOCIAL CHALLENGES: THE CASE OF FAMILY FARMING IN SOUTHEASTERN SPAIN

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### Abstract

Agrifood cooperatives in southeast Spain have increasingly turned to collective collaboration and coordination to address socio-economic and socio-ecological challenges, transforming their role from a dominant market logic to cooperation as a coordination mechanism based on the mutual benefit of the community and the environment. In turn, their capacity to meet a wide range of needs and challenges of their members and the community contributes to their longevity. These entities can act as a coordination mechanism for both the market and other sectors, balancing the economic, social, and environmental dimensions so that neither market logic nor other logics are dominant or exclusive. Agrifood cooperatives play a crucial role in food production and distribution in Europe, enabling small farmers to address challenges such as global competition, market consolidation, and limited access to financial resources. Cooperatives have proven essential for maintaining the viability of small family farms by providing collective services, thus fostering economic, social, and ecological sustainability. This study analyzes family farming in southeastern Spain (Almería province), focusing on the role of agricultural cooperatives and their link to the area's sustainable development. In this region, these organizations have intensified their collaboration and collective coordination to address socio-economic and eco-social challenges, transforming their role from a market-driven logic to a cooperative mechanism based on mutual benefit for the community and the environment. The study employs a case analysis, linking economic, socio-economic, and eco-social indicators to demonstrate how cooperatives have adapted their structure and strategy to ensure their sustainability. In the economic and socio-economic dimension, the following stand out: i) the consolidation of market power: more than 85% of horticultural production in Almería is managed by cooperatives, allowing small farmers to compete in international markets; ii) job creation: agrifood cooperatives are major employers, with a particular focus on the labor market integration of women and foreign workers; iii) innovation and education: through training programs and knowledge networks, cooperatives improve the competitiveness and sustainability of their members. Regarding the eco-social dimension, the following stand out: i) resource management, for example, irrigation communities in collaboration with cooperatives have promoted the efficient use of water, with Almería registering one of the lowest levels of agricultural water footprint in Spain; ii) the reduction of environmental impact, in this sense, cooperatives lead the implementation of quality standards and techniques such as integrated pest management, which have significantly reduced the use of pesticides; also iii) waste management, whether plastics, chemical products and plant biomass, moving towards circular economy models that promote recycling and revaluation; iv) on the other hand, cooperatives are promoting solar energy, biomass and cogeneration projects to reduce their carbon footprint and their energy costs. In general terms, this study case illustrates how agrifood cooperatives can act as effective coordination mechanisms that balance economic, social, and ecological needs. This model is relevant for future studies on resilience and sustainability in agricultural systems.

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## BEYOND OBJECTIVE MEASURES: HOW SUBJECTIVE SOCIAL MOBILITY SHAPES DEMOCRATIC DISSATISFACTION IN URBANIZING LATIN AMERICA

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### Abstract

Over the past two decades, Latin America has made notable progress in intergenerational mobility, with younger cohorts attaining higher levels of education than their parents. Yet, these educational gains have not consistently translated into improved living conditions, particularly in contexts where economic structures remain stagnant or unproductive. This disconnect may help explain growing dissatisfaction with democracy, as many individuals perceive a gap between their aspirations and the realities they face, despite their educational achievements. While such upward mobility may be considered “objective”, rising discontent with democratic institutions and increasing support for autocratic alternatives also appear to be shaped by subjective perceptions of socio-economic status. To investigate this, we use more than two decades of Latinobarómetro data to examine whether self-perceived wealth relative to one’s parents—and in turn, one’s children—affects levels of dissatisfaction with democracy. Furthermore, we explore how these perceptions vary across different levels of urbanization, a particularly relevant dimension given Latin America’s rapid and ongoing urban growth. As the regional urban population frequently sees higher levels of education and exposure to opportunities, the subjective experience of stagnation or disappointment in these areas may be particularly acute and politically salient.

## TARIFFS AND INDUSTRIAL LOCATION IN ECUADOR

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### Abstract

This paper examines the effects of trade liberalization on the internal geography of manufacturing in Ecuador during the period 2000–2010, a decade in which the combined impact of the country's 2000 dollarization and the wide ranging tariff reforms of the 1990s was fully in force. While the theoretical literature in New Economic Geography (NEG) provides ambiguous predictions regarding whether international integration generates spatial concentration or dispersion of economic activity within a country, the empirical evidence remains similarly inconclusive and strongly dependent on country specific characteristics. Ecuador offers a particularly informative case, as it differs from many Latin American economies—such as Mexico or Argentina—by having two major economic centers of comparable size (Quito and Guayaquil) and by being simultaneously integrated into two distinct trade spheres: the Andean Community and the United States through preferential agreements.

To analyze how trade policy affected patterns of industrial location, we exploit a uniquely assembled dataset covering 20 manufacturing sectors and 20 provinces for the years 2000 and 2010. Sector level tariff protection is constructed from more than 90,000 tariff subheadings from the Ecuadorian Customs Authority, aggregated into nominal and import weighted tariff measures following Central Bank methodology. Manufacturing employment by province and four digit ISIC sector is obtained from the Ecuadorian annual industrial survey.

We construct provincial indicators capturing market potential, industrial base, agricultural and natural resource endowments, labor force characteristics, infrastructure, and industrial promotion policies; and industrial indicators capturing factor intensities, intermediate inputs intensity and economies of scale. Distances to Quito and Guayaquil are used to proxy access to the country's two main domestic markets, while robustness tests also incorporate distances to Bogotá to control for proximity to Ecuador's key Andean partner.

Following Sanguinetti and Volpe Martincus (2009), we estimate a pooled OLS model in which industrial location is the result of multivariate interactions between regional and industrial characteristics and is also explained by the interaction between distance to Quito or Guayaquil and tariffs.

Across all specifications, results indicate that trade liberalization did not generate a redispersion of economic activity away from the principal urban centers. Instead, the interaction between distance to Quito and sectoral tariffs is consistently positive and significant—albeit small in magnitude—implying that sectors facing lower protection tended to concentrate more strongly in Quito. Evidence for Guayaquil is weaker and less robust. These findings stand in contrast to the redispersion observed in Mexico and Argentina following trade reforms but align with results for Brazil and with NEG models predicting reinforced agglomeration when domestic market linkages outweigh congestion or competition effects.

Overall, the analysis suggests that Ecuador's liberalization process—particularly its orientation toward the Andean market—strengthened Quito's role as the country's primary industrial hub, while Guayaquil did not experience a comparable boost despite increased trade with the United States. The paper highlights the importance of domestic geography, regional market access, and trade orientation in shaping the spatial effects of liberalization.

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## THE INFLUENCE OF SOCIAL CAPITAL ON SUBJECTIVE POVERTY

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### Abstract

Poverty has usually been analyzed using objective measures. However, a subjective approach to poverty allows us to understand people's perceptions about poverty. An important element of subjective poverty is social capital which informs about non-material resources people have in terms of social networks and social environment. This study aims to analyze the impact of social capital on subjective poverty using two approaches of social capital: the immediate environment and the general environment. Using data from the 2020 Latinobarómetro, a generalized ordered Logit model is estimated. The results show that social media is an important element of social capital that allows reducing poverty and trust in institutions is negatively associated with poverty. In addition, socio-demographic factors such as age, education, employment status, among others, influence subjective poverty.

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## MEGA-PROJECTS, PLANNING AND REGIONAL DEVELOPMENT IN MEXICO

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### Abstract

A megaproject is a large-scale economic and political plan with a technical and infrastructural base designed to exploit geographic areas according to its spatial, temporal, or raw material objectives. From the definition of its objective, the impact and the relationship it generates between society, the State, and private enterprise are identified. In Mexico, several megaprojects have been promoted, flagship projects of the last two federal administrations. The most relevant current project, requiring further analysis from different theoretical and methodological perspectives, is the so-called "Plan México." This plan aims to construct industrial corridors and development hubs throughout the country. Within this master plan, the Interoceanic Corridor of the Isthmus of Tehuantepec (CIIT) stands out. Connecting the narrowest part of Mexico, the plan seeks to bring development closer to the southern and southeastern regions of Mexico, the most vulnerable and unequal region in the country, while simultaneously exploring a new trade route as an alternative to international commerce. This and other projects being promoted by the federal government, which involve a significant deployment of resources at all levels of government, must be analyzed more thoroughly, considering all their economic, social, and environmental implications. Likewise, it is necessary to analyze, from an academic perspective, the territorial impacts of this and all the megaprojects that will be promoted under the framework of Plan Mexico.

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## IDENTIFYING POTENTIAL AND SEMINAL SPECIALIZATIONS IN RURAL AREAS IN POOR LAG BEHIND REGIONS OF SOUTH AFRICA, USING LAND USE ANALYSIS WITH ARTIFICIAL INTELLIGENCE

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### Abstract

There is difficulty in identifying potential and seminal specializations in rural areas in poor lag behind regions. The novelty of the paper is the combination of statistical databases at the regional level and geographical databases to estimate basic employment from land cover maps. The paper uses data on agricultural employment for the 52 regions of South Africa and, with justified treatment of raw data, estimates the employment per hectare for different types of land uses. Then, with location quotients for the employment discriminated for industry, services, and different types of agricultural land uses, the paper estimates the basic employment for each one of the 52 regions of South Africa.

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## AUTOMATION AND MATCHING FUNCTION IN THE COLOMBIAN LABOR MARKET: AN ANALYSIS FOR THE PERIOD 2015-2022

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### Abstract

We estimate the matching function to analyze the effect of labor automation on matching in the Colombian labor market using panel data at the occupational level from 2015 to 2022. The results suggest that the matching function presents increasing returns irrespective of the level of automation of occupations. Vacancies have a greater influence than unemployment regardless of the degree of automation, indicating that an additional vacancy is more likely to generate a new match. The possible transition of workers into less automatable occupations is also observed. Finally, a negative impact of COVID-19 on job matching is identified, especially in highly automatable occupations.

## TERRITORIAL JUSTICE AND SACRIFICE ZONES IN TOCANTINS, BRAZIL: INSIGHTS FROM THE RIO FORMOSO IRRIGATION PROJECT

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### Abstract

This paper examines the territorial, socio-environmental, and legal implications of the Rio Formoso Irrigation Project, one of the largest continuous irrigation schemes in Latin America, located in the state of Tocantins, Brazil. The project plays a central role in the regional development strategy based on irrigated agribusiness, while simultaneously generating intense conflicts over land use, water access, and Indigenous territorial rights. Anchored in Regional Development Studies, Political Ecology, and Territorial Justice, the study conceptualizes the Rio Formoso area as a sacrifice zone produced by asymmetric power relations between state-led development policies, agribusiness expansion, and Indigenous peoples.

The theoretical framework articulates the concepts of sacrifice zones and environmental justice with the understanding of territory as a system of objects and actions, complemented by the notion of multinormativity. This approach highlights the coexistence and tension among different normative orders—state law, Indigenous legal systems, and environmental regulation—allowing for an integrated analysis of how development policies institutionalize unequal distributions of socio-environmental costs and benefits.

Methodologically, the study adopts a qualitative and transdisciplinary case study approach. The empirical material includes: (i) semi-structured interviews with Indigenous leaders, public officials, agribusiness representatives, and legal actors; (ii) documentary analysis of judicial proceedings, institutional reports, and regulatory frameworks related to land and water governance; and (iii) secondary data on agricultural production and land use change covering the period from 1979 to 2024. Data triangulation supports a consistent reconstruction of territorial and institutional conflicts. The findings indicate that the Rio Formoso Irrigation Project has promoted significant territorial reconfiguration, intensified socio-environmental vulnerabilities, and restricted Indigenous access to water and ecosystems essential for the reproduction of traditional livelihoods. The expansion of irrigated rice cultivation and soybean production, combined with recurrent hydrological stress, has exacerbated conflicts over water use. Discourse analysis reveals a sharp contrast between state and business narratives framing the project as a vector of modernization and Indigenous narratives denouncing environmental degradation, cultural disruption, and violations of constitutional rights. The paper argues that prevailing development models in Tocantins reproduce territorial inequalities and institutionalize sacrifice zones, underscoring the need for a regional development paradigm grounded in territorial justice, environmental sustainability, and intercultural governance.

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## CONVERGENCE IN COLOMBIA'S TOTAL FACTOR PRODUCTIVITY: A SPATIAL ANALYSIS 1992-2022

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### Abstract

Productivity growth drives economic growth, with manufacturing being an essential sector. This study aims to identify inputs affecting manufacturing value added and estimate the Total Factor Productivity (TFP) for Colombia's departments using the Levinsohn-Petrin (LP) method and the Generalized Method of Moments (GMM) according to Wooldridge from 1992 to 2021 and using a KLHEMIS structure. Additionally, the assumption of Constant Returns to Scale (CRS) assumption in the manufacturing sector is tested. Results show that physical capital, human capital, electricity consumption, and public services significantly influence the manufacturing value added. However, both models indicate decreasing returns to scale. Once the elasticities are calculated, TFP is computed as the difference between value-added and inputs. The analysis reveals cyclical manufacturing TFP growth rates, with an annual average of 2.5%. Finally, the study analyzes the spatial and non-spatial convergence of manufacturing TFP, finding significant convergence relationships between departments, suggesting that manufacturing productivity tends to align in the long term, reflecting a homogeneous growth.

## **PUBLIC INNOVATION AND COLLABORATIVE GOVERNANCE FOR SUSTAINABLE INFRASTRUCTURE PLANNING: THE EXPERIENCE OF THE SUSTAINABLE INFRASTRUCTURE FOR COMPETITIVENESS PROGRAM (ISIC) IN THE LOS LAGOS REGION**

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### **Abstract**

The ISIC Program (Sustainable and Inclusive Infrastructure for Regional Competitiveness) is an initiative of the Los Lagos Regional Government, implemented by the University of Los Lagos, and carried out between 2024 and 2025. Its purpose was to support the strategic planning of regional infrastructure to strengthen competitiveness, sustainability, and social inclusion. The program sought to articulate public, private, and academic sectors around projects aimed at improving the quality of life and reducing territorial inequalities. The ISIC Program emerged as a response to three interrelated and complex public problems affecting the management of public infrastructure in the Los Lagos Region. First, the lack of a shared strategic vision for infrastructure hindered the alignment of sectoral investments with sustainable regional development objectives. Second, the fragmentation of information and planning tools prevented the development of an integrated database to support decision-making on priority projects. Finally, the disconnect between public services and levels of government—manifested in ineffective communication, duplication of initiatives, and institutional disputes over leadership or project authorship—resulted in inefficiencies, wasted resources, and a limited capacity for territorial coordination. Faced with this scenario, ISIC sought to develop an innovative methodological and institutional response based on stakeholder collaboration and the integration of sustainability, inclusion, and competitiveness criteria for project evaluation and portfolio definition. The process design enabled the consolidation of a collaborative governance structure that served as a space for collective learning and trust-building among participating institutions. This experience was implemented through the formation of a multisectoral committee of experts composed of representatives from civil society, private companies, political authorities, and regional public services. Through a deliberative process and the application of a multi-criteria evaluation matrix, projects were prioritized, resulting in the definition of a portfolio for sustainable and competitive infrastructure development by 2050. The ISIC demonstrates that, rather than being merely an instrumental initiative, it functions as a public management laboratory where sectoral and expert knowledge, political will, and a regional strategic vision converge to generate solutions to complex infrastructure-related challenges affecting the territory. This process demonstrated that innovation depends not only on the creation of new administrative procedures, but also on the deliberate redesign of collaborative interactions among actors operating in the public sphere. In addition, the ISIC highlights that intermediate levels of government constitute key arenas for the generation of innovative initiatives to address public problems. Territories can foster innovation by developing context-specific planning models adapted to their socio-environmental and productive realities. The ISIC's methodological approach transcends its original regional context, positioning itself as a replicable reference for other regions seeking to align their investment portfolios with sustainable development objectives while maintaining competitiveness.

## FROM IMPLEMENTATION TO THE EVALUATION OF COLLABORATIVE GOVERNANCE PROCESSES IN REGIONAL SETTINGS: THE CASE OF THE PACT FOR A SUSTAINABLE REGION IN THE LOS LAGOS REGION, CHILE

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### Abstract

Several contemporary public management paradigms promote collaborative governance between public and private actors as a mechanism for addressing complex territorial problems. While there is growing evidence of the proliferation of these initiatives at different scales—local, regional, and national—the systematic evaluation of their establishment and implementation processes remains limited. This study contributes to addressing this gap by evaluating the design, implementation, and consolidation of the Pact for a Sustainable and Inclusive Region Program in the Los Lagos Region, a program developed between 2022 and 2025 under the leadership of the Regional Government. The program brought together more than 150 public and private organizations and institutions from eight strategic productive sectors of the region (agriculture, construction, livestock, maritime and port activities, mussel farming, salmon farming, and tourism), creating a deliberative space aimed at defining shared commitments and strategic goals for sustainable and inclusive development. The evaluation was based on the analysis of participants' perceptions and experiences, which enabled the identification of critical factors for establishing a collaborative governance process at the regional level.

The establishment of an ambitious collaborative governance process in the Los Lagos Region aimed at defining commitments and goals for sustainable and inclusive development was enabled by two critical factors: innovative political leadership that convened diverse actors, mobilized resources, and promoted spaces for dialogue and negotiation across productive sectors; and the positive disposition and persistence of the region's main private actors and public services in sustaining a continuous process of dialogue and coordination.

Collaboration among different actors (public institutions, businesses, academia, social organizations, and local communities) is a key condition for establishing genuine collaborative governance processes and—as in this case—for advancing sustainability and inclusion. In this context, the creation of permanent spaces for dialogue, supported by clear rules of participation, strengthens both the legitimacy of agreements and the social ownership of proposals. The evaluation shows that when local actors participate in the co-creation of solutions, the relevance, sustainability, and implementation capacity of the proposed measures increase.

The systematic evaluation of the Pact for a Sustainable and Inclusive Region in Los Lagos demonstrates the viability and added value of collaborative governance processes in territorial management. The results show that innovative political leadership and the willingness of public and private actors are critical factors for their establishment. However, the evaluation also highlights the need to ensure sustained political support and adequate funding for the effective implementation of the agreed commitments. This research highlights the role of evaluation as a tool for institutional learning and continuous improvement. By assessing participants' perceptions and experiences, the evaluation identifies strengths of the deliberative process—such as overcoming stereotypes and building trust—as well as key challenges affecting its long-term sustainability.

## TOWARD A REINTERPRETATION OF REGIONAL RESILIENCE UNDER THE IMPACT OF THE WAR IN UKRAINE: A COMPARATIVE STUDY OF EUROPEAN REGIONS

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### Abstract

Over the past decade, European regions have confronted a succession of major shocks, including the global financial crisis, the COVID-19 pandemic, and Russia's aggression against Ukraine. These events, combining sudden disruptions with long-term, "slow-burning" pressures, have intensified spatial inequalities and placed regional resilience at the centre of public policy debates. The overlap of acute shocks and chronic stresses creates a complex and uncertain environment in which regions differ markedly in their capacity to absorb impacts, adjust to new conditions, and limit the accumulation of socio-economic risks. As a result, addressing contemporary development challenges requires a reinterpretation of resilience that is grounded in a clearer identification of shock sources, differentiated exposure and vulnerability, and the consequences for regional development trajectories. Such a perspective allows resilience to be analysed in a risk-aware manner, without reducing it to narrow notions of crisis management or short-term recovery.

This analysis aims to develop and apply an original methodological framework for the operationalization of regional resilience and to construct a typology of regions of European Union Member States in terms of their responses to the socio-economic consequences of Russia's aggression against Ukraine. The research is based on an integrated operationalization of resilience that combines the VEC components of shock response (vulnerability, exposure, and consequences) with a multi-dimensional characterization of regions across social, economic, infrastructural/environmental, institutional, and geopolitical/strategic dimensions, in line with an evolutionary and multi-phase understanding of resilience. The typology serves as a systematic analytical tool for comparing regional resilience profiles and for identifying similarities and differences in how configurations of vulnerability and exposure translate into observed socio-economic consequences and adjustment processes. In this way, it supports structured cross-regional comparison and provides a robust basis for selecting test regions for idiographic studies aimed at tracing processes of adaptation, reorientation, and potential transformational change in regional socio-economic systems in response to the development shock in question.

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## 404 NOT FOUND: THE INTERNET AND INTERNATIONAL TRADE

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### Abstract

The internet is widely believed to make cross-border business easier, thereby increasing the volume of international trade. This paper aims to provide evidence in support of this stylized fact which is typically difficult to identify empirically. Specifically, I use the country-wide internet blackout in Tonga in January 2019 as a natural experiment to examine the effect of the internet on trade. Analyzing monthly trade data for Tonga over the period from 2014 to 2019, I find an economically and statistically sizable, temporary decline in trade when the country's internet connectivity was lost. Consequently, the damage of sudden disruptions in the existing technological infrastructure in terms of foregone trade may be indeed sizable.

## BACK TO THE COUNTRYSIDE? REMOTE WORK AND COUNTERURBANISATION IN DENMARK AND SWEDEN

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### Abstract

This study examines migration from Copenhagen and Stockholm's capital city areas (CCA) to rural destinations (2014-2023), focusing on migrant characteristics, COVID-19's impact, and remote work's role. Utilising longitudinal micro-register data and logistic regression, we analyse counter-urbanisation patterns in two Nordic countries sharing cultural similarities but differing markedly in population density and geography.

The findings reveal fundamental cross-country differences. Denmark exhibits strong socioeconomic stratification, where highly educated, high-skilled workers avoid rural migration, whilst high earners drive a "wealthy rural exodus" seeking amenity-rich lifestyles. Sweden demonstrates spatial flexibility, with rural migration broadly distributed across social groups, though highly educated workers migrate substantially longer distances regardless of destination.

A key finding is remote work's divergent role as a mobility shock. In Denmark, higher work-from-home (WFH) probability paradoxically reduces CCA-to-rural migration, reinforcing metropolitan attachment, a pattern intensified during the pandemic. Sweden shows the opposite, where remote work gradually expanded the feasible migration radius, with higher WFH probabilities associating with notably longer distances to both rural and urban destinations, particularly post-pandemic.

Understanding these dynamics provides crucial insights for policymakers managing population redistribution and sustainable rural development where remote work increasingly drives residential preferences. Rural municipalities can proactively leverage the counterurbanisation trend, which is driven by desires for improved well-being and affordability, by investing in digital infrastructure and emphasizing local amenities such as environmental sustainability, cultural offerings, and social inclusivity to attract and retain new residents.

# THE REGIONAL RETURNS TO TRANSPORT AND CULTURAL INFRASTRUCTURE: A TERRITORIAL CAPITAL APPROACH FOR AUSTRIA

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## Abstract

Infrastructure investment has long been regarded as a central driver of regional economic development and competitiveness, with transport infrastructure occupying a dominant position in both policy discourse and empirical research. Roads, railways, and airports are commonly assumed to enhance accessibility, productivity, and regional convergence. However, evidence from highly developed economies increasingly challenges this transport-centric perspective. In contexts where transport networks are already dense and mature, additional investment may yield diminishing or even negligible returns, and in some cases may simply follow, rather than stimulate, income growth. At the same time, social, cultural, and digital infrastructures have gained attention as alternative sources of regional development, yet remain insufficiently integrated into econometric analyses. This paper addresses these gaps by rethinking how different types of infrastructure contribute to regional development when embedded in specific territorial contexts.

The study utilises a territorial capital perspective on infrastructure, and argues that infrastructure effects are fundamentally contingent on the social, economic, and institutional capacities of regions. Rather than treating infrastructure as a stand-alone input, we conceptualise it as an asset whose developmental impact depends on its interaction with territorial capital and on the maturity of existing networks. The paper's core contribution lies in developing a conceptual framework that explicitly links infrastructure outcomes to territorial capital. Thereby, the paper underscores the importance of regional absorptive capacities, social foundations, and institutional environments in shaping how infrastructure contributes to economic development.

Empirically, the analysis focuses on Austrian NUTS-3 regions over the period from 2008 to 2021. Regional economic development is measured using gross regional product per capita, labour productivity, and disposable income. Infrastructure is operationalised along two distinct types: transport infrastructure, captured by road and rail density, and cultural infrastructure, measured through indicators such as theatres, museums, and festivals. Territorial capital is proxied through a composite index encompassing economic, social, and human capital dimensions, including firm density, sectoral diversification, innovation capacity, associational density, and demographic dynamics. The empirical strategy lies on a comparative “horse-race” model that contrasts the returns to cultural and transport infrastructure. Non-linear specifications are employed to test for diminishing returns to transport investment and to incorporate interaction terms that assess how territorial capital conditions the effects of infrastructure. We hypothesise that cultural infrastructure generates territorially contingent development effects, while transport infrastructure exhibits weak or diminishing returns in a mature network and limited complementarities with territorial capital. By integrating two distinct infrastructure types, network maturity, and territorial capital into the analysis, the paper contributes to a more nuanced understanding of infrastructure-led development in advanced regional contexts and offers policy-relevant insights for rebalancing infrastructure investment priorities.

## WHAT DRIVES REGIONAL DIFFERENCES IN OCCUPATIONAL SEX SEGREGATION? THE CASE OF GERMANY

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### Abstract

For many women, it is self-evident to participate in the labour market, albeit in different segments than men. Sex segregation prominently manifests itself in the choice of different occupations and the resulting sorting into different economic sectors. As a stylized fact that can be observed for many countries, women tend to work in sales, cleaning, care and office occupations, whereas men rather work in transport, construction, and trades occupations. Occupational sex segregation entails considerable implications for individual success in the labour market. For example, men systematically outperform women in terms of wages and career chances, which is closely interrelated with the sorting of women into low-paid (part-time) jobs. In addition to detrimental individual effects for women, such as lower pay in female-dominated occupations, on the macro level occupational segregation impedes the optimal allocation of work across occupations and threatens to exacerbate labour and skill shortages.

Empirical research on this issue has so far mostly been conducted on the national level. This is surprising, since there are profound differences in the economic structure of regions that determine the demand side for occupations differently for men and women. On the labour supply side, gender roles vary in regional respect, often unconsciously influencing men's and women's occupational choice. Moreover, local socio-demographic features such as gender differences in human capital or in the age structure might also impact individuals' occupational choice. These regional disparities can be expected to be of more relevance for women than for men, since they are spatially more confined in their job search due to their lower regional mobility. As a result, characteristics of the local labour market are in close relation with labour market outcomes of individuals who work there. Hence, it is important to investigate gender differences in occupation and qualification and its determinants at the regional level. Not least, regional gender differences in occupations strongly determine profound regional differences in the gender pay gap.

This paper contributes to the sparse literature on regional differences in occupational sex segregation. Using detailed information on all employees in Germany for the years 2011 to 2024, we calculate indices of dissimilarity across occupations and qualification at the level of the NUTS 3-regions. Descriptive results show profound regional disparities, with distinctive sex differences in the explanatory factors. For explaining the disparities, we resort to a large set of determinants on the local labour market structure, gender and family relations, and socio-demographic features. Multiple fixed effects regression results point towards the relevance of the local labour market structure such as a high employment share of the construction sector, gender and family relations as well as the local socio-demographic composition such as the share of high-qualified women. In order to take spatial dependencies between local labour markets into account, we enrich the fixed effects regressions with spatial models. The results entail important implications for local labour market actors to reduce detrimental effects both for women and for regional labour and skill shortages.

## DO NEW CONSTRUCTIONS FILL THE GAP? HOUSING UTILIZATION AND VACANCY SPILLOVERS IN VIENNA

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### Abstract

Housing construction is widely regarded as a key strategy to address urban challenges of affordability, availability, and housing-market pressure. In recent years, Vienna has experienced a substantial wave of new residential development, driven both by limited-profit housing associations and by commercial developers, particularly in large-scale project areas such as Seestadt Aspern, Nordbahnhofviertel, and Sonnwendviertel. Despite the scale of this construction activity, little is known about its broader system-wide effects on the urban housing fabric, specifically, who moves into these new dwellings, from where they relocate, and what consequences these moves have for origin neighborhoods.

From a sustainability perspective, a central question is whether this highly resource-intensive approach actually alleviates housing market pressures directly through new housing production and indirectly through beneficial moving chains. However, new housing construction may also merely redistribute residents spatially, potentially creating new pockets of vacancy and underutilization in other parts of the city.

To address this topic, we draw on extensive longitudinal population and housing register data that allow us to track residential moves into and out of specific areas of Vienna, as well as housing registrations and non-registrations as proxies for vacancy. We link these data to detailed information on building age and ownership structure to capture key housing market segments shaped by social housing provision and housing subsidies.

Using regression-based analytical frameworks we analyze the distributional and spatial consequences of moves into newly built housing. Concretely, we ask: (1) How do new housing units reshape the spatial distribution of primary residences across different building age and ownership typologies? (2) Who moves into newly built areas, and from where? And (3) to what extent do moves into new construction predict vacancy creation in origin neighborhoods? This approach allows us to assess the broader side effects of major housing policy instruments in terms of who benefits from new construction and where risks of disinvestment or underutilization emerge. By explicitly linking moving chains to vacancy dynamics, this paper clearly contributes to urban policy debates on targeting, spatial equity, and the unintended consequences of large-scale housing provision in growing cities.

## POPULATION DISPLACEMENT ON THE BACKDROP OF CONFLICT ZONES: THE EVIDENCE FROM SPATIAL DATA

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### Abstract

Modern conflicts are more complex, more fragmented, and more causal, yet increasingly less isolated – often with local and regional spillover effects even at the continental scale. The causes of the conflict often vary, but they almost always lead to mass population displacements, alter neighbouring areas, pressure local resources, spark population resentment, fueling social tensions. Global displacement is caused by a mix of factors, primarily conflict, violence, and persecution, which leads to forced migration. There are also environmental issues like climate change, natural disasters (floods, storms, droughts), and habitat loss, as well as economic hardship, instability, and poverty, which are forcing people to seek better opportunities or flee (GHO, 2024; IOM, 2024; IOM, 2022). The most recent reports pointed to elevated ongoing population and migration changes. At the end of 2024, the number of forcibly displaced people worldwide was estimated at 123,2 million. Over the last decade, the number of forcibly displaced people almost doubled (UNHCR, 2024). However, many more people are in a state of human crisis. In 2025, 305 million people worldwide require urgent humanitarian assistance and protection, as multiple crises escalate with devastating consequences for affected people (GHO, 2024). In addition to conflicts in Ukraine and Gaza, millions of people have been displaced due to conflict, such as within and/or from the Syrian Arab Republic, Yemen, the Central African Republic, the Democratic Republic of the Congo, the Sudan, Ethiopia and Myanmar. There have also been large-scale displacements triggered by climate- and weather-related disasters in many parts of the world, including in Pakistan, the Philippines, China, India, Bangladesh, Brazil and Colombia (IOM, 2024). The objective of the paper is to examine population changes through the lens of forced population displacement, where internal and/or external factors often drive migration. There is already evidence (ACLED, UNHCR, IDMC) of the spatial connectivity and geographical synergies among many of the world's conflict zones, which are driving mass emigration waves. Hence, the partial objectives of the paper may be defined:

- \* identification of major depopulation zones with the highest displacement rates
- \* analysis of geographic patterns and links between the zones using spatial statistics methods
- \* prediction and statistical inference from the spatial data

Within the paper's research scope, the following method of spatial analysis will be used:

- \* hot spot analysis for identification patterns of spatial clustering
- \* Incremental spatial autocorrelation for measuring the degree of clustering

The principal methods for analysis are the Moran Index and General G statistics. Such statistics would reveal clustering or dispersing patterns, including the hot spots. Incremental spatial autocorrelation would help define statistically significant distances that reflect the spatial intensity of clustering, further highlighting the interconnectivity of conflict zones. The application of the methods requires a continuous space, hence the continents of Europe, Africa and Asia will be evaluated assuming a "Pangea" supercontinent. The novelty of the paper lies in linking theory and empirics with statistical methods of spatial analysis, providing further evidence on the geographic conditionality of local conflicts and making a significant contribution to population migration research.

## CLIMATE CHANGE AND THE RURAL LABOR MARKET: AN EMPIRICAL ANALYSIS OF OKUN'S LAW IN BRAZIL, COLOMBIA, AND MEXICO (2012–2024)

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### Abstract

Rural employment is pivotal for inclusive growth and progress toward the Sustainable Development Goals, yet rural labor markets in Latin America remain structurally vulnerable: informality is widespread, labor demand is seasonal, non-farm opportunities are limited, and livelihoods are highly exposed to climate-sensitive production systems. These features can weaken the canonical inverse relationship between economic growth and unemployment posited by Okun's Law, and they may even "decouple" short-run income dynamics from job creation. This paper reassesses Okun-type dynamics in rural Brazil, Colombia, and Mexico by embedding climate variability directly into a multivariate macro-labor framework and quantifying how temperature and precipitation shocks propagate into rural unemployment over time. We assemble a quarterly, subnational panel spanning 2012Q2–2024Q4 that merges rural labor-market indicators from national household surveys (IBGE for Brazil, DANE for Colombia, and INEGI for Mexico) with climate measures from NOAA. The sample includes 22 of Brazil's 27 federal units, 23 of Colombia's 33 departments, and all 32 Mexican federal entities; the remaining Brazilian and Colombian units are excluded because consistent rural meteorological series cannot be constructed over the full study window. Rural labor-market slack is measured as the growth rate (log first difference) of the number of unemployed individuals in rural areas. The core economic covariates are the growth rate of real household income (as a proxy for local economic activity) and the growth rate of rural human capital (proxied by changes in the stock of residents with technical qualifications or university education). Climate conditions enter as quarter-on-quarter percentage changes in average temperature (°C) and precipitation (mm), enabling harmonized short-run comparisons across countries. Methodologically, we estimate a Panel Vector Autoregression (P-VAR) with unit fixed effects and common time shocks, selecting up to four lags via the Bayesian Information Criterion and tracing dynamics through orthogonalized impulse-response functions under a recursive (Cholesky) identification. Variables are ordered as rural unemployment, real income, human capital, temperature, and precipitation, with shocks defined as one-standard-deviation innovations. Results point to a systematic weakening of the growth–unemployment channel in rural settings. Contrary to Okun's prediction, real income growth does not exhibit a robust, statistically significant unemployment-reducing effect in any of the three countries over the full sample, suggesting that rural labor absorption is muted by informality, underemployment, and structural rigidities. In contrast, climate shocks are first-order drivers of rural unemployment dynamics, with heterogeneous timing and intensity: higher temperatures increase rural unemployment in Brazil and Mexico (with short-run effects and partial subsequent correction in Mexico), while precipitation shocks are especially salient in Colombia, where rainfall increases raise unemployment with lags. Human capital effects are also heterogeneous: they reduce unemployment with delays in Colombia, are not robust in Brazil, and may be associated with short-run mismatch dynamics in Mexico. Overall, the evidence implies that climate variability can dominate short-run income effects in rural labor markets, underscoring the need to integrate climate adaptation into rural employment policy, align skilling with local labor demand and placement mechanisms, and deploy place-based, seasonally informed interventions that strengthen resilience and diversify rural livelihoods.

## INTENTIONS OF CITIZENS REGARDING THE DIRECTION OF AGRICULTURAL AND RURAL DEVELOPMENT: A COMPARATIVE ANALYSIS BETWEEN CHINA AND JAPAN

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### Abstract

The process of sustainable agricultural and rural development is essential for ensuring food security and transforming food systems. To achieve this, it is important to develop transition strategies aimed at changing the awareness and behavior of diverse stakeholders. Citizens are important actors who influence the direction of agricultural and rural development from multiple perspectives, including their involvement and support in agricultural policy formation, their proactive food consumption, and their investment and support for agricultural and food companies. In particular, change agents are considered to be civic innovators (or citizen innovators) for realizing sustainable agriculture and rural development and be important players in driving cognitive innovation through organizational learning at the citizen level (Senge 2006).

The purpose of this study is to clarify the commonalities and characteristics of the civic innovators both in China and Japan, as well as the intentions of public attitudes toward the direction of agricultural and rural development. Specifically, the study focuses on citizens' perceptions of risk factors related to food security, preferences and evaluations of agricultural and rural development policies, directions of farmer empowerment, and awareness related to food consumption by applying Latent Class Analysis (LCA) to the results of a large-scale questionnaire survey conducted in both China and Japan. Based on the analysis results, the study will derive policy implication.

The results of this analysis suggest that citizens in China and Japan are aware of risk factors to food security, support agricultural and rural development policies, and take practical steps to improve their food consumer behavior, forming an awareness of the direction of agricultural and rural development. Both countries share a common need for a stable food supply that meets consumer needs, reducing environmental impacts and addressing climate change, and promoting rural economic and social development through the empowerment of farmers. In Japan, farmers' development and the promotion of environmentally friendly agriculture, such as organic farming, are recognized as distinctive challenges, while in China, food safety and rural economic development are recognized as distinctive challenges. Furthermore, latent class analysis revealed that China and Japan both have a certain degree of what could be considered as an innovator citizen. In particular, those civic innovators are highly aware of the challenges facing agricultural and rural development and emphasize on sustainability in policy preferences and consumer behavior. Therefore, the our hypothesis that "Civic innovators favor the direction of sustainable agricultural and rural development." is supported.

## EXPLORING THE JAPANESE RICE FARMERS' INDIVIDUAL AND SHARED VISIONS FOR RURAL AND AGRICULTURAL DEVELOPMENT

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### Abstract

Rice farming not only provides food for Japan, but also plays an important role in environmental and social aspects. However, it has been pointed out that Japan's rice farming sector as a whole has a low entrepreneurship, the spread of innovation is slow, structural reform is lagging, and the environmental burden is high, posing sustainability challenges (OECD 2019). The Basic Act on Food, Agriculture, and Rural Areas, revised in May 2024, defines food security as "a state in which every citizen has access to a stable supply of high-quality food at a reasonable price with peace of mind". This study aims to explore the current state of Japanese rice farmers' individual visions for their work and life, and their shared vision for rural and agricultural development from the view of systems thinking. Specifically, we first introduce structural equation modeling (SEM) to the results of questionnaire survey to clarify the relationship between the individual and shared visions and strategies of Japanese rice farmers. Next, we apply cognitive map analysis to the results of the free answers to an online questionnaire survey of rice farmers to visualize their shared vision. Finally, through the case analysis of three rice farming operations, we answer the research question that "How does Japanese rice farming sector have an organizational learning strategy that encourages farmers' individual visions that lead to the creation of a shared vision?".

The empirical analysis results clarified that current rice policy and rice paddy policy often rely on subsidies, and the high degree of market intervention distorts competition, and does not encourage the development and exercise of entrepreneurship of stakeholders. To promote the creation of shared value in Japan's rice farming sector, the current centralized agricultural policy framework has many limitations in forming a shared vision. From the view point of systems thinking, rice policy needs to encourage organizational learning among diverse stakeholders in the food system, such as producers, businesses, consumers, citizens, and the government, both within and outside the region, and to implement management and strategies for forming a shared vision.

## CHALLENGES OF ORGANIC RICE FARMING IN JAPANESE AGRICULTURAL CORPORATIONS: TOWARD ESTABLISHING A SUSTAINABLE CSV MANAGEMENT MODEL

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### Abstract

In 2021, Japan's Ministry of Agriculture, Forestry, and Fisheries (MAFF) formulated the "Green Food System Strategy," which aims to balance productivity and sustainability in the food, agriculture, forestry, and fisheries industries through innovation. This strategy sets ambitious targets, including achieving zero CO2 emissions in these industries, reducing chemical pesticide use by 50%, and reducing chemical fertilizer use by 30%, as well as increasing the proportion of organic farmland by 25%. However, regarding rice, Japan's staple food, the ratio of organic rice cultivation as of 2022 remains extremely low at only 0.12%. Sustainable agricultural development requires balancing economic and social value, yet creating social value often diminishes economic value. The complexity of the factors related to value creation and their dynamic interrelation makes it difficult to clarify the actual situation, resulting in insufficient research on effective theories and strategies to balance social and economic values. Meanwhile, the CSV (Creating Shared Value) business model, which views solving social issues as a business opportunity and simultaneously realizes economic and social value, is gaining attention for its sustainability. Therefore, this study conducts an empirical analysis targeting agricultural corporations engaged in organic rice farming, aiming to clarify the conditions necessary to achieve both economic value (profitability) and social value (such as reduced environmental impact).

The analytical framework is based on a model where the manager's "philosophy" influences "strategy," which in turn leads to "outcomes." The analyzed data consists of 328 complete sets of data from rice farming corporations, selected from 1,382 responses to a survey by the Japan Agricultural Corporations Association. Using qualitative comparative analysis (fsQCA), the study derived the combination of causal conditions (CSV philosophy, entrepreneurship, market-creating strategy, scale of operations, organic rice cultivation ratio) that generate high economic value.

The conditions for achieving high economic value in "Organic Rice CSV-Type Agricultural Corporations" (rice farming corporations with above-average economic and social value) were consolidated into the following three patterns:

1. High social value × Low organic rice proportion × Small-scale operation × Strong CSV philosophy
2. High social value × Small-scale operation × Strong entrepreneurship × Strong CSV philosophy
3. High social value × Low organic rice cultivation ratio × Strong entrepreneurship × Weak market creating-strategy × Strong CSV philosophy

These results can be interpreted as follows: Agricultural corporations achieving high economic value operate based on CSV philosophy, but this does not mean they have successfully converted the value of organic rice cultivation itself into economic value. In many cases, economic value is secured through the characteristics of small-scale operations and entrepreneurship, while market-creating innovation has yet to be realized fully. Therefore, for the widespread adoption of organic rice cultivation, establishing a sustainable management model that incorporates "market-creating innovation" linking its social value to economic value is essential, beyond mere technology introduction.

## FROM HOUSING TO ASSET: HOW HOUSING FINANCIALIZATION SHAPED POST-SOCIALIST SKOPJE IN THE CONTEXT OF UNCERTAINTY

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### Abstract

Skopje’s transition from a socialist planned economy to a liberal market system occurred under conditions of prolonged instability, economic uncertainty and demographic stagnation. In this context, housing progressively shifted from a social good to a financial asset, becoming a primary instrument for value storage, investment, speculation and, in some cases, a medium of exchange (Aalbers, 2016). This paper examines how an extreme form of housing financialization has shaped Skopje’s urban development over the last three decades, not despite uncertainty, but precisely because of it.

The contribution argues that in a context where institutional trust, economic predictability and long-term development visions were weak, the built environment emerged as a relatively stable reserve of value. Practices such as *Kompenzacija* – where real estate is used as a compensatory and exchange mechanism between actors involved in the construction operations – are analyzed as adaptive responses to uncertainty, operating within and alongside formal planning instruments.

Through selected cases, the paper investigates how plans, regulations and urban policies have supported, enabled, or legalized ex-post these dynamics, opening spatial and regulatory pathways that have profoundly transformed the city. Rather than framing these processes as planning failures, the paper interprets them as outcomes of planning systems operating under deep uncertainty, where short-term adaptability has overridden long-term urban livability and strategic coherence. Methodologically, the paper adopts a qualitative, case-based approach combining the analysis of planning instruments with the close reading of the built environment. Selected sites and projects are examined across different phases of post-socialist transformation in order to trace how regulatory frameworks, development practices and financial logics have interacted over time. The analysis draws on planning documents, zoning regulations, development agreements and policy amendments adopted since the early 1990s, complemented by the interpretation of built outcomes as material evidence of regulatory and economic arrangements.

Preliminary findings suggest that planning instruments in Skopje have operated as mechanisms for enabling and stabilizing financialized housing practices in uncertain conditions rather than as tools for steering long-term urban development than. In this process, regulatory flexibility and ex-post legalization have played a central role in consolidating specific development trajectories, while narrowing the range of alternative urban futures. By reading the built environment as documentary evidence, the study reflects on how financialized housing practices produce unintended urban futures and path-dependent development trajectories. The paper contributes to broader debates on city development under uncertainty by highlighting the role of regulatory frameworks in shaping adaptive – but with differentiated impacts on urban form and livability.

## EVALUATION OF REGIONAL DEVELOPMENT PATHS AND IMPACT OF COHESION POLICIES: METHODOLOGICAL QUESTIONS AND CENTRAL EUROPEAN EXAMPLES

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### Abstract

The elimination of regional disparities of socio-economic phenomena or, in a milder and more common form, their reduction to an acceptable level, is often considered a desirable goal for economic and social policy. From the 1990s to the present, three factors have played the most significant role in the growing popularity of research in temporal change of spatial differences of any socio-economic phenomenon. Firstly, the ideological background and the imperative to reduce inequalities; secondly, the easy availability of data sets on internationally comparable socio-economic indicators; and thirdly, the intention to measure the effectiveness of regional development policy, the efficiency of the use of different regional development funds, monitoring various social, educational, cultural programs. For example, impact of European Union's cohesion policy is a popular research topic for the whole EU and for the member states too. Some forms of regional economic development programmes, which are similar to the cohesion policy, exist in almost every country. Large and unequally developed countries, including China, India, Indonesia and Brazil have a lot of research on their regional disparities.

The main aim of this study is to systematically and critically examine the methodological factors that emerge in studies assessing the impact of regional economic subsidies and that influence their results. The analysis has an abstract level and an applied part. The applied part presents various specific regional economic cases from Central Europe, mainly from Hungary, over the last two decades. Issues related to evaluations can be divided into two main categories, namely spatial and content-related issues. Spatial issues include the level of analysis, delimitation, the treatment of cross-border effects, and the separation of special regions. A typical methodological problem of spatial analyses within a country is that large cities often form a separate metropolitan region, isolated from their surrounding agglomeration and wider area. This generates different structures and levels of development, not only because of commuting but also because of the spatial division of labour between urban and rural areas. In the case of very small spatial units (settlements, micro-regions with a small number of settlements), the daily commuting of people has an extreme influence on those data which are expressed in proportion to the number of inhabitants. This is the main reason why the per capita types of indicators are not always appropriate. Difference of regions of workplaces and the regions where the employed live is most important in city regions and the neighbouring regions, like for example Prague and Central Bohemian Region. This is a significant part of a more general issue, the zoning system effect. Regarding the content-related issues, the complexity of the question is demonstrated by the following factors, among others: the difficulty of the separation of policy effects from autonomous developments, the different theoretical and methodological approaches, the vagueness of data quality, observational problems of relevant variables, the problem of deadweight and displacement, the possible difference between short term and long term impacts, the uncertainty of the future, and, in general, the problem of the time frame under consideration.

## JANE JACOBS AND FRIEDRICH VON HAYEK ON URBAN PLANNING

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### Abstract

A central element of Friedrich von Hayek's works is his critique of central planning and his skepticism regarding the decisions made by large bureaucratic organisations. Hayek deals with the spatial and urban aspects of the issue at length in a single place, in the chapter on „Housing and Town Planning” in his work „The Constitution of Liberty.” These ideas have not received much attention either in discussions of Hayek's legacy or in the literature on planning theory. This study examines and elaborates on this question from both perspectives and compares Hayek's ideas and influence with those of Jane Jacobs, who is much better known in urban studies literature.

A common misunderstanding or misinterpretation regarding Hayek is the claim that he opposed all forms of planning. However, according to Hayek, the debate is not about whether planning is necessary or not, but rather whether planning should be carried out centrally by a single authority for the entire economy or distributed among a large number of individuals. Hayek's position on urban planning is that the fundamental question is not one of necessity, but rather of methodology and of spatial extent: whether the measures to be applied should be to supplement and assist the market or to suspend the market and replace it with central control. The practical problems raised by policy here are very complex, and no perfect solution can be expected. Based on his views on urban planning, it can be posited that Hayek made an exception for land use and real estate development, which, to a certain extent and within a certain geographical area, allows an authority or an organization above individual ownership to intervene in what private property can be used for and how. However, he did not support real estate development controlled by regulations and individual decisions through the elimination of the market and the price mechanism. According to Hayek, this engineering and architectural approach fails to understand the role of the price system in coordinating individual behaviour.

Hayek's approach, which supports neighbourhood planning and opposes large-scale planning, stands in sharp contrast to the engineering-based styles of urban planning of his time. However, is in line with the views of Jane Jacobs, who wrote about the subject in much greater detail, as her 1961 book (The Death and Life of Great American Cities) was devoted entirely to this topic. Jacobs does not refer to Hayek's slightly earlier book, only to Warren Weaver's theory of complexity, which Hayek also refers to, but she comes to the same conclusion that the scattered information among individuals, termed “locality knowledge” by Jacobs, is not transferable to urban planning authorities.

## POPULAR HABITAT IN HYBRID TERRITORIES: A CASE STUDY OF COMUNA 18, SANTIAGO DE CALI, COLOMBIA

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### Abstract

Rapid urbanization in Latin America has intensified the expansion of informal settlements at urban-rural interfaces, giving rise to hybrid territories characterized by the coexistence of formal and informal practices, urban and rural logics, and socio-environmental tensions. These spaces are commonly addressed through homogeneous planning instruments that fail to recognize their spatial, social, economic, and ecological particularities, generating inequalities in the production of space through spatial injustice and segregation. This article presents advances from an ongoing doctoral research project that seeks a multiscale understanding of popular habitat in hybrid territories, with the purpose of re-signifying them as complex systems that require models of situated planning.

The research is grounded in theoretical discussions on spatial injustice, hybrid territories, popular habitat, social cohesion, situated planning, and multiscale analysis. At the conceptual level, the study characterizes popular habitat in hybrid territories in order to delimit the object of study, understood as spaces where formal and informal housing coexist, with intermediate levels of consolidation and high urban densities. The hypothesis holds that the quality of life of popular habitat in these territories can be improved through multiscale strategies of situated planning that integrate urban design and social cohesion.

The theoretical stage is oriented toward characterizing popular habitat, hybrid territories, and quality of life as central analytical categories. The empirical stage aims to: establish a spatial reference framework to understand territorial structure; construct a multiscale diagnosis from a situated planning perspective; make visible interdependencies between territorial scales; and identify power relations, conflicts, and synergies that influence the quality of life of popular habitat in hybrid territories. Finally, the propositional stage aims to structure a multiscale framework for action in situated planning, integrate situated planning at meso and micro scales, and translate theoretical and empirical results into situated intervention proposals.

The case study is located in Santiago de Cali, Colombia, a city characterized by accelerated urban expansion, a complex geographic structure, and a diffuse urban perimeter, as well as by processes of progressive consolidation of popular habitat in hybrid territories. The selected territory is located in Comuna 18, an area distinguished by its location along an urban-natural edge susceptible to progressive territorial transformations. This territory presents consolidated collective practices of social production of habitat, which makes it a relevant case for the proposed analysis.

This article presents findings corresponding to the theoretical stage of the ongoing research. The results highlight the need to deepen the analysis of spatial (in)justice in Latin American territories, particularly that associated with traditional planning approaches that have predominated to date. In this context, the characterization of popular habitat in hybrid territories is consolidated as a fundamental input for understanding the object of study. It is identified that the "urban perimeter," as conceived in city planning instruments, presents limitations in its delimitation, definition, and characterization, hindering a comprehensive territorial reading. These findings suggest the need to rethink planning as a situated planning process, attentive to local dynamics, territorial temporalities, and the human relations that configure habitat.

## ECONOMIC STABILITY, URBAN CONDITIONS, AND QUALITY OF LIFE IN SOUTH ASIAN CITIES: A DYNAMIC ECONOMETRIC AND MACHINE LEARNING ANALYSIS

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### Abstract

Rapid urbanization in South Asia has intensified concerns about living conditions in cities, raising questions about the role of macroeconomic environments in shaping urban quality of life. This study investigates how macroeconomic stability and structural urban factors jointly influence urban livability across major South Asian economies.

The study constructs a multidimensional urban livability index using principal component analysis applied to indicators of housing adequacy, health access, and physical infrastructure. A balanced panel covering Bangladesh, India, Nepal, Pakistan, and Sri Lanka from 1980 to 2023 is analyzed. To capture dynamic persistence and mitigate endogeneity, the empirical strategy combines dynamic panel estimators—specifically system GMM and instrumental-variable-based 2SLS—with penalized regression techniques. Lasso regression is used to identify the most influential predictors, while Ridge regression addresses multicollinearity and stabilizes coefficient estimates. Model performance is evaluated using forecast accuracy measures, including root mean squared error and covariance-based diagnostics.

Across all estimation frameworks, the expansion of urban slum populations emerges as the most influential factor reducing urban livability. Macroeconomic instability, reflected in higher unemployment and inflation, is consistently associated with deteriorating urban conditions. In contrast, stronger fiscal balances contribute positively to livability outcomes, while public investment does not exhibit immediate measurable effects. Regularized regressions reinforce these conclusions, with Lasso isolating slum prevalence as the dominant predictor and Ridge emphasizing the broader contribution of fiscal and labor market conditions.

The results highlight the importance of maintaining macroeconomic stability and addressing informal urban expansion as central pillars of urban policy in South Asia. Improvements in urban livability appear to depend less on short-term investment levels and more on sustained fiscal discipline, labor market performance, and targeted interventions in informal settlements.

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## REGIONAL UNCONDITIONAL TRANSFERS: THE CASE OF RIVERSIDE REGIONS IN A DEVELOPING COUNTRY

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### Abstract

Disadvantaged communities worldwide have been the focus of government-sponsored programs aimed at improving living standards and fostering economic development. Decentralization has emerged as a central strategy in this effort, strengthening accountability, and promoting local development, a trend to which Colombia is no exception. This paper examines the effects of a regionally targeted transfer program that designated additional resources to municipalities allocated along the Magdalena River, the longest country's waterway. To identify causal impacts, we exploit the 2002 reform that significantly reduced these transfers and apply a difference-in-differences approach using panel data for the period 1994-2019. The findings reveal no effects on social outcomes but a slowdown in economic activity, accompanied by reductions in municipal operating expenditures and investment, while revealing an increase in tax revenues. These results highlight the complex interplay between fiscal decentralization and regional development, raising important questions about the effectiveness of targeted transfers in achieving their intended objectives.

## ECONOMIC IMPACTS AND REGIONAL RESILIENCE UNDER LARGE-SCALE NATURAL DISASTERS IN JAPAN: A DYNAMIC SPATIAL INDUSTRIAL MODELING APPROACH

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### Abstract

Large-scale natural disasters impose severe direct damages on buildings, factories, public facilities, and critical infrastructure. The immediate destruction of capital stocks and production facilities generates substantial physical and financial losses, constraining productive capacity in affected regions. Such direct damages have traditionally been treated as the primary source of disaster-induced economic losses, and remain a core concern in hazard mitigation, insurance, and reconstruction planning.

However, recent catastrophic events have revealed that cascading disruptions in infrastructure service supply chains can produce broader and more persistent economic consequences than physical damages alone. Interruptions in the provision of electricity, gas, water, information/communication, and transportation services propagate indirectly across industrial and spatial networks, undermining production coordination, logistics, and input procurement. These service interruptions impose significant supply-side constraints on production processes and impede regional and interregional industrial activity. For highly interconnected economies such as Japan, the economic implications of infrastructure service outages represent a critical systemic risk. The anticipated Nankai Trough megathrust earthquake and a potential eruption of Mt. Fuji exemplify scenarios in which both direct damages and cascading service disruptions may jointly induce nationwide economic effects.

To evaluate these intertwined mechanisms, this study employs a Dynamic Interregional Input–Output (DRIO) Model that captures spatial and temporal adjustments in industrial production, interregional trade, and factor allocation. The modeling framework explicitly incorporates (i) direct capital damages, (ii) supply-side constraints arising from infrastructure service outages, and (iii) dynamic recovery and reconstruction processes. The model emphasizes impacts on the production sector. This structure enables the simulation of short-run cascading disruptions—such as production suspension due to electricity or gas outages, manufacturing slowdown caused by water shortages, communication failures affecting business coordination, or transportation disruptions limiting freight mobility—as well as medium- to long-term recovery through reconstruction investment and supply reallocation.

Applying the model to realistic disaster scenarios for the Nankai Trough earthquake and a large-scale Mt. Fuji eruption in Japan, the analysis highlights how direct damages and infrastructure service disruptions jointly influence industrial activity across sectors and regions. The simulation results underscore that the vulnerability—or strengthening—of infrastructure service networks and supply chains plays a critical role in shaping the magnitude and persistence of production-side impacts. These findings suggest the importance of accounting for interdependencies among electricity, gas, water, information/communication, and transportation services when evaluating disaster risk reduction and regional resilience initiatives. The modeling framework developed in this study provides a foundation for further applications to infrastructure investment planning, prioritization, and policy design aimed at enhancing regional resilience under systemic disaster risks.

## SPATIAL INEQUALITY AND THE FORMATION OF OCCUPATIONAL ASPIRATIONS IN CHILDHOOD

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### Abstract

Occupational aspirations formed in childhood play a central role in shaping long-term wellbeing and sustainable regional development, yet little is known about how these aspirations are structured by place before adolescence. This paper examines how gendered occupational aspirations are patterned and stratified among children aged 10 to 12 in Chile, and how individual, household, school, and territorial conditions jointly shape these early imagined futures. Using nationally representative data from the Encuesta Longitudinal de Primera Infancia (ELPI 2017), we first classify children's occupational aspirations along two dimensions: socioeconomic prestige and gender-typicality. We document systematic differences by gender, household characteristics, school type, and territorial context, revealing early spatial and social gradients in aspirational horizons.

We then analyze the drivers of these aspirations through multivariate regression and decomposition techniques, integrating household gender norms and labor roles, school characteristics, and a novel Territorial Opportunity Index capturing institutional density, labor market diversity, and public investment at the municipal level. Results show that territorial opportunity structures significantly shape both the level and gender-typing of children's aspirations, above and beyond household socioeconomic status and school characteristics. More opportunity-rich territories are associated with higher-prestige and less gender-typed aspirations, particularly for girls, suggesting that spatial inequalities influence wellbeing trajectories from early life stages.

By linking childhood aspirations to territorial opportunity structures, this paper contributes to regional science debates on wellbeing, sustainability, and inequality beyond GDP. It highlights how uneven regional development shapes not only material outcomes but also children's perceived futures, with implications for place-based policies aimed at fostering inclusive and sustainable development.

## WORKER SORTING, INDUSTRY SORTING, AND AGGLOMERATION EFFECTS

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### Abstract

The urban wage premium is a well-known and understood fact. Significant spatial wage disparities can be observed in virtually all countries with free market economies. In particular, larger cities offer higher wages compared to more rural areas. There are at least two major explanations for this observation. The first is that people with characteristics that are related to higher wages prefer to live in larger cities. The other explanation is that the same worker becomes more productive if she or he is located in a larger rather than a smaller city.

In this paper, we use a full sample of all workers subject to social security in Germany for the years 2011-19. We shed light on the relative importance of those explanations and demonstrate that, after controlling for worker and plant sorting, there is still a significant agglomeration effect that makes wages increase with the size of local population. We adapt a novel decomposition of the sources of spatial wage disparities for the German labor market. Our empirical approach uses the decomposition proposed by Card, Rothstein, and Yi (2024, henceforth CRY). This decomposition stems from the seminal work by Abowd, Kramarz, and Margolis (1999, henceforth AKM) that additively decomposes individual log wages into a worker-specific component and a firm-specific component. CRY modify this approach to the spatial setting by decomposing log wages into a worker component and an industry component. Furthermore, CRY establish the so-called “hierarchy effect”, i.e. the systematic asymmetry in the pattern of workers’ mobility. Typically, workers move from relatively higher-paying firms in the origin industry to relatively lower-paying firms in the destination industry, if the latter industry is superiorly ranked in the wage ladder compared to the former industry.

We add two additional insights: First, we refer to CRY and demonstrate that mobility between German cities of different sizes is usually not between representative firms, the above-mentioned “hierarchy effect”. This implies that we may underestimate the actual effect of mobility between small and large cities. In a further step, we estimate the unconditional urban wage premium getting the result of 6.5 % in the unweighted case and 7.9 % in the case of weighting by employment size. Moreover, all estimated fixed effects (by person, region, firm and hierarchy) are positively correlated with the population size of the local labor market region. Second, we adapt the approach of CRY (2024, 2025) by decomposing the AKM plant effects into an industry-mix effect and a region-specific effect. This allows us to analyze if bigger cities offer a more favorable industry mix and to identify the true urban wage premium. We show that the local plant-specific wage is more or less fully absorbed by the regional component, which in turn increases with the size of the local population by both a statistically and economically significant extent. This provides strong evidence for the presence of so-called Marshall-Arrow-Romer-type agglomeration effects.

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## SUBNATIONAL INPUT-OUTPUT ANALYSIS FOR REGIONAL SUSTAINABILITY ASSESSMENT

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### Abstract

Regional disparities are commonly analyzed through economic outcomes, yet sustainability requires attention to social and environmental dimensions as well. This paper applies a socially and environmentally extended subnational input-output model to assess how value added, employment, and greenhouse gas emissions interact to shape uneven development across regions. By quantifying impacts from both production- and consumption-based perspectives, the analysis provides a comprehensive view of regional sustainability. Sustainability accounts are developed for Colombian departments as an illustrative case. The study explores how economic, social, and environmental dimensions may align or diverge across territories, and seeks to identify potential patterns of complementarity and tension among them. The approach highlights the usefulness of subnational input-output analysis for assessing the triple sustainability dimension and for informing region-specific strategies toward sustainable development.

## URBAN CENTRALITIES: THE URBAN HIERARCHY OF THE SÃO PAULO METROPOLITAN REGION

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### Abstract

Urbanization patterns in Latin American metropolises are characterized by spatial segregation; the literature points to the movement of elites away from the old city center, creating new centralities. In the São Paulo Metropolitan Region (SPMR), this process took place towards the southwest with the establishment of three centralities (the historic center, Paulista Avenue, and Berrini-Faria Lima). This study aims to verify the urban hierarchy of the São Paulo metropolis to understand if the pattern analyzed in the literature presents new developments, identifying the levels of typically non-central locations and how the SPMR's spatial relationships are distributed in 2023.

The study is grounded in Central Place Theory and Central Flow Theory; the former establishes that the concentration of a sector defines its range of influence and centrality, while the latter establishes that the relationship between different hierarchies is constructed through human flows. Based on the methodology used in the IBGE's REGIC (Regions of Influence of Cities) research, 2023 RAIS (Annual Social Information Report) data will be used to geolocate companies by coordinates and apply the K-density technique for each sector to obtain actual concentration and a counterfactual, enabling the classification of sectors by their centrality.

Weighted by the median income of each sector and differences in concentration, a taxonomy for the sectors was established with scores proportional to the level of centrality, allowing these scores to be applied to the sectors' shares in each district to form a centrality index. Using Jenks natural breaks on this index, fifteen levels of hierarchy were established: districts with metropolitan influence (1 and 2), regional influence (1, 2, and 3), local influence (1 to 4), and low influence (1 to 6).

Using the 2017 São Paulo Metro Origin and Destination (OD) survey, it is possible to construct a network of influences among districts, establishing the primary flow destination for each district. The analysis of the flow matrix between hierarchical levels corroborates the classification, demonstrating a pattern of hierarchical subordination, where more flows originate in lower-level zones destined for higher-level zones. The highest value in flow exchange refers to zones at the top of the hierarchy (excluding internal flows within each district); lateral relationships between these districts were established, given the volume of exchanges and geographical proximity.

The results confirm the centralities identified in the literature: the southwest axis is expanding, and the old center shows a staggering loss of dynamism, sustaining itself through commerce. Peripheral regions present few high-hierarchy districts, pointing to a concentration in a central core generated by overflow. Based on these relationships, five axes of centralities were established; these connect and each expands into a different zone of the city with intermediate subcenters, generating a concentrated polycentric pattern.

## AGGLOMERATION ECONOMIES IN A METROPOLITAN SCALE

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### Abstract

Agglomeration economies are economic advantages driven by the spatial proximity of firms, functioning as endogenous factors with cumulative causality. From a Marshallian perspective, these effects arise from innovation spillovers, increased hiring efficiency, and the sharing of common inputs. New Economic Geography highlights backward and forward linkages as crucial for agglomeration, pointing to the worsening of center-periphery inequalities. Furthermore, the diversification of activities fosters complementary exchanges of ideas between sectors, known as 'Jacobian externalities'.

Previous research on the effects of agglomeration economies on wages in Brazil identified a significant gap. Studies found a strong effect for the industrial sector but suggested that for productive services—those with high complexity within the production chain—the metropolitan scale is the most appropriate level of analysis. São Paulo, classified as a 'Great National Metropolis' (IBGE) and a global 'Alpha' city (GaWC), connects Latin America to the world economy.

This paper adopts spatial regression techniques using the RAIS database for 2023, 2018, 2013, and 2008. We classified productive service sectors (CNAE) and aggregated their concentration by urban zones within the São Paulo Metropolitan Region (RMSP). Spatial weight matrices included urban relationships more accurately measured using average travel time matrices, sourced as a proxy from the 2017 Origin-Destination Survey (São Paulo Metro). The objective is to understand the effect of agglomeration economies on service sector wages within one of Latin America's largest metropolises, aiming to comprehend regional inequalities and urban organization.

Using a two-step model, the place effects (pure externality gains) and the composition effect (sorting) were segregated, controlling for the heterogeneity of individual wages across sectors through a Fixed Effects model. The spatial dependence of these effects was evaluated using different spatial matrices: those reflecting physical geography (Queen and k-neighbors) and those based on the average transport duration between zones. The latter included a pure accessibility matrix (limited to 30 minutes) and a k-neighbors matrix weighted by duration.

Moran's I tests for place and composition effects show no spatial autocorrelation for the former but strong spatial autocorrelation for the latter. The  $R^2$  of the spatial regressions for the place effect is lower than that of sorting, indicating sorting as the most relevant factor in the spatial segregation of wages. Physical geography matrices (Queen, k-neighbors) performed better for the place effect model, while duration matrices fitted better for the total and sorting models. Comparing the results, sectors behave differently across effects; notably, the industrial share within the zone and the HHI show contrasting patterns. Both are positive for the place effect but negative for sorting, suggesting that while local industrial specialization generates wage gains due to location, it tends to drive away skilled workers. Conversely, specialization is positive for the place component of wages, while diversification favors the sorting effect.

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## THE RETURN OF URBAN MANUFACTURING: SPATIOTEMPORAL DYNAMICS AND MICRO-DETERMINANTS IN THE SEOUL METROPOLITAN AREA

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### Abstract

The separation of urban and industrial spaces, long driven by deindustrialization and strict zoning, is being challenged by a recent trend toward "urban-industrial reintegration." Facilitated by digitalization and cleaner production technologies, manufacturing is increasingly returning to city centers. However, the micro-spatial dynamics driving this phenomenon remain underexplored. This study investigates the spatiotemporal patterns and intra-regional determinants of urban-industrial reintegration in the Seoul Metropolitan Area (SMA) from 2008 to 2022. Using 1 km × 1 km grid-level micro-data, the study constructed an Urban-Industrial Integration Index (UIII) and employed emerging hot spot analysis and panel regression models. The results indicate a consistent upward trajectory in integration since 2011. Spatially, reintegration is uneven, with persistent hot spots concentrated in Seoul and adjacent municipalities, characterized by high-tech manufacturing growth. Panel regression analysis reveals that a young demographic structure, industrial diversity, and amenity-rich environments positively influence reintegration. Crucially, the availability of urban industrial spaces, particularly multi-story "vertical factories," plays a pivotal role in fostering this coexistence. Conversely, immediate subway accessibility shows a negative association, likely due to intense land-use competition. These findings underscore that urban-industrial reintegration is a selective process dependent on specific micro-spatial conditions, offering key insights for policies aiming to sustainably reactivate urban production.

## A NOVEL STUDY ON INTERVIVA ECONOMICS IN INFORMATION AND BUSINESS STUDIES: URBAN MOBILITY AND FINANCIAL MARKETS DURING THE COVID-19 PANDEMIC

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Chuo School for the Deaf, Osaka prefectural, Japan

### Abstract

The "INTERVIVA STUDY" serves as a theoretical framework to analyze the processes through which dynamic order is generated by endogenizing exogenous shocks—occurring across the past, present, and future—into social systems and subsequently reorganizing these elements. Parallel to this, "SOULFUL STUDY" focuses on the investigation of "Predicament phenomena" within society. The global crisis initiated by COVID-19 persists as an evolving predicament in the post-pandemic era. This paper, situated within the "INTERVIVA Study" framework, explores the nexus between global financial markets and hyper-local behavioral data. The study is based on 573 field surveys in the KARAHORI shopping streets, Osaka, conducted from 2020 to 2026. While the longitudinal survey spans this seven-year period, the current analysis specifically focuses on the pandemic period, defined from February 27, 2020, to May 6, 2023, and compares the pandemic period (2020–2023) of the Dow Jones Industrial Average (NYDOW) with micro-level traffic data, focusing on the pandemic period (2020–2023), with extended data up to 2026 used for robustness checks. While the field survey remains ongoing until April 3, 2026, to capture the complete post-pandemic transition, this specific study focuses on the period concluding on May 6, 2023. This delimitation is strategically chosen to coincide with the World Health Organization's (WHO) official declaration of the end of COVID-19 as a global health emergency, thereby isolating the unique behavioral dynamics and 'Interviva' resilience manifest specifically during the global crisis era. The study compares the Dow Jones Industrial Average (NYDOW) with unique micro-level traffic mode data (bicycles, electric bicycles, motorcycles, and cars). To ensure statistical robustness and address endogeneity, this paper employs a Two-Stage Least Squares (2SLS) regression with Newey-West (HAC) standard errors, using sunspot numbers as an instrumental proxy for exogenous environmental variation. Furthermore, Delay Differential Equations (DDE) are applied to identify the specific time lag ( $\tau$ ) and stability of the socio-economic feedback loop. The findings reveal that while motorized traffic reacts instantaneously to market volatility, electric bicycle usage functions as a leading indicator of urban resilience, preceding the Dow shifts by approximately 2.00 days. This confirms a "Butterfly Effect" where solar-influenced local mobility rhythms manifest in global economic indices. This study provides a statistically significant predictive relationship, offering a new lens for risk management in the "Digital SOULFULIAN" era.

## A NOVEL STUDY ON “INTERVIVA ECONOMIC SCIENCE” ON “INFORMATION AND BUSINESS STUDY”: THE RELATIONSHIP BETWEEN URBAN BEHAVIORAL DYNAMICS AND FINANCIAL MARKET PERFORMANCE IN “GENERAL AND UNIFICATION PHENOMENON”

[Hayama Kazuyoshi](#)

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### Abstract

The "INTERVIVA STUDY" serves as a theoretical framework to analyze the processes through which dynamic order is generated by endogenizing exogenous shocks—occurring across the past, present, and future—into social systems and subsequently reorganizing these elements. Parallel to this, "SOULFUL STUDY" focuses on the investigation of "Predicament phenomena" within society. The global crisis initiated by COVID-19 persists as an evolving predicament in the post-pandemic era. This paper, situated within the "INTERVIVA Study" framework, explores the nexus between global financial markets and hyper-local behavioral data. This study is based on 573 field surveys in the KARAHORI shopping streets, Osaka, conducted from 2020 to 2026. While the longitudinal survey spans this seven-year period, the current analysis specifically focuses on the pandemic period, defined from February 27, 2020, to May 6, 2023, and compares the pandemic period (2020–2023) of the S&P500 with micro-level traffic data, focusing on the pandemic period (2020–2023), with extended data up to 2026 used for robustness checks. While the field survey remains ongoing until April 3, 2026, to capture the complete post-pandemic transition, this specific study focuses on the period concluding on May 6, 2023. This delimitation is strategically chosen to coincide with the World Health Organization's (WHO) official declaration of the end of COVID-19 as a global health emergency, thereby isolating the unique behavioral dynamics and 'Interviva' resilience manifest specifically during the global crisis era. The study compares the Standard & Poor's 500 Index (S&P500) with unique micro-level traffic mode data (bicycles, electric bicycles, motorcycles, and cars). To ensure statistical robustness and address endogeneity, this paper employs a Two-Stage Least Squares (2SLS) regression with Newey-West (HAC) standard errors, using sunspot numbers as an instrumental proxy for exogenous environmental variation. Furthermore, Delay Differential Equations (DDE) are applied to identify the specific time lag ( $\tau$ ) and stability of the socio-economic feedback loop. The findings reveal that while motorized traffic reacts instantaneously to market volatility, electric bicycle usage functions as a leading indicator of urban resilience, preceding S&P500 shifts by approximately 4.25 days. This confirms a "Butterfly Effect" where solar-influenced local mobility rhythms manifest in global economic indices. This study provides a statistically significant predictive relationship, offering a new lens for risk management in the "Digital SOULFULIAN" era.

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## CAN THE UNEQUAL DISTRIBUTION OF URBAN GREEN AREAS CONTRIBUTE TO THE INTRA-CITY WAGE GAP? AN ANALYSIS OF FOUR CITIES IN CHILE

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### Abstract

Amenities are usually seen as compensating for wage differentials. Individuals choosing to locate in more amenable areas experience a reduction in their monetary wages, given that part of their compensation is coming in the form of access to amenities. The opposite is true for workers that are required to live in less-desirable areas. Nonetheless, amenities could also act as production factors for workers. Green cover, for instance, can reduce stress and increase concentration and performance, directly affecting labor productivity. However, given that green areas are unequally distributed within cities, the benefits might depend upon the urban area where an individual lives. This manuscript investigates the association between green cover and wages of workers living in four cities of Chile. The results show that green cover is positively linked to higher wages. However, this association is non-linear: individuals living in highly vegetated areas are the most benefited, but, as one should expect, their return to greenery diminishes as green cover increases. Those living in poorly vegetated areas are, on the other hand, less impacted by green cover, but the returns to green cover grow exponentially. These results suggest that part of the intra-city wage gap can be reduced through a more just distribution of green cover within cities.

## COMPARATIVE URBAN PERCEPTIONS ACROSS CITIES AND STAKEHOLDERS

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### Abstract

Comparative urban analysis increasingly emphasises wellbeing and liveability, yet cross-city evidence often relies on secondary indicators that may not capture how different stakeholders perceive urban conditions. This paper develops a survey-based benchmarking approach to compare perceived quality of life (QoL) both across cities and across stakeholder groups within cities. The study uses primary survey data collected through a harmonised questionnaire administered in a set of selected cities in the Republic of Serbia. Respondents are sampled from three segments: general public, business decision-makers, and knowledgeable elites, with an intentionally balanced allocation across groups to ensure comparability of perspectives. The instrument measures perceived performance across a multidimensional QoL framework encompassing various dimension of urban wellbeing. In addition, the survey elicits stated priorities through domain-importance ratings, enabling assessment of not only perceived conditions but also preference structures across cities and groups. The questionnaire is designed to ensure measurement equivalence across cities, with consistent wording, response scales, and sequencing of items. This allows us to interpret observed differences as substantive rather than products of survey design. Alongside domain assessments, respondents provide overall evaluations of their city, enabling us to contextualise domain-specific findings within broader perceptions of urban wellbeing. The analysis addresses three research questions. First, how do cities differ in perceived QoL across domains, and which domains generate the largest between-city dispersion (i.e., strongest differentiation)? Second, to what extent do stakeholder groups evaluate the same city differently, and are these within-city gaps systematic or city-specific? Third, where do the largest priority-adjusted deficits occur (domains that are simultaneously rated as highly important yet perceived as underperforming) and do these deficits vary by city and stakeholder segment? Methodologically, domain-level perception scores were computed at the individual level and city benchmarks were produced using standardised summaries with uncertainty intervals. To examine whether perceived quality of life differed across cities, a MANOVA was applied to the set of domain scores for the general-public sample, with City specified as the main factor; this was followed by separate ANOVAs for each domain to identify where the strongest between-city differences were observed, using adjusted post-hoc comparisons for city-to-city contrasts. To compare stakeholder perspectives, perceptions were analysed by Stakeholder group while City was controlled for (city effects were included to account for systematic differences between cities). Group differences were first assessed at an overall level and were then examined within each domain through follow-up tests with multiple-comparison adjustments. Differences between groups within the same city were subsequently described using model-based estimates with uncertainty intervals, so that both cross-city variation and cross-group perception gaps were benchmarked in a consistent manner. Provisional expectations are that cities will exhibit distinct “perception profiles” rather than uniform strengths, and that stakeholder segments will show systematic differences in emphasis and evaluation, especially for governance, affordability, and economic opportunity. The contribution is reflected in a survey-based framework for comparative urban wellbeing assessment that directly benchmarks cities while revealing stakeholder-specific perception gaps relevant for targeted, legitimacy-sensitive urban interventions.

## CARBON COST GOVERNANCE AS AN INSTITUTIONAL FILTER IN REGIONAL GREEN INNOVATION NETWORKS: INSIGHTS FROM CATL UNDER CHINA'S DUAL-CARBON TRANSITION

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### Abstract

Against the backdrop of the “Dual Carbon” strategy, the carbon management practices of focal firms are increasingly transcending corporate boundaries, evolving from micro-level internal cost control tools into meso-level value chain governance mechanisms. Adopting an Evolutionary Economic Geography perspective, this paper conducts a longitudinal single-case study of Contemporary Amperex Technology Co. Limited (CATL) to investigate how carbon cost governance, functioning as an “institutional filter,” reshapes the structural configuration and evolutionary trajectory of the Regional Green Innovation Network.

The findings indicate that CATL has established a comprehensive carbon cost governance system—encompassing supplier codes of conduct, Life Cycle Assessment, and value chain transparency audits—which exerts critical screening and restructuring effects within the regional network. Specifically: (1) Regarding the selection mechanism, the system establishes stringent carbon performance thresholds that effectively filter out high-energy-consuming and low-technology nodes, thereby reducing heterogeneity incompatible with green development goals. (2) Regarding the transmission mechanism, carbon cost pressures are transformed into drivers for technical innovation, inducing knowledge spillovers and deep collaboration across the value chain, which enhances the intensity and resilience of network linkages. (3) Regarding the evolutionary trajectory, analysis based on the Fitness Landscape model reveals that this potent institutional filtering disrupts the pre-existing “low-cost path lock-in”. By bridging the “Valley of Death” during the transition, it propels the regional industrial cluster to leap from a “cost-driven loose agglomeration” to an “innovation-driven green symbiosis”, achieving a transition from a low-efficiency high-carbon peak to a globally optimal green peak.

The theoretical contribution of this study lies in uncovering the spatial governance attributes of management accounting tools. It elucidates how micro-level corporate behaviors induce meso-level regional co-evolution through institutional filtering mechanisms, offering novel theoretical insights and practical implications for understanding how focal firms drive the green transformation of regional industrial clusters under the “Dual Carbon” context.

## INTERDEPENDENCE BETWEEN PRODUCTIVE SECTORS AND THE ENERGY SECTOR: AN APPLICATION OF THE MIYAZAWA MULTIPLIER TO THE BRAZILIAN ECONOMY

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<sup>1</sup>Federal University of Juiz de Fora, Brazil. <sup>2</sup>University of Sao Paulo, Brazil

### Abstract

To investigate the interdependence between the productive sectors and the energy sector, the study adopts a quantitative approach based on the input–output matrix, which makes it possible to capture both direct and indirect relationships among the different economic segments. To achieve the study's objectives, an input–output matrix for the Brazilian economy was constructed and calibrated for the year 2019. This matrix comprises 73 productive sectors, including 8 energy sectors, namely: (a) Oil and gas extraction, including support activities; (b) Petroleum products; (c) Biodiesel; (d) Biofuels manufacturing; (e) Centralized electricity generation; (f) Distributed electricity generation; (g) Transmission; and (h) Natural gas. The Miyazawa method (1966, 1968, and 1976) and the method modified by Sonis and Hewings (1993) and Fritz et al. were particularly relevant for measuring cross-impacts, enabling a more detailed analysis of how the effects of shocks in the energy sectors propagate to the rest of the economy. To this end, three simulation exercises were carried out: (i) interactions between a set of energy sectors and non-energy sectors; (ii) interactions between a set of renewable energy sectors and non-energy sectors; and (iii) interactions between a set of non-renewable energy sectors and non-energy sectors.

The preliminary results for the primary sectors of the matrix show that the highest multiplier is observed in the sector Extraction of non-ferrous metallic minerals, including beneficiation (S6). In contrast, the lowest multiplier is observed in the sector Forestry production, fishing, and agriculture (S3), with values of 0.3366 and 0.1195, respectively. When assessing the decomposition of effects, it is found that the direct effect is more prominent in the sector Extraction of non-ferrous metallic minerals (0.097). Regarding the indirect effect, the sectors that stand out are Agriculture, including support activities and post-harvest operations (S1) and Livestock, including support activities (S2), both with 0.033. As for internal and external propagation, once again the sector Extraction of non-ferrous minerals is the most representative, with values of 0.084 and 0.125, respectively.

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## SUBJECTIVE WELL-BEING AND RELATIONSHIP POPULATION: A NETWORK ANALYSIS APPROACH

[Keisuke Kondo](#)

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### Abstract

This study proposes a novel framework for policy evaluation of the concept of a "relationship population" or "related population" from the perspective of network analysis. In Japan, which is facing a rapid decline in population, the national and local governments have been implementing a set of regional revitalization policies for "creation and expansion of relationship populations" since the second phase of the "Comprehensive Strategy for the Creation of Communities, People, and Jobs" in 2019.

This study shows that the relationship population can be conceptualized as a network of connections among individuals and regions. It can be structured as the number of individuals connected to a region, termed the "relationship population," and the number of regions to which an individual is connected, referred to as the "relationship region." This study evaluates the potential of individuals to attain a high level of subjective well-being by becoming a relationship population in multiple regions.

Using microdata that include individuals' residential histories in Japan, this study constructs measures of the number of relationship regions and empirically examines their association with subjective well-being and life satisfaction. The study finds that individuals with residential experiences across a more diverse set of regions tend to report relatively higher subjective well-being. Moreover, having ties with diverse regions is particularly relevant for middle-aged individuals (ages 40–59), for whom accumulated residential experiences across regions are associated with higher subjective well-being.

This study provides important policy implications. Increasing relationship population is often expected to contribute to regional sustainability in a shrinking society; our findings suggest that being connected to diverse regions may also be an important factor for individuals' subjective well-being. Accumulating residential experiences across regions may expose individuals to diverse values and contribute to happier lives with higher life satisfaction. In Japan's population-decline era, it is therefore critical to design relationship-population policies in a way that can simultaneously advance two goals: regional sustainability and individual well-being.

## CORE AND PERIPHERY IN THE PROCESSES OF SPATIAL PLANNING IN THE EUROPEAN UNION

[Géza Salamin](#)<sup>1</sup>, [Márton Péti](#)<sup>2,3</sup>

<sup>1</sup>Corvinus University of Budapest department of Geography and Planning, Hungary. <sup>2</sup>University of Pannonia, Hungary. <sup>3</sup>Research Institute for National Strategy, Hungary

### Abstract

The paper examines differences among EU Member States (MSs) in their participation in the Europeanization of spatial planning. Although spatial planning policy is not within the competence of the European Union (EU), formal policies and collaboration among member States have a strong influence on domestic spatial planning policies and practices, a process known as the Europeanisation of spatial planning. From the late 1990s onwards, the process of creating various spatial strategic policy documents (perspectives, agendas, charters, etc.) at the European level, along with the related open coordination methods among Member States, supported by EU cooperation programs, resulted in the evolution of a framework-like European spatial planning. This European spatial planning serves as a driver of the Europeanization of this field, providing a soft policy framework through which common European ideas about spatial development can be developed, shared, promoted, and adopted by the various actors associated with it. The paper is based on two empirical analyses by the authors: an analysis of projects carried out between 2007 and 2020 under the INTERREG transnational and interregional programs, which provide a framework for European cooperation and discourse on spatial planning (Péti&Salamin et al., 2024), and an analysis of the appearance of EU spatial planning themes and concepts in the spatial planning of member states (Salamin&Péti, 2025). Using the authors' expert surveys and an analysis of national spatial planning documents, it examines how EU-level planning concepts emerge and are adopted domestically. Countries' roles in these discourses vary based on planning culture, power dynamics, and political will. Cohesion Policy and Europe's core-periphery divide play a role in shaping these patterns. The study revealed significant and permanent functional differences in the participation of European states in the Europeanization of spatial planning. CEE states have been participating as adopters of European concepts in their planning systems without making any significant contributions to shaping the European spatial planning content and norms. The paper reveals barriers to the idealistic discursive integration described in the literature to date. It can therefore be said that both the analysis of INTERREG projects and the examination of the integration of European content into planning systems reveal a persistent asymmetrical pattern in the discursive integration of spatial planning involving the core countries and the eastern periphery, which perpetuates core-periphery relations.

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## SPATIAL PLANNING AND THE SCIENCE BEHIND IT IN EAST-CENTRAL EUROPE: THE CASE OF HUNGARY IN THE EUROPEAN UNION CONTEXT

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### Abstract

The paper analyses the evolution of the current spatial planning system in Hungary that developed after the political change in 1990 and the scientific background of it. It focuses on the various forms of planning and assesses changes in the formal planning framework defined by legislation. The research is based on the analysis of legislation, and interviews and broad experiences of the author in planning in Hungarian and European context. The research explores how the Hungarian system fits within European typologies and how these changes relate to broader European trends, particularly the impact of the European Union (EU). The European trends were identified through key themes in planning literature, as well as EU directives and policy documents that influence spatial planning, alongside findings from the European Spatial Planning Observation Network (ESPON 2018) survey on planning systems. These trends predominantly indicate a move towards a coordinating form of planning that is comprehensive and integrative, aimed at achieving broader socio-environmental objectives. Hungary, like many other Central and Eastern European countries, established its new planning system in the second half of the 1990s, largely inspired by European integration. However, spatial planning in Hungary has developed in a fragmented manner, with a distinct separation between policies on local and supralocal planning, regulatory zoning, and spatial development, primarily focused on garnering external support. The technical aspect of planning has recently gained prominence in land use and urban planning, while integrated settlement planning has been marginalised, increasingly falling under the purview of the construction and architectural sector. The importance of spatial development planning is declining. In Hungary, spatial planning is frequently viewed not as a tool for policy implementation but rather as a bureaucratic impediment to development. This perception has led to planning reform and a greater tendency to bypass local regulatory plans at the spatial level, resulting in a decreased utilisation of spatial and settlement development plans within domestic development policy. Additionally, in several areas, there has been a noticeable regression in the nature of planning instruments, their scope, and the mission of planning when compared to previous trends and the theoretical models of Europeanization. However, changes in planning spaces exhibit a stronger correlation with overarching European trends. Among the various European planning models, Hungary is distinctly shifting from the comprehensive-integrated approach toward the model of urbanism, while the regional economic planning model, which is still also strong, is primarily dependent on EU cohesion policy funding and has no real connection with private actors and developers. While there was a robust wave of Europeanization until the mid-2010s, recent developments have steered the Hungarian system away from common European practices. This shift can be attributed not only to ongoing political tensions between the EU and the Hungarian government but also to the absence of an independent profession and policy framework for spatial planning in Hungary.

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## SPECIALIZATION, DIVERSIFICATION, AND EMPLOYMENT GROWTH IN MEXICO: INSIGHTS FROM A SPATIAL PANEL DATA MODEL

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### Abstract

This paper investigates whether regional specialization or diversification fosters or hinders employment growth across Mexican municipalities between 1986 and 2019. We frame the analysis within the literature on specialization versus diversification, particularly the MAR-Porter-Jacobs debate. Using the Krugman Specialization Index (KSI) and a spatial autoregressive (SAR) panel model with municipality and time fixed effects, we assess how specialization affects local employment in total and across sectors: manufacturing, services, mining and commerce. Our results show that higher specialization is associated with lower employment growth overall, supporting Glaeser et al. (1992) findings. This negative effect is strongest in manufacturing, services, and mining, while commerce is less affected. By contrast, higher education, access to electricity, and foreign direct investment significantly promote employment growth, with education exerting the largest positive effect. Spatial spillovers are positive and significant, indicating that employment dynamics extend beyond municipal boundaries. These findings suggest that specialization may enhance productivity but does not necessarily translate into employment gains. Policymakers should therefore focus on economic diversification strategies and spatially coordinated development, rather than promoting specialization alone.

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## PREFERENCES, TRUST, AND INDEX-BASED FLOOD INSURANCE: EVIDENCE FROM PERU

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### Abstract

Index-based insurance offers an innovative risk management solution for communities vulnerable to weather-related hazards. This risk transfer product shows significant promise for promoting sustainable development not only in rural areas, as documented in the literature, but also in enhancing resilience to flood shocks in megacities in developing countries. Using data from a lab-in-field experiment conducted in three urban communities in Lima, Peru, I examine how economic preferences and price shape the uptake of hypothetical index-based flood insurance. The findings indicate that demand increases with patience but decreases with risk aversion and price. Exploring the mechanisms underlying these effects, I find that low trust in traditional insurance providers and in the local government's flood risk management plan discourages adoption, particularly among highly risk-averse households. Fostering trust in disaster risk mitigation efforts may therefore promote the adoption of index insurance in vulnerable urban communities.

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## FROM ADOPTION TO IMPACT: EFFECTS OF ARTIFICIAL INTELLIGENCE ON PRODUCTIVITY AND HETEROGENEITY IN THE SPANISH MANUFACTURING SECTOR

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### Abstract

This paper examines the heterogeneous effects of predictive artificial intelligence (AI) adoption on total factor productivity (TFP) among Spanish manufacturing firms, with particular emphasis on the role of the COVID-19 pandemic as a technological turning point. Predictive AI—encompassing advanced data analytics, cloud computing, and algorithm-based forecasting tools—has become increasingly central to firm-level decision-making and operational efficiency. Yet, empirical evidence on which firms benefit most from these technologies remains limited. Using firm-level data from the Encuesta sobre Estrategias Empresariales (ESEE) for 2018 and 2022, we analyze how the productivity effects of predictive AI vary across the TFP distribution and how these effects evolved before and after the pandemic. Our empirical strategy combines quantile regression techniques to capture productivity heterogeneity with two-stage least squares (2SLS) estimations to address potential endogeneity in AI adoption. The results reveal that the positive impact of predictive AI on TFP has become stronger and more widespread in the post-pandemic period, with particularly pronounced effects among firms located in the upper quantiles of the productivity distribution. Firm-level capabilities—such as training investment, international market engagement, and process innovation—consistently enhance productivity outcomes. In addition, regional capital intensity supports firm productivity, while strong localization economies exert negative spillover effects. Overall, the findings highlight the growing productivity returns to predictive AI adoption and underscore the importance of firm capabilities and regional context in shaping these gains.

## THE PARADOX OF GLOBAL CONNECTIVITY: INTERPLAY BETWEEN CULTURAL DIVERSITY AND INSTITUTIONAL SELECTIVITY IN CROSS-BORDER R&D NETWORKS

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### Abstract

As global innovation becomes increasingly fragmented, understanding the deep-seated cultural and institutional drivers behind its evolution is critical. This study investigates the reconfiguration of global innovation networks by extending the Heterogeneity-Bridging-Filtering (H-B-F) framework to the international scale. Utilizing a longitudinal dataset of EPO and PCT patent collaborations (1995–2024), we examine how the "cultural compass" of different nations guides their position and connectivity within the global R&D landscape.

Our analysis reveals a "Diversity Paradox": while cultural heterogeneity facilitates the cross-pollination of non-redundant ideas, it simultaneously increases coordination costs, potentially leading to "knowledge traps" or network stagnation. We find that this relationship is significantly moderated by Institutional Selectivity (Filtering). Specifically, stricter institutional regimes (such as the EPO's rigorous legal and technical standards) act as a vital gatekeeper, filtering out low-quality interactions and enabling "smart bridging" across culturally distant nodes. Through spatial econometric modeling and network topology analysis, we demonstrate that the global network is undergoing a structural shift—moving away from traditional geographical proximity toward blocks defined by institutional-cultural alignment. These findings challenge the "more connectivity is better" orthodoxy and suggest that policymakers should focus on enhancing institutional selectivity and bridging mechanisms to escape the inherent stagnation of high-entropy cultural networks.

## BETWEEN EXPECTATIONS AND REALITY: WHY SMALL-SCALE SEAWEED AQUACULTURE DOES NOT ALWAYS LIFT WOMEN OUT OF POVERTY

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### Abstract

Small scale seaweed aquaculture is widely promoted as a gender inclusive livelihood and a pathway out of poverty, but evidence on welfare effects for women remains limited. This study evaluates whether income expectations align with realized poverty outcomes among seaweed producing households and whether the determinants of each differ, with emphasis on gendered vulnerability. Using primary survey data from 152 seaweed producing households in the Biobío and Los Lagos regions of Chile, we define expected poverty as anticipating household income below the official poverty line and realized poverty as reported household income below that threshold. Both outcomes are modeled using separate Probit specifications, complemented by Ordered Probit models using income terciles to capture heterogeneity in poverty intensity.

Descriptive results show a systematic gap between expectations and outcomes: 52 percent of households expect to be poor while 71 percent are poor based on reported income. Probit estimates indicate that being female is associated with a higher probability of poverty in both the expected and realized dimensions, suggesting persistent gender disadvantages that are not offset by participation in seaweed aquaculture. However, the correlates of expectations and outcomes diverge. Expected poverty is strongly associated with institutional and perceived production conditions, including participation in social programs and access to a suitable cultivation area, while these factors show weaker or non significant relationships with realized poverty. In contrast, realized poverty is more closely related to household structural constraints, particularly household composition and dependency. Exposure to theft is associated with both dimensions, linking insecurity to material outcomes and to heightened perceived vulnerability. Ordered Probit results reinforce the role of gender and household constraints across income categories and highlight ownership as a determinant of mobility in realized income, reducing the probability of being in the lowest income category and increasing the likelihood of being in the highest category.

The findings show that subjective expectations and objective poverty capture distinct dimensions of vulnerability and respond to different mechanisms. From a policy perspective, expanding participation or production in small scale seaweed aquaculture may not reduce poverty if structural household constraints, exposure to risks such as theft, and institutional barriers continue to limit income generation and protection.

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## QUOTA SETTING AND DYNAMIC HARVESTING DECISIONS: TURFS IN CHILE

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<sup>1</sup>University of Concepción, Chile. <sup>2</sup>University of Nottingham, United Kingdom

### Abstract

We examine the determinants of the harvesting decisions made by artisanal organizations operating under territorial use of rights (TURFs) in the abalone fishery (locally known as Loco) in a region of Chile from 2004-2020. Although biological gains recovering the benthic resources are broadly recognized, the effects of specific harvesting decisions on TURFs' effectiveness are still little known. This work evaluates harvesting decisions on artisanal organizations accounting for loco's stock, harvest, quotas, and catchability. We explore harvesting decisions through a dynamic model. Organizations may decrease their harvest below the quota in order to obtain a higher quota for the next year. Empirically, we find that consultants differ substantially in their quota setting practice, but the quotas are mostly increasing in stock. Quotas are higher for biennial reporting. About three quarters of harvests are below the quota. Harvests are increasing in stock, TURF area and organization membership. Organizations with more than one TURF have higher harvest. Harvests are decreasing in last year's combined harvests by the other organizations in the same commune.

## SPATIAL INEQUALITIES IN URBAN GREEN ACCESSIBILITY: APPLYING THE 3-30-300 RULE TO SUPPORT WELL-BEING AND URBAN SUSTAINABILITY

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### Abstract

Urban green infrastructure plays a vital role in supporting wellbeing, environmental sustainability and resilient urban development, particularly under mounting social, climatic and health pressures. The 3-30-300 rule has recently emerged as a practical and evidence-informed planning framework for promoting everyday contact with greenery by ensuring that residents can see at least three large trees from their homes, that neighbourhoods maintain a minimum 30 % tree canopy cover, and that all inhabitants have pedestrian access to high-quality public green spaces of at least 0.5 ha within 300 m. This study applies the 3-30-300 framework to assess spatial inequalities in green area accessibility in the city of Wolsztyn, Poland, and to inform planning strategies that enhance urban resilience, sustainability and quality of life.

Using a case study approach rooted in spatial planning and regional science, the research analysed six residential locations representing diverse housing types (single-family and multi-family) and urban contexts (central and peripheral). For each location, we conducted detailed spatial analyses of tree visibility from residences, the extent of tree canopy and biologically active surfaces in the immediate environment, and walking access to designated green areas within a 300-metre radius. This methodology allowed us to identify areas that meet the 3-30-300 criteria as well as those with significant deficits in green accessibility.

The results reveal a heterogeneous distribution of urban greenery across Wolsztyn, with notable disparities in both visual and physical access to green spaces depending on residential location and neighbourhood morphology. These findings highlight the role of spatial planning in addressing inequities in environmental exposure and green access, factors that are increasingly recognised as central to public health, social inclusion and climate adaptation. Based on the analyses and insights from community perception surveys and stakeholder workshops, we propose targeted interventions, including “green acupuncture” to strategically insert vegetation in deficit areas, urban agriculture initiatives, and design guidelines to improve green infrastructure integration in future housing developments. We also emphasise the importance of participatory processes in planning to ensure local buy-in and long-term sustainability of green space interventions.

By framing green access as an integral component of wellbeing, resilience and sustainable urban development, this study contributes to regional science and spatial planning debates on achieving equitable and health-promoting urban environments. The 3-30-300 rule offers a transferable analytical lens for comparative research and policy implementation aimed at advancing wellbeing and sustainability across regions and urban contexts.

## FROM GARDEN CITY TO 15-MINUTE CITY: URBAN PLANNING RESPONSES TO RESILIENCE AND SUSTAINABILITY CHALLENGES

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### Abstract

In the current context of urban planning debates the 15-Minute City concept represents a timely response to the endeavours of improving the quality of life in cities. The goal of this model is to provide inhabitants with access to essential services within 15 minutes from their homes by walking or cycling. Consequently, more people interact with their local environment contributing to the creation of vibrant, environmental friendly neighbourhoods (EIT, 2022). The concept was launched in 2016 by Carlos Moreno, being the result of long-term accumulations in relation to past and more recent ideals, from Ebenezer Howard's Garden City and Clarence Perry's Neighbourhood Unit at the beginning of the 20th century to the New Towns Movement (post World War II), New Urbanism (Calthorpe, 1993) and Chrono-urbanism (Gwiazdzinski, 2014) in the last decades of the century. It re-emerged and captured a great deal of attention as a result of the COVID-19 pandemic challenges. This paper places the 15-Minute City model in a historical perspective, revealing the urban planning models' quest for resilience and sustainability-based responses and, thus, opening the door for a complex analysis of the current initiatives in this respect. The spotlight is directed to the EU Mission for Climate Neutral and Smart Cities – also known as “Cities Mission”, which aims to deliver 100+ climate-neutral smart cities by 2030 and inspire the other cities to follow suit by 2050. Given the planning principles the 15-Minute City model is based on - proximity to essential services, proximity to public transport, density, mixed land use, walkable and cyclable streets, public space and place-making, inclusiveness, ubiquity (EIT, 2022) – it can contribute to offering cleaner air, safer transport and less congestion to citizens and thus, to respond to the European Green Deal ambition to reduce gas emissions by at least 55%. Our paper aims to examine the preparedness for the “Cities Mission” through the lens of the 15-Minute City, proposing as case study the District 2 of Bucharest Municipality, included in this mission. The investigation is based on desk research using available data and information from regional and local development institutions, combined with interviews with representatives of relevant stakeholders (e.g. district town hall, regional development agency, etc.). The methodology behind the 15-Minute City Index proposed by Badii et al. (2021) is employed in our research using the data provided by the SonyCLS platform so as to assess the effective compliance of the District 2 of Bucharest Municipality with the 15-Minute City defining aspects. The results can offer a useful orientation for decision-makers, civil society/community and entrepreneurs in District 2 with regard to the most favourable positioning within the “Cities Mission” while implementing the 15-Minute City principles, able to contribute to maximizing their benefits, with synergies between the multiple components involved.

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## AI-ENABLED ADAPTIVE REUSE FOR REGIONAL RESILIENCE

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### Abstract

Regions facing post-industrial decline, climate stress, and infrastructural obsolescence require new models of development that integrate technological innovation with socially grounded and environmentally responsible planning. This paper examines how artificial intelligence (AI) and digital design technologies can support adaptive reuse strategies as engines of smart, sustainable, and inclusive regional growth.

Building on regional science, urban resilience theory, and green transition frameworks, the study positions adaptive reuse not only as a heritage or design intervention but as a regional development strategy capable of activating underutilized assets, reducing embodied carbon, and fostering place-based innovation. AI-enabled tools—including spatial analytics, machine-learning-assisted scenario modeling, digital twins, and participatory platforms—are examined as decision-support infrastructures that enhance planning capacity across scales.

The paper draws on comparative case studies from post-industrial and resource-dependent regions, with a particular focus on design-led planning studios and community-engaged pilot projects in the United States and international contexts. These cases demonstrate how AI can support multi-criteria evaluation of reuse scenarios, optimize land use and infrastructure performance, and mediate negotiations between public agencies, local communities, and private actors. Rather than treating AI as a neutral or purely technical solution, the analysis critically examines its governance implications, ethical risks, and uneven accessibility across regions.

The findings indicate that when AI is used in planning that involves community participation, it can help improve the region's quality of life by boosting local economies, creating green jobs, building social connections, and helping with climate change efforts. However, if we deploy digital tools without institutional transparency and civic oversight, we risk technocratic lock-in, data bias, and exclusion.

The paper ends by suggesting a new idea for using AI in adaptive reuse as a way to improve regions, connecting digital tools, governance, and sustainability results. This framework offers policy-relevant insights for planners, regional authorities, and researchers seeking to leverage AI and digital technologies in support of equitable and resilient regional transitions.

## STRUCTURAL CHALLENGES AND THE GVC POSITIONS IN FDI-DEPENDENT REGIONAL ECONOMIES: EVIDENCE FROM CENTRAL AND EASTERN EUROPE

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### Abstract

This paper examines how foreign direct investment (FDI) shapes regional development trajectories in Central and Eastern Europe, focusing on the Visegrad countries and Slovenia, Croatia and Romania. The analysis covers four interrelated dimensions of regional development : labour productivity, technological and knowledge complexity, global value chain (GVC) positioning, and the structure of regional knowledge bases. Using a NUTS-2 panel dataset for the period 2008-2018, the study integrates Eurostat regional FDI stocks, regionally disaggregated OECD TiVA input-output data to measure GVC upstreamness, and EPO patent-based indicators capturing knowledge complexity, diversity (entropy), and specialisation (Herfindahl index).

The empirical framework adopts a role-based GVC perspective, distinguishing between controller, supplier, assembler, and outsider regions following the Capello-Dellisanti (2024) classification, and differentiates between manufacturing and advanced services sectors. Interaction terms are used to assess how FDI effects vary across regional GVC roles and sectoral structures. The results show that FDI is a robust driver of labour productivity growth, particularly in supplier and assembler regions, confirming its role as an efficiency-enhancing mechanism. However, these gains do not translate into systematic functional upgrading or sustained shifts towards more upstream GVC positions. Manufacturing-related FDI remains strongly associated with downstream, assembly-oriented activities, while limited upstream movement and modest complexity gains are concentrated in finance and ICT-related services.

In peripheral (outsiders) and assembly-oriented 'factory' regions, the relationship between FDI and technological complexity is weak or negative, pointing to a persistent and spatially uneven complexity gap. Moreover, FDI tends to narrow regional knowledge structures by increasing technological specialisation and reducing diversity, especially where local absorptive capacity is limited. This pattern suggests the emergence of an "assembler trap", characterised by productivity gains without parallel knowledge deepening and heightened vulnerability to external shocks. Overall, knowledge complexity appears largely unaffected by FDI alone, indicating that foreign capital inflows are insufficient to drive endogenous technological upgrading.

The main contribution of the paper lies in demonstrating, from a regional policy perspective, that FDI-led growth delivers productivity gains without automatic upgrading. Upgrading outcomes depend critically on regional GVC roles, sectoral composition, and local innovation capacity. The findings contribute to debates on dependent growth models by showing how FDI can simultaneously stimulate regional economic performance and reinforce structural dependence. The paper concludes that FDI attraction strategies must be complemented by region-specific R&D, innovation, and supplier-development policies to foster sustainable upgrading and reduce excessive reliance on foreign-led growth.

## THE LIMITS OF UNIVERSITY-LED DEVELOPMENT IN PERIPHERAL REGIONS: CHALLENGES OF INDUSTRY 4.0 IN CENTRAL AND EASTERN EUROPE

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### Abstract

This paper aims to critically assess the limits of university-led development strategies in peripheral and semi-peripheral regions of Central and Eastern Europe (CEE) macro region of the European Union in the context of Industry 4.0 and innovation-oriented smart regional development. While universities are increasingly expected to act as engines of regional growth through their third and fourth missions, the paper questions the transferability of innovation models developed in advanced metropolitan regions to institutionally weaker territories. Particular emphasis is placed on the comparative analysis of the Pécs city-region in Hungary and the Brno region in Czechia, representing two contrasting non-metropolitan regional innovation trajectories within CEE.

The paper builds on long-term empirical research on regional innovation systems, mid-range universities, and university-industry linkages in CEE. A comparative case-study methodology is applied, combining secondary statistical indicators, regional innovation profiles, and qualitative evidence derived from applied research and policy-oriented projects. The analysis is further informed by insights from the EU RIS, RIS+ strategies and UNIREG IMPULSE IPA cross-border cooperation project jointly implemented by the universities across national borders. The analytical framework integrates concepts from regional innovation systems, Triple and Quadruple Helix models, smart specialisation, and Industry 4.0-related transformation paths.

The results indicate that universities can function as important regional anchors in peripheral regions by supporting human capital development, institutional learning, and selective knowledge transfer. However, the comparative analysis reveals strong path-dependent differences between Pécs and Brno in terms of industrial embeddedness, governance capacity, and innovation performance. While Brno demonstrates a more coherent Industry 4.0-oriented smart regional ecosystem, Pécs remains constrained by weak entrepreneurial structures, limited firm-level absorptive capacity, and misalignment between academic specialisation and regional industrial needs. The findings suggest that university-led development alone is insufficient for smart regional transformation, underlining the need for complementary industrial structures and place-based university-region development models as well.

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## CORPORATE SOCIAL RESPONSIBILITY AND WOMEN'S LABOUR MARKET POSITION IN REGIONAL CONTEXT

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### Abstract

Corporate social responsibility (CSR) is increasingly becoming a central element of corporate governance and sustainability strategies, especially in the context of internal policies addressing the well-being of employees and gender equality. While CSR is often analysed at company level, its effects are also embedded in wider regional labour market and institutional settings. This paper examines how CSR internal strategies affect the status and career prospects of women employees, with particular reference to regional socio-economic context.

The study focuses on companies operating in an economic sector where CSR reporting obligations provide a structured empirical basis for benchmarking. CSR is not only seen as a voluntary corporate activity, but also as an institutional mechanism, shaped by regulatory frameworks, regional development trends and labour market standards. Central research question is to examine how CSR practices on work-life balance, employee wellbeing and gender equality interact with current regional labour market conditions and gender stereotypes.

Methodologically, the research follows a mixed method approach. The first phase of the research is based on a systematic analysis of the content of corporate CSR reports, which identify internal CSR commitments on employment and work-life balance for women in different regional contexts. It is complemented by a qualitative analysis to capture how these formal obligations are perceived and experienced by women workers in the day-to-day workplace. This combined approach allows for both institutional intentions and living realities to be examined.

Preliminary findings show that, although CSR strategies are increasingly recognising gender equality as a key objective, their practical impact remains highly dependent on context. In some regional settings, CSR practices contribute to greater flexibility and better integration of women in the labour market, while in others they may unintentionally reinforce traditional gender roles by giving primary responsibility for reconciling work and life to women. These differences underline the importance of regional socio-economic structures and institutional environment in shaping results of CSR initiatives.

By linking CSR practices at the level of enterprises to regional labour market dynamics, the paper contributes to regional scientific debates on social sustainability, labour market inequalities and spatial integration of corporate governance. The findings highlight the need for a CSR framework that is sensitive to regional contexts and able to promote fairer and more sustainable labour market outcomes.

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## SCHOOL CHOICE AS A RELATIONAL URBAN PROCESS: NETWORKS AND SOCIOSPATIAL SEGREGATION IN CHILE

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### Abstract

This study examines the relational and spatial dimensions of school choice in Antofagasta, Chile, a municipality characterized by pronounced sociospatial inequalities. Using data from the School Admission System (SAE) for 14,946 families, two quantitative approaches are applied. First, Social Network Analysis (SNA) is employed to model the spatial structure of shared school preferences among families. Subsequently, a Geographically Weighted Principal Component Analysis (GWPCA) is implemented to explore how these relational dynamics vary spatially across the urban territory. The results indicate that school choice decisions are organized around a dominant dimension of centrality, while also revealing patterns of local cohesion and fragmentation associated with socioeconomic segregation. Whereas some areas display dense and well-integrated networks, others exhibit relational isolation and constrained choice sets. These findings suggest that school choice is a socially interdependent and territorially embedded process. It is concluded that public policies should account for both spatial inequalities and the social networks that mediate effective access to educational opportunities.

## FOREST ECOSYSTEM SUPPLY SERVICES IN POLAND - A TEMPORAL AND SPATIAL PERSPECTIVE

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### Abstract

Forests, being one of the most important resources of the natural environment, provide multiple ecosystem services. They provide people with provisioning services in the form of tangible products and intangible use values (regulatory, cultural), thus satisfying their various needs. Thus, forest ecosystems are a source of timber and non-timber raw materials, among other crops of undergrowth, as well as other utilitarian benefits of fundamental importance for the existence and development of society. The use of forest resources should be carried out in a rational manner, at a level that guarantees the continuity of forest use and its provision of various ecosystem services in the future. Sustainable forest management requires continuous monitoring of the services provided by forest ecosystems, especially provisioning services, the intensity and use of which have a significant impact on the ability to provide forest regulatory and cultural services.

The purpose of the study is to recognize the spatial heterogeneity of the level and changes of forest ecosystem supply services in Poland at the beginning of the 21st century. Two research questions have been posed: 1. What is the development level of forest ecosystem supply services? 2. What is the direction of changes taking place in the development level of forest supply services? The spatial scope covers the whole country by regions.

The empirical analysis uses data from the Statistical Yearbook of Forestry and Forest Data Bank. Diagnostic variables were selected so that their values were available in two temporal moments analyzed. The analysis was conducted on the basis of six measuring instruments. All indicators are stimulants. Assessment of the level and changes of forest supply services is carried out based on Perkal's synthetic index. The investigated features were subject to the standardization procedure aiming at levelling out differences resulting from the range of values adopted by the features. Then, using cluster analysis, classification of regions is carried out due to the differentiation of the level of forest supply services.

The development level of forest ecosystem supply services in Poland has clear spatial differences. In 2009, the highest development level of services could be found in Pomorskie region. In 2024, the highest development level of forest supply services was recorded in Podkarpackie region. The lowest development level of forest management in 2024 was noted in Świętokrzyskie and, fifteen years earlier, in Mazowieckie. Zachodniopomorskie was the region that maintained the stable position in the ranking of 2009 and 2024. A drop in disparities in the level of forest ecosystem provisioning services across regions has been observed, indicating a trend toward convergence.

## FINANCIAL SUSTAINABILITY AND MUNICIPAL SOLID WASTE MANAGEMENT: EVIDENCE FROM A STAGGERED DIFFERENCE-IN-DIFFERENCES ANALYSIS IN BRAZIL

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### Abstract

This paper examines the effects of the New Legal Framework for Sanitation (Law No. 14,026/2020), which mandates the adoption of specific fees or tariffs for solid waste services to ensure full cost recovery. The inadequate waste management disproportionately affects poorer municipalities, exacerbates territorial inequalities, and undermines public health and environmental quality. Despite the importance of the topic, there are still questions to be explored on the subject. Part of the challenges stem from the difficulty in establishing efficient monitoring mechanisms and service indicators. The Union of Urban Cleaning Companies (SELUR, 2017) established the ISLU (Urban Cleaning Sustainability Index), calculated since 2017, a composite indicator developed from the National Sanitation Information System (SNIS), which evaluates municipal waste services across four dimensions: municipal commitment and service coverage (E), financial sustainability (S), recovery and recycling (R), and environmental impact (I). Previous studies have documented managerial inefficiencies (Schappo; Minatti; Rocha, 2017), health benefits of proper waste disposal (Saiani; Mendonça; Kuwahara, 2020), and the challenges of implementing (Freitas et al, 2024) the National Solid Waste Policy (PNRS). However, there is limited causal evidence on whether financial instruments improve integrated performance indicators (Da Silva et al, 2024). Fewer studies assess impacts on composite indices such as the ISLU. The main objective of the study is to evaluate whether the introduction of waste collection fees improves dimensions of the ISLU. The paper employs a staggered Differences-in-Differences (DiD) approach once the municipalities have adopted the policy at different points in time and with varying intensities of cost recovery. Following Callaway and Sant’Anna (2021), we use a two-way fixed effects models under staggered treatment. Municipal-level panel data are drawn primarily from the National Sanitation Information System (SNIS), covering the period 2020–2024. The GDP and population are used as covariates and to apply a matching procedure to refine the control group. An event-study design is used to assess pre-treatment trends and the dynamic effects of the policy over time. The study explores heterogeneity by distinguishing between municipalities with high and low levels of cost recovery. The results reveal a heterogeneous pattern of impacts. The adoption of waste collection fees is associated with statistically significant improvements in the ISLU’s municipal commitment dimension (E), particularly in municipalities that achieve higher levels of cost recovery. These effects tend to materialize with a lag of one to two years, suggesting that financial autonomy facilitates gradual expansion of service coverage. In contrast, no robust or consistent effects are found for the recovery (R) and environmental impact (I) dimensions. In some cases, negative or insignificant effects are observed, especially for cohorts affected by the COVID-19 pandemic, which disrupted recycling activities and strained municipal budgets. The waste management fees can strengthen municipal commitment and service coverage when designed to ensure substantial cost recovery. However, achieving broader environmental improvements depends on coordinated policy mixes and resilient local institutions, reinforcing key challenges for regional development and sustainability research.

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## PERSISTENCE AND HETEROGENEITY OF THE ECONOMIC EFFECTS OF NATURAL DISASTERS IN BRAZIL

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### Abstract

This study investigates the economic impacts of natural disasters on per capita GDP and formal employment across 5,338 Brazilian municipalities between 2003 and 2021, distinguishing between hydrological, climatological, and combined events (including meteorological phenomena). Using staggered Difference-in-Differences (DiD) methods, we explore heterogeneous effects by treatment cohort and calendar time. The aggregate results indicate that hydrological disasters reduce per capita GDP by up to  $-6.7\%$  and formal employment by  $-6.4\%$ , reflecting simultaneous physical destruction and production disruptions. Combined disasters exacerbate these effects ( $-9.1\%$  for both indicators), suggesting synergistic impacts when extreme shocks co-occur. Climatological events show more modest average effects on per capita GDP ( $-2.3\%$ ) but lead to severe employment losses ( $-27.4\%$ ), highlighting asymmetries in transmission mechanisms: shocks such as droughts and heatwaves affect production and labor markets unevenly, with partial recovery of income but persistent employment losses. The comparison between cohort-based and calendar-time models reveals that temporal aggregation better captures the persistence of employment effects in the context of prolonged droughts. These findings enrich the empirical evidence on how disasters interact with sectoral vulnerabilities and regional inequalities in emerging economies. Finally, the results reinforce the urgency of adaptation strategies to mitigate growing climate-related risks in Brazil.

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## THE EFFECT OF WOMEN'S EMPOWERMENT ON ECONOMIC GROWTH: EVIDENCE FROM LATIN AMERICA IN THE PERIOD 2000-2022

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### Abstract

This study analyzes the relationship between female empowerment and economic growth in Latin America during the period 2000-2022. Despite progress in the region, gender gaps remain a challenge for development. Using a quantitative approach based on panel data regression for 17 countries, the study evaluates the impact of women's empowerment—represented by the civil liberties index, the index of women's participation in civil society, and the index of women's political participation—on gross domestic product (GDP) per capita. The main results indicate that a one percentage point increase in the women's civil liberties index is associated with a 1.29% increase in GDP per capita. In other words, the greater the level of freedom of expression, democratic participation rights, and protection against discrimination and gender violence, the better a society's economic performance will be. Likewise, it is evident that a one percentage point increase in the women's political participation index is associated with a 2.28% increase in GDP per capita. The study concludes that women's empowerment is not only a social justice imperative, but also an indispensable economic driver. The study concludes that women's empowerment is not only a social justice imperative, but also an indispensable economic driver. It recommends that public policies in the region prioritize strengthening civil liberties and women's political participation in order to promote sustainable growth.

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## THE IMPACT OF PROMOTION AND RELEGATION OF FOOTBALL CLUBS ON TOURISM

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### Abstract

Sports tourism is one of the fastest-growing sectors worldwide, yet the impact of hosting top-division football clubs on local tourism remains underexplored. This study investigates how promotion to (or relegation from) a top-tier football league affects tourism flows, offering an empirical investigation for the case of Spain. Exploiting the promotion and relegation system as a quasi-natural experiment, we employ a stacked-DiD approach using data from the 2021/22–2024/25 seasons and mobile phone tracking data from the National Statistics Institute. Results show that promotion significantly increases inbound tourism from cities of visiting teams. However, this effect is primarily driven by the market size of visiting teams rather than by promotion itself. No evidence was found of broader domestic tourism gains, indicating that the benefits of top-division status are geographically concentrated and do not enhance overall city tourism. These findings offer nuanced insights for policymakers and local governments seeking to leverage football clubs for tourism development.

## HYBRID CONFIGURATIONS IN QUITO'S FOOD SYSTEM: CONSUMPTION PRACTICES AND GOVERNANCE THROUGH URBAN AGRICULTURE

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### Abstract

Accelerated urbanization in the Global South exerts mounting pressure on natural resources and urban food systems, posing significant challenges to sustainability, food security, and well-being. Within this context, Urban and Peri-urban Agriculture (UPA) has emerged as a relevant grassroots initiative for strengthening urban resilience. However, an analytical gap persists regarding how these initiatives articulate with institutional frameworks and everyday consumption practices, giving rise to hybrid governance configurations in urban settings.

This study analyzes the municipal program AGRUPAR in Quito, aiming to understand how a grassroots urban agriculture initiative configures hybrid arrangements among community actors, technicians, institutional actors, and consumers, and how these arrangements influence consumption practices and the construction of legitimacy within the local food system.

A mixed-methods approach is adopted, combining semi-structured interviews with producers, technicians, and program managers with a survey of 93 consumers at Healthy Food Points (Puntos de Alimentación Saludable, PAS). This design enables the examination of both multi-actor articulation and coordination processes and their manifestation in everyday consumption practices. The results show that AGRUPAR configures a hybrid governance arrangement that articulates community, technical, and institutional logics in food production and marketing through short supply chains and agroecological practices. Qualitative evidence reveals the program's role as an intermediary space that facilitates coordination among actors, reduces production and commercial risks, and combines local knowledge with technical and institutional support. From the consumers' perspective, quantitative results indicate that these arrangements translate into recurrent consumption practices, sustained expenditure levels, and a high rate of social recommendation of the PAS. Furthermore, the legitimacy of the system is built less on formal certification mechanisms and more through trust-based relationships, social proximity, and traceability grounded in the recognition of producing families. The analysis also identifies tensions associated with the insertion of this hybrid arrangement into an expanding urban environment, related to accessibility, product diversity, and the stability of institutional support.

Collectively, the study provides empirical evidence on how urban agriculture, when embedded in hybrid governance arrangements, can contribute to reconfiguring consumption practices and strengthening more sustainable urban food systems from a situated, multi-actor perspective.

## REGULATORY CENTRALIZATION AND MUNICIPAL AUTONOMY IN BRAZILIAN SANITATION POLICY: EVIDENCE FROM THE CITY SÃO CAETANO DO SUL

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### Abstract

Brazil's 2020 sanitation reform (Law No. 14,026/2020) restructured the sector's regulatory architecture by expanding the authority of the National Water and Sanitation Agency (ANA) to issue Reference Norms (Normas de Referência - NRs). These norms aim to reduce regulatory fragmentation, promote investment, and accelerate service universalization by establishing national standards for governance, tariff regulation, and performance. Although formally classified as non-binding instruments, the NRs condition access to federal funding and regulatory legitimacy, raising questions about their effects on municipal autonomy and institutional capacity. This article analyzes how ANA's Reference Norms reshape local governance through a qualitative case study of São Caetano do Sul (SP), a municipality characterized by universal service coverage, direct public provision through a municipal autarchy (SAESA), and high technical-administrative capacity. The case is analytically significant because it allows examination of federal regulatory effects beyond contexts of low institutional capacity, where constraints are typically expected. The study draws on systematic document analysis of federal legislation, ANA Reference Norms, especially NR No. 4/2024 on regulatory governance and NR No. 6/2024 on tariff regulation, municipal planning instruments, regulatory agency reports, and performance indicators. The analytical framework combines insights from the literature on cooperative federalism, multilevel governance, and regulatory soft law, emphasizing how conditional financing and standard-setting function as indirect coordination mechanisms. The findings indicate a high degree of normative convergence between municipal planning instruments and federal regulatory standards, particularly in areas related to tariff structures, governance practices, and financial sustainability. While São Caetano do Sul formally retains regulatory authority and service provision autonomy, its substantive discretion is increasingly constrained by federal conditionalities embedded in access to credit and investment financing. In this sense, the NRs operate as de facto binding soft law instruments, producing practical compliance even in the absence of formal coercion. This dynamic reveals a process of regulatory centralization mediated through financial and reputational incentives rather than constitutional or statutory reassignment of competences. The case demonstrates that even municipalities with strong institutional capacity and successful public service models are subject to indirect forms of regulatory steering that reshape decision-making spaces and policy priorities. These findings contribute to the broader literature on multilevel governance by illustrating how national harmonization can coexist with formal decentralization while subtly redefining the boundaries of local autonomy. The article argues that while regulatory harmonization may reduce territorial inequalities and improve investment predictability, uniform standards risk undermining locally successful institutional arrangements. It therefore suggests the need for more flexible regulatory designs that accommodate institutional diversity while preserving coordination, accountability, and universalization goals. By empirically documenting the effects of ANA's Reference Norms in a high-capacity municipal context, this study advances understanding of regulatory federalism in infrastructure governance and highlights the trade-offs inherent in balancing autonomy and coordination in decentralized policy systems.

## ESTIMATION OF SOIL ORGANIC CARBON USING GRAPH NEURAL NETWORKS AND MULTIMODAL GEOSPATIAL DATA

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### Abstract

Soil Organic Carbon (SOC) is a key indicator of soil quality, the ecosystem services it provides, and the impacts of climate change on ecosystems, being closely linked to agricultural productivity, carbon sequestration potential, and long-term territorial sustainability. Accurate spatial characterization of SOC is therefore essential for supporting land management decisions, climate mitigation strategies, and sustainable agricultural planning at regional and national scales. However, SOC dynamics are complex and influenced by interacting environmental drivers operating across multiple spatial and temporal scales.

SOC levels are determined by the interaction of multiple environmental factors, including topography, climate, soil types, and vegetation cover, whose relationships are inherently spatial and often nonlinear. As a result, SOC observations exhibit heterogeneous spatial distributions and uneven sampling coverage across scales, which complicates regional-scale estimation and uncertainty assessment. Conventional approaches, such as linear regression, geostatistical models, and machine learning methods based on independent observations, face limitations in simultaneously capturing nonlinear relationships among environmental factors and the spatial dependence between observations, thereby reducing their generalization capability, particularly in data-scarce regions.

In this context, this study investigates the use of Graph Neural Networks (GNNs) for SOC estimation in Ecuador using multimodal geospatial data composed of: (i) satellite imagery from the Sentinel-1, Sentinel-2, and Sentinel-3 missions; (ii) topographic variables derived from the Copernicus GLO-30 Digital Elevation Model; and (iii) climatic variables, including temperature and precipitation. These data are organized into a spatial graph, where nodes represent sampling sites and edges encode geographic proximity relationships, enabling explicit modeling of spatial heterogeneity and spatial autocorrelation.

The GNNs are trained and evaluated under two complementary schemes: a transductive approach based on random data partitions and a more demanding inductive approach in which entire spatial regions are withheld to assess the model's generalization capability to unseen areas in study area. The performance of both schemes is compared using standard regression metrics, including Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE), the coefficient of determination ( $R^2$ ), and Root Mean Squared Error (RMSE), as well as spatial diagnostics of residuals. Preliminary results indicate that GNN models more effectively capture the spatial patterns of SOC and the nonlinear interactions among climatic, topographic, land-use, and soil properties, providing a robust and scalable methodological framework for SOC estimation in heterogeneous landscapes. Overall, this study will provide a robust and transferable framework for integrating graph-based deep learning with multimodal geospatial data, enhancing spatial generalization and reliability in regional-scale SOC mapping across complex landscapes.

## INSTITUTIONAL CAPACITIES OF REGIONAL GOVERNMENTS IN CHILE

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### Abstract

The quality and capacity of national and subnational public institutions responsible for implementing policies are crucial to realizing the efficiency and effectiveness benefits of decentralization (Miranda et al. 2023). Therefore, this study focuses on regional governments in Chile. Following the notion proposed by Howlett and Ramesh (2014), who understand policy capacity in terms of the resources and skills governments require to select and formulate appropriate policies and implement them effectively, the situation of these institutions is analyzed. Consistent with this, an analytical perspective is developed that shifts the focus from structural aspects to knowledge- and learning-based factors (resources, competencies, capabilities). According to Wu, Ramesh, and Howlett (2015; 2018), these skills and competencies can be categorized into three types: analytical, operational, and political. Furthermore, each of these competencies can be observed at three different levels: individual, organizational, and systemic (Wu et al., 2015; Woo, 2020). Within this framework, this study analyzes regional governments and their institutional capacities to exercise effective governance that enables the comprehensive development of their territories. It examines analytical, operational, and political capacities at the organizational level. To this end, a review of various secondary and primary sources, both quantitative and qualitative, was conducted. This review provides an account of the progress and current situation of regional governments, as well as the challenges they face in strengthening their institutional capacities. All of this allows for an analysis of key aspects of governance and its potential to effectively guide the comprehensive development of their territories. The results show that there is no institutional governance model that ensures the sustainability of intergovernmental relations at the vertical and horizontal levels, acknowledging conflicts over competencies and coordination in the cases analyzed. Likewise, positive progress is recognized in strengthening organizational capacities, driven by the new divisions of the Regional Governments (GOREs) and the processes of transferring competencies from the central to the regional levels. However, the need to strengthen analytical and operational capacities and consolidate policies is recognized (Wu et al., 2015 and 2018), as well as to achieve the sustainability of changes (and reduce the risk of recentralization), recognize the role of civil society, and establish a new central-regional relationship (Nickson, 2023). Positioning itself as a leading organization that promotes a vision of territorial development and shifting its role from financiers to promoters of regional development remains a challenge.

## EFFECTS OF MINING ACTIVITY ON FIRM PRODUCTIVITY IN PERU, 2007–2018

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### Abstract

This study evaluates the effects of mining activity on total factor productivity (TFP) of medium and large Peruvian firms over the period 2007–2018. Following Demena and Murshed (2018), a two-stage methodology is proposed. In the first stage, TFP is estimated using the Arellano–Bond and Akerberg–Caves–Frazer methods; in the second stage, a mining externalities model is estimated, which considers the spillover effects of mining activity as exogenous productivity shocks that affect firms' efficiency levels through changes in market and institutional conditions. These effects may be shaped by each firm's absorptive capacities, based on its intangible capital or managerial capabilities. A panel dataset for 1,071 firms is used, constructed from the Annual Economic Surveys conducted between 2008 and 2019, which collected information on firms' operating performance in the previous year. This dataset is combined with national- and macro-regional-level aggregated data on mining production from records of the Ministry of Energy and Mines, as well as data on local public expenditure financed by mining tax revenues from the Ministry of Economy and Finance. The results provide evidence of the presence of externalities generated by mining activity on firm productivity, showing positive and statistically significant effects at both the macro-regional and national levels through the market channel, which also depend on the level of managerial capabilities. Absorptive capacities based on managerial capabilities offset these effects, such that firms with lower levels of managerial capabilities benefit more from the externalities generated by mining activity; however, as this variable increases, productivity gains diminish. At the macro-regional level, institutional changes do not influence productivity, whereas at the national level they do. In addition, short-term institutional constraints to the generation and absorption of mining externalities are identified.

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## SOCIAL AND SPATIAL INTEGRATION THROUGH PARENTHOOD. LOOKING AT PORTUGUESE CENSUS OF 2021

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### Abstract

Globalization of migration creating new challenges for social and spatial integration within space. The absence of social and spatial integration generates balkanized multicultural societies living in the same spaces. Spatial and social integration promotes cohesion, cooperation, and collective action within communities, build up social capital and reduce disparities. We take parenthood as an indicator of social and spatial integration, collect data from a sample of 1000 residents of the Portuguese Census of 2021 and formulate a Model that estimates the probability of different males and females having a son or a daughter as a function of the differences in religion, race, age, education, place of birth and place of residence. Using the level of education of the sons and daughters the paper also tests whether migrant educate better children than non-migrants. We conclude that racial and religious distances are the more important barriers for social integration, age and education do not have a major impact and income has a medium impact. Results also indicate that integration also depend on the place where migrants resides and that that the reduction of economic disparities is the major factor or social and spatial integration.

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## THE ROLE OF AGGLOMERATION DYNAMICS IN THE (EXTENSIVE-FORM) GROWTH PROCESS: EVIDENCE FROM CHINA

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### Abstract

The paper discusses whether – and to what extent – sub-national population change responds positively or negatively to agglomeration dynamics (i.e., population density), in ways that reinforce or, instead, equalize population concentrations across space. Examining processes of concentration and de-concentration of population goes beyond the demographic interest per se, as it may, also, shed light on questions concerning economic convergence and divergence in the more general sense of understanding wider economic processes. To this end, the paper presents evidence from China. Under the conditions of the rapid market liberalization process that China has been experiencing, questions of spatial cohesion – and thus of convergence and divergence – even though are still, rather, neglected, become increasingly salient. This is so as the elimination of spatial imbalances is both a pre-condition and a core objective of the reforms aiming at market liberalization. Scholars both in the urban economics and the growth economics tradition have well-recognized that studying population growth offers a window through which to study the process of economic growth as the latter is systematically related to population growth through the trade-off between agglomeration economies and urban costs (i.e., commuting, housing, land use, environmental, inter alia). This is especially so in China given that productivity levels, capital deepening and levels of technology are rather low, compared to the corresponding levels of the EU and the USA), and thus economic growth is still very much of the extensive (i.e. increase in inputs, including labor) than the intensive form (i.e. increase in the productivity of each input and in total factor productivity). Moreover, given that China is still at low levels of economic development, spatial productivity differentials are predominantly along the lines of urban-rural (i.e. core-periphery) dichotomy, and thus very much related to patterns of population agglomeration (i.e. urbanization). In these conditions, measures of spatial disparity in population concentration act as a lower bound indicator of spatial disparities in terms of economic development, and this may be of acute analytical and policy interest. If patterns of population growth are found to be cumulative across space, this could be taken as a signal of a wider spatial disequilibrium, representing spatial inequalities in economic opportunities more generally. This may, ultimately, raise concerns as regards the success of the market liberalization process in itself.

## SPATIAL DYNAMICS OF INTRA-EUROPEAN OUTWARD FDI: ANALYSIS AT THE REGIONAL LEVEL

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### Abstract

Europe is gradually moving from a “space of places” to a “space of flows” as the pure essence of the process of economic integration boils down to the gradual elimination of the pecuniary and non-pecuniary impediments to interaction. Indeed, as the process of European economic integration is in full swing, European regions have been experiencing a period of unprecedented change, being transformed into integral parts of the European economic space. Yet, the scarcity of data on economic flows at the regional level (i.e., interregional data) acts as a deterrent to the end of the thorough understanding of the spatial dynamics and externalities that are generated and / or reproduced. Hence, several important questions regarding the dynamics of the European economic integration process remain unsolved, for both scholars and policy makers. The paper offers a new understanding of the interrelations among regional economies in Europe, examining the spatial dynamics of intra-European outward foreign direct investment (FDI) across European NUTS-2 regions and over the period 2010-2018 (i.e., from the beginnings of the economic crisis to the outbreak of the COVID-19 pandemic). To this end, the paper integrates a Poisson Pseudo-Maximum Likelihood (PPML) gravity framework with spatial Markov chain analysis. Particularly, using high-dimensional fixed effects, the paper recovers region-specific outward FDI capacity (i.e., exporter fixed effects) and assesses both its spatial clustering and its mobility across relative performance states. Moving beyond static views of regional attractiveness, the paper models transitions across four pooled performance states and conditions them on local neighborhood regimes, thus capturing how spatial context shapes persistence, upgrading and downgrading. The results of the paper point to pronounced spatial dependence: regions embedded in high-performing neighborhoods display markedly higher state persistence, while upward mobility does not differ systematically across neighborhood regimes. These findings underscore the role of spatial context in shaping regional FDI trajectories and motivate place-based investment and cohesion policies that account for persistent neighborhood regimes. For the needs of the analysis, the paper utilizes a novel origin-destination (O-D) matrix for intra-European FDI flows at the regional level.

## CLIMATE JUSTICE IN THE BRAZILIAN AMAZON: WHO CONTRIBUTES TO THE MITIGATION EFFORT AND WHAT ARE THE SHORT-TERM EFFECTS?

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### Abstract

The Sixth Assessment Synthesis Report of the Intergovernmental Panel on Climate Change (IPCC) reinforces warnings about the worsening global climate crisis. One the last report indicates a probability greater than 50% that global warming will reach or exceed 1.5°C between 2021 and 2040, amid a recent intensification of extreme climate events worldwide, including in major emitters such as the United States and China (IPCC, 2023). Data from CRED/EMDAT show that in 2023 the frequency and magnitude of climate-related disasters exceeded the average observed between 2003 and 2022, affecting countries across different income levels and world regions. This context deepens the debate on unequal responsibility for historical emissions and the asymmetric distribution of climate vulnerability, reinforcing the centrality of climate justice and differentiated adaptive capacities across territories. In this regard, Brazil—and particularly the Amazon—occupies a strategic position due to its high biodiversity, global hydrological relevance, and large carbon-rich biomass stocks. Between 1990 and 2018, agriculture and deforestation accounted for approximately 80% of national emissions, reaching 69% in 2018, despite the Amazon region exhibiting relatively weaker socioeconomic conditions. Paradoxically, several Amazonian municipalities record net negative emissions, contributing decisively to national climate targets while facing disproportionate territorial pressures and socio-environmental costs. Against this backdrop, this article analyses how climate mitigation efforts are socially and spatially distributed across the Brazilian Legal Amazon between 1990 and 2023. It addresses two central questions: which municipalities contribute most to national mitigation targets, and what short-term socio-environmental effects are associated with these efforts. The analysis is guided by three hypotheses: (i) mitigation contributions vary significantly according to structural inequalities; (ii) municipalities that contribute most face higher short-term costs; and (iii) adequate compensatory mechanisms for those sustaining the national mitigation effort are lacking. The study uses data on net greenhouse gas emissions, deforestation, remaining forest cover, and population from SEEG, PRODES/INPE, and IBGE, covering a balanced panel of 760 municipalities in the Brazilian Legal Amazon. To capture dynamic interactions among these variables, a Panel Vector Autoregression (PVAR) model estimated via System GMM is employed. Separate estimations are conducted for the 110 municipalities that meet national climate targets and the 650 municipalities that do not, allowing for a comparative assessment of mitigation dynamics and environmental responses across groups. The results reveal strong municipal heterogeneity and high persistence of emissions, indicating substantial inertia in environmental degradation patterns. Deforestation has a positive and significant short-term impact on emissions, while forest cover reduces emissions only transiently. Granger causality tests confirm that deforestation drives emissions. Municipalities that meet climate targets display weaker deforestation effects and greater mitigation capacity associated with forest cover, whereas non-compliant municipalities exhibit more persistent emissions and a stronger influence of deforestation. These findings underscore the need for territorially differentiated climate policies grounded in climate justice principles, prioritizing targeted financing, economic incentives, and intergovernmental transfers based on environmental performance to promote a more equitable distribution of mitigation costs and benefits.

## ANCHORING RESILIENCE: THE ROLE OF HIGHER EDUCATION IN SUPPORTING INCLUSIVE GROWTH PATHWAYS FOR REGIONS IN TRANSITION

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### Abstract

Growing disparities in regional economic performance are a central concern for policymakers worldwide. In structurally weak, low-innovation regions, universities are increasingly framed as key 'anchor institutions' that can stabilize local economies beyond their core missions of teaching and research. This paper assesses how, and to what extent, universities help to reduce socio-economic inequalities and promote inclusive growth in distressed regional contexts.

The study adopts a mixed-methods design. On a quantitative basis, it exploits a panel dataset of European NUTS-2 regions and Latin American subnational areas covering the period 2011-2021 and estimates spatial econometric models consistent with the relationship between university presence, in terms of student density, R&D intensity, and funding- and metrics capturing inclusive development, such as the Gini coefficient, youth unemployment, and regional GDP per capita. Qualitatively, comparative case studies of selected lagging regions draw on semi-structured interviews with academic leaders and local stakeholders to trace how university-led human capital initiatives translate into local social cohesion.

Preliminary evidence indicates that universities' contribution to regional equity depends strongly on their strategic orientation. 'Research-excellence' models can unintentionally intensify local divides by generating high-skill enclaves, whereas 'community-engaged' models – prioritizing vocational upskilling, graduate retention, and support for local SMEs – are more consistently associated with reductions in income inequality. The paper elucidates the concrete channels through which academic human capital operates as a driver of social inclusion.

The analysis calls for a rethinking of the university's 'third mission' in lagging regions. It argues that regional policies should move beyond a narrow innovation agenda and more explicitly support universities as elements of social infrastructure. The findings are especially pertinent for the design of Smart Specialization Strategies (S3) and place-based policies aimed at ensuring that no region is left behind.

## EDUCATIONAL SERVICES DEVELOPMENT IN POLAND IN THE CONTEXT OF URBANISATION PROCESSES

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### Abstract

Socio-economic development in Poland since the 1990s has been largely shaped by transformations resulting from the change in the political system from a centrally planned economy to a democratic and market-oriented one. The systemic transformation led to profound changes in the functioning of social service systems, including the education sector, and triggered settlement processes related to metropolisation and suburbanisation on a scale previously unknown in the country. The simultaneous occurrence of processes of spatial concentration of population in urban areas and unfavourable demographic trends, including population decline and changes in age structure, has had a significant impact on the functioning of educational services. In the context of negative demographic projections for Poland, a further intensification of spatial disparities in the accessibility and organisation of these services is expected.

The main objective of the presentation is to identify demographic determinants and their consequences for the development of the education sector in functional urban areas in Poland, including Poznań, Wrocław, the Tricity, Łódź and Kraków. The analysis takes into account key demographic indicators such as population size and dynamics, natural increase, migration balance and age structure, as well as selected educational indicators, including the availability of childcare services for children under the age of five, spatial accessibility of kindergartens and schools, and upper secondary school leaving examination pass rates. The temporal scope of the study covers the years 2011–2020. The main research method applied in the study is the TOPSIS method (Yoon, Hwang, 1995). The results made it possible to assess the level of development of the analysed functional urban areas and to identify the directions and dynamics of ongoing changes.

## REGIONAL DEVELOPMENT AND INNOVATION IN EASTERN EUROPE. THE USE OF AI IN SHAPING PUBLIC ADMINISTRATION REFORMS IN ROMANIA AND MOLDOVA

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### Abstract

For Romania, an EU member state since 2007, and the Republic of Moldova, a potential EU candidate in the near future, the relationship between European integration and innovation is a key driver of regional development and institutional convergence.

Romania's post-accession experience illustrates how EU membership can enhance innovation capacity, digital transformation, and public administration reform through access to common regulatory frameworks, cohesion policies, and transnational networks. In contrast, Moldova's European trajectory highlights both the opportunities and constraints faced by neighboring regions seeking alignment with EU standards amid structural and geopolitical vulnerabilities.

This paper examines the relationship between EU integration and innovation, focusing on the role of artificial intelligence in transforming public administration reforms in Romania and Moldova. It argues that EU integration provides a multi-level governance framework and specific financial instruments that support innovation diffusion, while AI-driven digital reforms will contribute to administrative capacity-building, territorial cohesion, and improved public service delivery.

Using a comparative perspective and statistical analysis, this article highlights differentiated regional pathways in adopting and regulating AI within public administration, reflecting disparities in institutional capacity, infrastructure, and human capital. Finally, the paper identifies policy directions that can strengthen innovation-led convergence and support sustainable development in Eastern Europe.

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## REGIONAL AND STRUCTURAL EVOLUTION OF AGRIBUSINESS TECHNOLOGY STARTUPS IN BRAZIL (2016–2024)

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### Abstract

Given the importance of agriculture for Brazilian regions, the relevance of technology in general and Agribusiness Startups (Agtechs) in particular, and the lack of consolidated knowledge on this topic in Brazil, this study evaluates the structure and identifies the main characteristics of the evolution of Agtech startups in the country. The analysis considers regional, sectoral, human capital, and year-of-foundation dimensions. The study initially outlines the broader context of the emergence of startups, as well as the process through which firms focused on agribusiness-related solutions have arisen in connection with the stages of agricultural technological development. To this end a descriptive statistical methodology was adopted. Tables and graphs were constructed to assess data trends over time and across regions, based on an extensive review and compilation of ten sectoral reports on Agtechs published between 2016 and 2024. These reports were produced by Agtech Garage and ESALQ/USP; Distrito; Embrapa, SP Ventures and Homo Ludens; Abstartups; and Liga Ventures. It is worth noting that, even among reports prepared by the same institutions, methodological differences exist. Therefore, caution was required in direct comparisons due to distinctions in taxonomy and classification criteria across documents. The results show that, in all the reports analyzed, the state of São Paulo consistently leads in terms of the number of Agtechs, with a strong concentration in the state capital and in municipalities located within the so-called “Agro Corridor”. In the early Agtech reports, the state of Minas Gerais ranked second. However, this territorial pattern changed over time, as the Southern region of Brazil - particularly Paraná State - began to occupy the second position in terms of the number of Agtechs from 2019 onwards. In 2023, Rio Grande do Sul became the leading state in the Southern region and the second largest state nationwide in Agtechs, while São Paulo experienced a decline in its relative share over the analyzed period. Regarding areas of activity, the segments with the highest participation were innovative food products and emerging food trends, farm management systems, and integrated platforms for systems, solutions, and data. With respect to human capital, there is a predominance of men among both founders and employees. In addition, administrative and financial functions, together with production and operations, account for the largest shares of professionals employed. Concerning the timing of Agtech emergence, the findings indicate an upward trend until 2019, followed by a decline from 2020 onwards, possibly associated with the Covid-19 pandemic, which constrained investment and hindered the expansion of these activities.

## PREPARING SPORT MEGA-EVENTS FOR LOW-CARBON TRANSITIONS: UNDERSTANDING RESIDENT-CENTERED EMISSIONS RESPONSABILITY

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### Abstract

Large pre-event infrastructure programs for sport mega-events (SMEs) are commonly evaluated through construction footprints, venue life-cycle assessments, and sectoral supply-chain impacts. Yet the pre-event phase is also a citywide economic disruption that operates through residents: public investment triggers a demand shock that propagates across local production networks, redistributes household incomes, reshapes consumption practices, and generates additional embodied emissions that rarely enter sustainability planning. This paper develops and applies a resident-centered accounting framework to quantify these linked mechanisms and to identify who bears emissions responsibility—and where—during the build-up period of an SME. We study the Santiago 2023 Pan American Games in the Santiago Metropolitan Region (SMR), Chile, where a large infrastructure program (new and upgraded facilities across multiple municipalities) provides a policy-relevant setting to examine distributional and spatial heterogeneity within a single metropolitan economy. Methodologically, we implement an environmentally extended Miyazawa input–output (I–O) model that closes the standard Leontief system with households disaggregated by income quintile. This closure endogenizes the income–consumption loop: an exogenous investment shock increases sectoral output, generates factor incomes by quintile, and induces further household demand through quintile-specific consumption baskets, producing an interrelational (Keynesian) multiplier structure. We then link induced production to CO<sub>2</sub> emissions using sectoral emission intensities and report results under both (i) an accounting decomposition—investment-driven versus income-induced household demand—and (ii) a shared-responsibility attribution that allocates a single marginal footprint across production-based, consumption-based, and income-based principles. Finally, we spatialize incidence across municipalities using residence-based allocation matrices for workers (by sector) and households (by quintile), allowing us to compare between- and within-municipality burdens. Empirically, results show that the induced carbon footprint is dominated by investment-driven supply chains (about 90%), consistent with the construction-intensive nature of the pre-event surge. However, the household-induced channel is non-trivial (about 10%) and strongly structured by inequality: consumption-linked impacts are not concentrated exclusively among the richest households, while the income-based incidence of the shock is skewed toward higher-income groups. Under shared responsibility, aggregate responsibility splits almost evenly between production-based (about 43%) and consumption-based (about 42.5%) principles, with a smaller but meaningful income-based (about 14.5%) component. Spatially, attributed responsibilities are clustered across municipalities rather than evenly distributed, revealing metropolitan hotspots and a clear center–periphery pattern that raises environmental-justice questions when high burdens overlap with socio-economic vulnerability. The main conclusion is that credible low-carbon mega-event planning cannot be reduced to “greening construction.” Because the pre-event phase accelerates local economies beyond their everyday pace, planning should integrate resident-centered measures (e.g., reducing the carbon intensity of induced consumption through information and targeted demand-side instruments) alongside economy-wide supply-chain decarbonization, and adopt place-based strategies that address uneven municipal burdens during disruptive investment cycles.

## MACROECONOMIC CIRCULARITY AND ECONOMIC GROWTH: EVIDENCE FROM LATIN AMERICA AND CARIBBEAN COUNTRIES

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### Abstract

This study examines the relationship between macroeconomic circularity and economic growth in Latin American and Caribbean (LAC) countries using an empirical approach based on aggregate indicators and panel data models. It was built on the premise that, when analyzed at the macroeconomic level, the circular economy can be understood as a set of structural characteristics related to resource-use efficiency, trade integration, and productive organization, which are measurable and comparable across countries. Within this framework, the paper investigates whether economies exhibiting higher levels of macroeconomic circularity achieve superior economic growth performance, as measured by Gross Domestic Product (GDP) per capita. As its main methodological contribution, the study proposes a Composite Macroeconomic Circularity Index (CMCI), constructed for the period 2013–2019 to assess the degree of circularity in eight LAC countries: Argentina, Brazil, Chile, Costa Rica, Guatemala, Mexico, Peru, and Uruguay. The CMCI integrates six core dimensions of circularity at the aggregate level: material productivity, share of renewable energy, water productivity, ecological balance per capita, circular trade intensity, and corporate environmental certification (ISO 14001). The variables were selected based on criteria of conceptual relevance, data availability, and international comparability, and were combined into a synthetic indicator for capturing structural differences in circular performance across the analyzed countries. Additional empirical validation exercises were conducted to ensure the consistency of the results. Moreover, the empirical strategy combines the construction of the CMCI with the estimation of panel data econometric models. The baseline specification employs fixed effects to control for unobserved country-specific heterogeneity, complemented by a dynamic specification including a lagged dependent variable to capture the temporal persistence of economic growth. GDP per capita at constant prices is used as the dependent variable, while the CMCI constitutes the main explanatory variable. The model also includes control variables associated with growth mechanisms and environmental constraints, such as human capital, innovative effort, and carbon dioxide (CO<sub>2</sub>) emissions per capita. The empirical results indicate a positive and statistically significant association between the degree of macroeconomic circularity and GDP per capita levels in the countries analyzed, even after controlling for structural characteristics, fixed effects, and growth persistence. The evidence suggests that economies with relatively stronger performance in macroeconomic circularity indicators tend to exhibit more favorable economic growth trajectories over the period considered. The findings are robust across alternative econometric specifications and validation exercises, thereby reinforcing the observed association and contributing to the empirical debate on circularity in emerging LAC economies.

## THE RELATIONSHIP BETWEEN SERVICES AND POPULATION SIZE IN DEPOPULATING REGIONS: AN URBAN SCALING PERSPECTIVE

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### Abstract

As numerous localities in South Korea have experienced severe depopulation, the redesign of essential services—including healthcare, education, transportation, and welfare—has become an urgent policy priority. This is critical because existing infrastructure and service standards were often established under the premise of continuous population growth, potentially leading to misallocation and efficiency loss in the current shrinking context. While urban scaling theory has systematically explained nonlinear relationships between city size (primarily population) and various urban functions, empirical evidence remains scarce regarding whether the same scaling laws hold in depopulating regions or whether structural transformations occur. This study aims to compare scaling relationships between population-declining and non-decline areas, identify the causes and policy implications of deviations, and diagnose regions with under- or over-provision relative to expected norms.

The research is structured around two core questions: (1) Do scaling exponents and intercepts for services differ systematically between declining and non-declining regions? (2) What structural factors—fiscal capacity, geographic constraints, policy inertia, or network economies—explain residual deviations from predicted service levels? We hypothesize that population-declining areas exhibit lower scaling exponents (flatter curves) due to the indivisibility and fixed costs of infrastructure. This flattening is posited to result from a structural decoupling of population size from infrastructure provision due to the high sunk costs and long-term planning horizons of public assets. Significant residuals are hypothesized to stem from multi-dimensional contextual factors.

Methodologically, the study employs multiple analytical approaches. First, we construct a comprehensive dataset spanning 162 cities and counties (si-gun) for 2025, covering different service domains, alongside demographic, fiscal, geographic, and network covariates. For instance, healthcare service indicators include the number of public health centers and beds per capita, while transportation covers public transit coverage. Second, we estimate a power-law scaling model ( $Y=Y_0X^\beta$ ) with separate exponents for population-declining and non-declining subsamples, testing for structural breaks and parameter heterogeneity. Spatial econometric models (spatial lag/error) account for inter-municipal spillovers and spatial autocorrelation. Third, we use standardized residuals (z-scores) to identify the top and bottom 20% of municipalities as over- or under-provision outliers. Fourth, Explainable AI techniques (e.g. SHAP values) decompose residual variance into contributing factors and rank their importance.

Provisional findings are expected to reveal that declining regions display significantly lower scaling exponents in service provision, reflecting threshold effects and service indivisibility, while service infrastructure shows relative over-capacity due to past investments. Residual decomposition will likely attribute variance to fiscal constraints, geographic isolation, network density, and administrative inertia. The study will contribute theoretically by extending urban scaling frameworks to shrinking city contexts, methodologically by integrating spatial econometrics with interpretable machine learning, and practically by delivering actionable, evidence-based public service adjustment strategies for population-declining regions.

## COMPETITION BETWEEN THE CREATIVE CLASS AND A REGIONAL GOVERNMENT: A FIRM LEVEL ANALYSIS

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### Abstract

Richard Florida (2002, 2003, 2005, 2008, 2014) has pointed out in several books and papers that regions that want to prosper in this era of globalization need to do all they can to attract and retain members of the creative class. This is because members of the creative class are fundamentally entrepreneurial in nature and, therefore, they are the chief drivers of regional economic growth and development.

Once one accepts Florida's claim that regions seeking to prosper economically need to attract the entrepreneurial members of the creative class, the next logical question is the following: "How are regions to do this?" Two answers to this question have been offered in the literature. The first answer is the one provided by Florida (2002, 2008), Buettner and Janeba (2016) and Batabyal et al. (2019). These researchers have answered the above query by demonstrating that regions can utilize local public goods such as cultural amenities and quality schools to effectively carry out the "attract" function. The second answer has been postulated by Batabyal and Beladi (2021), Batabyal and Nijkamp (2022), and Batabyal and Yoo (2022). These researchers have pointed out that tax policy can be used to draw in members of the creative class into a particular region.

Even though these issues are worth postulating and researching, surprisingly, the extant literature has been largely silent on the point that after entrepreneurial creative class members have been attracted to a region, such members often launch startups, spin-offs, or consultancies that then compete with existing governmental firms and organizations.

Many examples of this phenomenon readily come to mind. In transportation, Schneider (2015) and Tarduno (2024) note that creative class entrepreneurs such as the founders of Uber and Lyft have competed with or disrupted city-run transit and taxi regulation systems.

In space exploration, Reddy (2018) and Kovacic (2019) point out that the entrepreneurial Elon Musk's firm SpaceX, regularly competes with and often outperforms government agencies like NASA for contracts, thereby changing the model of space exploration from a public endeavor to a case of public-private competition.

Finally, consider education technology startups. The founders of online learning platforms such as Coursera and Udacity are offering alternatives to public universities and to continuing education programs. In this regard, Williamson (2018) has pointed out that Silicon Valley venture philanthropists are seeking to disrupt public schooling by introducing competition using their technocratic expertise.

Our central claim is that despite the presence of many real-world examples where the private firms started by entrepreneurial creative class members are directly or indirectly competing with public firms or organizations set up by regional governments, there are no theoretical studies in the literature that have analyzed the nature and the effects of strategic competition between such private and public entities. Given this lacuna in the literature, our objective in this paper is to provide the first theoretical analysis of the impacts of strategic competition between a private firm started by a creative class member and a public firm established by an appropriate regional government.

## TWO FORMS OF TAXATION, MAJORITY VOTING, AND WATER POLLUTION CLEANUP IN THE GANGES

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### Abstract

The longest river in India is the Ganges. This river is particularly significant in this nation and in South Asia more generally because the river occupies a central place in the Hindu religion (Hammer 2007, Conaway 2015). As the Ganges traverses the densely populated and agriculturally intensive Indo-Gangetic Plain, it faces severe pollution from a confluence of urban, industrial, and agricultural sources (Markandya and Murty 2000).

Industrial effluents from numerous clusters of tanneries, textile mills, distilleries, and chemical plants add a toxic layer of pollution (Rawat et al. 2009). These discharges introduce heavy metals like chromium, arsenic, and lead, along with synthetic dyes, acids, and other hazardous chemicals, which are not only poisonous to aquatic life but also bioaccumulate in the food chain.

Further compounding the crisis is pollution from diffuse non-point sources, chiefly agricultural runoff (Chaudhary and Walker 2019). The fertile Indo-Gangetic plain is India's agricultural heartland, and the intensive use of chemical fertilizers and pesticides results in significant amounts of nitrates, phosphates, and persistent organic pollutants washing into the river and its tributaries during the monsoon rains. This nutrient overload leads to eutrophication, depleting oxygen levels and creating dead zones.

Despite the severity of the water pollution problem along many stretches of the Ganges, the theoretical literature about pollution cleanup in the Ganges and how political-economy factors affect this cleanup is sparse. Batabyal and Beladi (2020) use a game-theoretic model of local elections to show that there exist circumstances in which an insincere politician, who pays lip service to Ganges pollution cleanup in Varanasi, can nonetheless persuade voters to elect him to office. Batabyal and Beladi (2023) focus on the cities of Kanpur and Varanasi and analyze how pollution spillovers affect the decision about whether pollution control ought to be centralized or decentralized. Finally, Batabyal and Beladi (2024) extend their previous analysis to three cities along the Ganges and show how the direction of pollution spillovers influence the decision about whether pollution control ought to be centralized or decentralized.

We focus on a single location or city along the Ganges such as Kanpur or Varanasi and suppose that the decision to provide pollution cleanup is decentralized. In this setting, we extend the research discussed above by analyzing the implications of two kinds of taxation and majority voting for water pollution cleanup.

First, we examine how a poll or head tax on citizens of the locality under study and majority voting together affect how much pollution is cleaned up. Second, we study how a proportional tax on the citizens of the relevant locality and majority voting together impact the magnitude of pollution cleanup. Finally, for alternate income distributions, we discuss which of the two preceding cleanup amounts is closer to the efficient amount of pollution cleanup.

## UNEQUAL EMISSIONS ACROSS URBAN COLOMBIA: A CITY-LEVEL ANALYSIS OF HOUSEHOLD CARBON FOOTPRINTS

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### Abstract

As urbanization accelerates across the Global South, cities have become central arenas for both economic development and environmental impact. Urban areas concentrate population, income, consumption, and infrastructure—making them critical spaces for addressing sustainability challenges. Yet, we know surprisingly little about how household consumption-based emissions vary within countries, particularly across different cities in middle-income nations.

This study seeks to quantify and compare the carbon footprints (CFs) of household consumption across Colombian cities, using a novel combination of Environmentally Extended Multi-Regional Input-Output (EE-MRIO) modeling and nationally representative microdata from Colombia's Household Budget Survey (HBS). We construct detailed consumption vectors for individual households and integrate them with the OECD's Inter-Country Input-Output (ICIO) database to estimate city-level carbon footprints by expenditure decile.

The goal is to analyze spatial inequalities in household emissions across Colombian urban areas, investigating how city-specific factors such as economic structure, access to infrastructure, and trade patterns may shape both the scale and composition of household carbon footprints. By focusing on urban disaggregation, the paper contributes to the emerging literature on subnational carbon inequality and offers relevant insights for place-based climate mitigation strategies.

Although results are still under development, the project aims to inform policy debates about sustainable urbanization, low-carbon consumption transitions, and the role of cities in national decarbonization pathways—particularly in unequal middle-income contexts like Colombia. The proposed analysis is expected to be of interest to researchers and policymakers working at the intersection of regional science, ecological economics, and environmental justice.

## INTERACTIONS BETWEEN UNIVERSITIES AND COMPANIES: THE RECENT VIEW OF INDUSTRIAL COMPANIES IN BRAZILIAN REGIONS

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### Abstract

The generation of scientific and technological knowledge is one of the central elements in the development process of regions and countries. This process occurs in a dynamic, interactive and non-linear way, involving the performance of different agents that make up the Innovation System (IS). A particularly relevant aspect of this discussion refers to the interaction between universities and companies, which is capable of increasing the performance of countries in innovation and competitiveness (MOWERY; SAMPAT, 2005).

Based on this understanding, this study aimed to identify and analyze the characteristics of the interactions between universities, through their research groups, and industrial companies in the Brazilian regions. An excerpt was made to understand the interaction with industrial companies (extractive and transformation), using secondary data from the 2023 Census of the Directory of Research Groups (DGP) of the National Council for Scientific and Technological Development (CNPq), in addition to complementary bases referring to sources of funding for innovation.

The DGP database shows the relationships between research groups and other actors in society. Characteristics such as the region of location of the group and the company, the size of the companies, the use of public instruments to support innovation by the companies, the nature and remuneration of the interaction were analyzed. It is important to note that the data are self-declared by the research groups in the DGP and previous studies report the existence of underestimation (RAPINI, 2007).

The results indicate that there are 1,948 research groups registered with the DGP that declare interaction with companies from all economic sectors. Of this total, 38.8% reported interacting with industrial companies. When analyzing only the groups that interact with industrial enterprises, the North and Central-West regions had the lowest regional concentration (4.2% and 4.9%, respectively), followed by the Northeast region (16.27%). The Southeast (41.1%) and South (33.5%) regions concentrate most of the interactive groups. These results are in line with the findings of previous studies that analyzed previous CNPq Censuses, revealing a structural characteristic of the Brazilian innovation system.

Changing the perspective for companies, there are a total of 1,512 of them that interact with the groups, of which 697 are industrial companies (46.1%). Following what occurs in the regional distribution of the research groups, most of the industrial companies are located in the Southeast region (50%), especially in the state of São Paulo (242 in total), and in the South region (33.3%). Regarding size, 26.3% are medium-sized, 24.1% small and 21.7% large companies.

It is concluded, in line with previous studies (MARCELLINO et al., 2019), that there is a strong concentration of the interactions analyzed in the Southeast and South regions, which reflects regional inequalities in terms of industrial and scientific-technological development in the country. These results suggest the importance of geographical proximity for the establishment of university-company interactions, since both actors tend to be concentrated in the same regions. This finding also corroborates previous studies (FERREIRA, et al., 2025; GARCIA, et al., 2024).

## FOOD WASTE IN A UNIVERSITY CANTEEN: EMPIRICAL EVIDENCE FROM A PUBLIC INSTITUTION IN ECUADOR

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### Abstract

Food loss and waste are one of the main challenges to the sustainability of urban food systems, due to their environmental, economic and social impacts. In this context, university campuses, as spaces with high concentrations of food consumption, play a strategic role in reducing waste through institutional practices, behavioural changes and community actions (Sundin, Malefors, et al., 2024). However, empirical evidence on the magnitude and composition of food waste in university food services remains limited, especially in developing countries.

The objective of this study is to quantify food waste generated in a university canteen based on a case study conducted at a public university in Quito, Ecuador, and to provide empirical information that contributes to the design and implementation of sustainable campus initiatives aligned with the Sustainable Development Goals, particularly SDG 12.3. The study is part of research project PIGR 23-04 of the National Polytechnic School (EPN), aimed at strengthening institutional strategies for sustainable waste management.

A direct weighing methodology combined with waste composition analysis was applied, which allowed for accurate measurement of waste generated at the plate level and characterization of the main types of food waste (CCA, 2019; Hanson et al., 2016). The information was collected in two institutional canteens—one for executives and one for students—during consecutive periods of ten working days each.

The results show that food waste represents a significant proportion of the food served, with plate waste being the predominant and largely avoidable fraction. Differences in waste generation were also identified according to the type of dining room and food categories, suggesting the influence of factors such as portion size, menu design and consumption patterns.

The findings are consistent with international literature, but provide relevant empirical evidence from a Global South context, where data availability on food waste in higher education institutions is still in its infancy. Beyond quantification, this case study highlights the potential of university campuses as living laboratories for the transition to more sustainable food systems, in which food waste measurement is a key tool for guiding institutional policies, waste management strategies, and awareness programmes aimed at the university community (Guimarães et al., 2024).

This work contributes to the literature on reducing food loss and waste by providing contextual data, strengthening methodological discussion, and linking empirical evidence to institutional governance processes aimed at sustainability in urban environments.

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## HOUSING PRICES IN CALI: EVALUATING THE IMPACT OF THE PROTESTS

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### Abstract

This paper examines the impact of the 2021 strike in Cali, Colombia, on local housing prices. The strike lasted more than two months and disrupted many areas of the city. We use advertisement data from the website [www.fincaraiz.com](http://www.fincaraiz.com) to analyze asking prices and assess the short-term effects of the strike on housing markets. Specifically, we estimate a spatially defined difference-in-differences model comparing prices in neighborhoods adjacent to strike locations before, during, and after the events. Our results indicate average price declines of approximately 9% for apartments and 15% for houses during the strike, followed by a significant post-strike recovery. We further account for violent confrontations between protestors and police, conduct falsification tests, and use traffic flow data to verify that blockade locations were not systematically correlated with the city's most congested routes. The findings are consistent with the presence of spatial spillovers and reveal a spatial threshold distinguishing treated from control areas.

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## LOCAL PRODUCTIVITY AND AGGLOMERATIONS BY TECHNOLOGICAL PATTERN: EVIDENCE FROM FIRM-LEVEL IN BRAZIL

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### Abstract

This study investigates the impact of industrial agglomerations on local productivity in Brazil, with particular attention to technological patterns and human capital externalities. Building on a taxonomy that distinguishes structural features from regional competitiveness, we apply spectral decomposition techniques within an FGLS estimator framework to address biases arising from unobserved heterogeneity. The empirical strategy incorporates a locational Gini coefficient to capture specialization effects and an employment density proxy to disentangle urbanization economies.

Our findings indicate that human capital externalities -- especially cognitive skills -- significantly enhance productivity in traditional industries, chemical production, energy and fuel sectors, as well as in the manufacturing of capital and durable goods. By contrast, firms in mineral commodity markets display weaker productivity gains, largely explained by the dominance of homogeneous oligopolies reliant on physical capital. Econometric tests further reveal that MAR-type localization economies positively influence traditional and durable goods industries, whereas spatial concentration in mineral commodities amplifies productivity asymmetries within the mining sector. The results also confirm that urban density contributes to productivity improvements in non-industrial urban activities. Overall, the FGLS estimates align with the broader literature on agglomeration, underscoring the substantial role of unobserved heterogeneity in shaping productivity outcomes across industrial sectors. Random effects range from 62.3% to 78.8%, depending on firm-level patterns, highlighting the importance of accounting for structural diversity in regional development analyses.

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## REGIONAL TECHNICAL EFFICIENCY APPLIED TO BRAZILIAN MANUFACTURING: A MULTIPLICATIVE ESTIMATOR BASED ON A SPATIAL STOCHASTIC FRONTIER

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### Abstract

This article presents a multiplicative estimator for analyzing the (in)efficiency of the manufacturing industry in Brazil (2007-2022). The index, extracted from a spatial stochastic frontier model of panel data with autoregressive effects (SAR), allows the total effect to be decomposed into spatial spillovers and a direct internal effect of the region. The SSF-SAR estimator uses scaling functions to control for individual heterogeneity bias associated with region size. In all sectors, econometric tests indicate that boundary parameters (capital and labor elasticity) are important in specifying the Cobb-Douglas production technology. The spatial autoregressive coefficient was estimated to be positive and significant at less than a 5\% probability of error in 18 of the 21 sectors examined, ranging from 0.022 to 0.079 on average. In general, structural differences associated with firm size have negatively influenced the spatial distribution of technical inefficiency, indicating that more heterogeneous regions are less efficient. Furthermore, in 15 of the 21 sectors examined, MAR-type location economies have contributed to reducing spatial disparities in technical inefficiency. Urbanization economies, measured by urban density, promoted productivity gains and reduced regional disparities in only 3 sectors. Finally, observing the productive composition, we estimated technical efficiency scores for regional TFP. The results revealed that specialized regions, located on the border between the North and Midwest of the country, are relatively more efficient.

## MEASURING DECLINE AND ATTRACTIVENESS IN LOW-DENSITY TERRITORIES

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### Abstract

Demographic decline and population ageing have become structural features of territorial change in Portugal, particularly in low-density territories (LDTs). These areas face cumulative dynamics of population loss driven by persistently low fertility, selective out-migration, ageing population structures and the shrinking cohort of women of childbearing age. In many contexts, demographic decline tends to become difficult to reverse once critical thresholds are crossed—such as the loss of working-age population and the closure of essential services—highlighting the need to move beyond uniform, density-based policy approaches. Developed within the REVITA project, this paper combines long-term demographic analysis (1940–2021) with spatial and composite-indicator methods to examine the interaction between demographic vulnerability and territorial attractiveness across Portuguese municipalities. Population trajectories are analysed using structural break detection and time-series clustering, allowing the identification of differentiated paths of growth, stagnation and decline. Building on this longitudinal analysis, two composite indices are constructed: a Demographic Vulnerability Index (DVI), capturing population change, ageing structure, fertility and migration; and an Attractiveness Index (AI), measuring territorial capacity to attract and retain population through housing conditions, economic dynamism and employment, and access to services of general interest and accessibility. All indices are computed using a weighted geometric mean, ensuring comparability while penalising internal imbalances across dimensions. The results reveal strong and persistent territorial asymmetries consistent with a long-term territorial reconfiguration shaped by metropolisation and coastalisation. Low-density territories experienced earlier and more intense demographic decline than the national average, confirming depopulation as a secular and territorially embedded process rather than a recent or cyclical phenomenon. However, the analysis also uncovers substantial heterogeneity within LDTs. Several municipalities combine high demographic vulnerability with relatively favourable levels of attractiveness—particularly in housing markets and service endowment—while remaining constrained by limited accessibility or weak economic dynamism. Conversely, some demographically more stable territories display low attractiveness, signalling potential future risks. By crossing demographic vulnerability with attractiveness dimensions, the paper derives a fourfold territorial typology that helps explain why similar policy instruments generate divergent outcomes across territories. This typology provides a basis for analytically grounded policy implications. First, it supports the need for territorially differentiated policy mixes aligned with demographic trajectories and local attractiveness factors. Second, it highlights the strategic role of anchor centres—municipal or sub-regional hubs with sufficient mass and functional capacity—as focal points for population retention and attraction, with spillover effects on surrounding areas. Third, it underlines the importance of adaptive strategies in territories with low reversibility, prioritising minimum standards of service provision, accessibility and quality of life through flexible and mobile solutions. Overall, the paper advances research on demographic shrinkage by linking long-term demographic trajectories to multidimensional territorial conditions and by demonstrating how empirically grounded typologies can inform more coherent and territorially sensitive approaches to cohesion and spatial justice in ageing societies.

## FROM QUANTITY TO QUALITY: SOCIAL HOUSING AND URBAN INEQUALITY

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### Abstract

Social housing in Colombia has historically been conceived as a policy instrument aimed at guaranteeing access to housing for low-income households and currently represents nearly 47% of total housing sales nationwide. Despite its central role within national housing policy, social housing continues to be perceived as a sub-market product directed toward populations excluded from conventional housing markets. Over recent decades, the physical and spatial conditions of social housing have progressively deteriorated. The concept of “minimum housing,” once associated with dignity and social inclusion, now frequently reflects conditions of socio-spatial marginalization, characterized by peripheral locations, reduced living areas, and the absence of essential urban amenities. As a result, public housing policies have increasingly prioritized market efficiency and cost reduction over the effective fulfillment of the right to adequate housing, weakening minimum habitability standards. This paper addresses the following research question: what characteristics define the qualitative housing deficit of social housing projects across Colombian cities with diverse social, cultural, and geographical contexts? The main objective is to identify differences in housing quality and habitability standards among projects located in cities with contrasting climatic conditions, demographic profiles, and urban scales. Case studies are selected in Bogotá and other Colombian capital cities, covering multiple thermal zones and varied territorial configurations. A mixed-methods approach is applied. Initially, the level of socio-spatial segregation is assessed using spatial variables related to proximity to urban services, employment centres, and public facilities, as well as indicators associated with territorial functionality, including land-use diversity, specialization patterns, and the degree of urban consolidation. Subsequently, from a quantitative perspective, housing units and communal areas are analysed using a matrix composed of thirty-four main indicators addressing spatial quality, environmental performance, and functional organization. Selected projects share common characteristics, including horizontal property regimes, predominantly peripheral locations, and an average age of approximately ten years. The results indicate that the peripheral location of social housing developments significantly contributes to processes of socio-spatial segregation, reinforcing patterns of inequality and territorial marginalization. These dynamics are particularly intensified by limited urban connectivity, extended distances to employment centralities, and restricted access to efficient public transport systems. In parallel, the findings confirm the persistence of a qualitative deficit in social housing. This deficit is expressed through reduced dwelling sizes, limited construction quality, and insufficient consideration of residents’ social, cultural, and demographic conditions. Common spaces exhibit high levels of standardization and weak territorial adaptation, reflecting development models that prioritize access to low-cost land and construction efficiency over social integration, environmental performance, and overall urban quality. The findings provide robust empirical evidence to support the reformulation of social housing policies in Colombia. The study highlights the urgent need to redefine minimum habitability standards, incorporate territorial and climatic adaptation criteria, and improve architectural design quality, material performance, and environmental comfort. Advancing toward these principles is essential to promote urban equity and to reposition social housing not merely as a quantitative response to housing demand, but as a fundamental component of inclusive and sustainable urban development.

## THE REGIONAL ECONOMIC EFFECTS OF PORT EFFICIENCY IMPROVEMENTS IN BRAZIL

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### Abstract

Port efficiency plays a decisive role in shaping the competitiveness of developing economies, yet its regional economic implications remain insufficiently understood. While improvements in port performance are often discussed in terms of aggregate trade costs, far less attention has been paid to how operational heterogeneity across ports translates into spatially differentiated economic outcomes. This study quantifies how improvements in port efficiency affect regional growth, trade flows, and sectoral performance in Brazil, a large and regionally heterogeneous economy where maritime transport plays a central role in domestic and international trade. Using detailed operational microdata from Brazilian ports, we construct a physically grounded measure of port productivity based on cargo-weighted operation times, capturing variations in turnaround efficiency across states, sectors, and types of cargo. Unlike conventional proxy indicators, this measure is directly linked to observable port operations and allows for the explicit incorporation of logistical bottlenecks into an economy-wide framework. The productivity indicator is mapped to regional transport margins and embedded into a dynamic multiregional computable general equilibrium (CGE) model, which represents interregional trade linkages, sectoral input–output relationships, and factor mobility over time. The model is used to simulate the economic effects of achieving productivity targets established in Brazil’s National Port Logistics Plan (PNLP 2015). The simulations trace the dynamic adjustment of regional economies following port efficiency improvements, accounting for both direct cost reductions in transport services and indirect spillover effects transmitted through interregional supply chains. By embedding port-level operational heterogeneity into a multiregional general equilibrium setting, the analysis makes it possible to examine spatial adjustment patterns that aggregate indicators typically conceal. The results indicate that port efficiency improvements generate positive but highly asymmetric regional effects. Economically diversified and logistically central states—such as São Paulo, Espírito Santo, and Rio de Janeiro—capture the largest gains in terms of output expansion, trade intensity, and real income. In contrast, commodity-specialized regions experience more modest local impacts but generate significant spillovers to neighboring states through production and trade linkages. Sectoral results reveal substantial expansions in logistics-intensive and export-oriented industries, particularly Machinery, Electronics, Oil and Gas, and Transport Services, reflecting the reduction in effective trade costs and improved access to domestic and international markets. Overall, the findings highlight the strategic role of ports as engines of regional competitiveness and underscore the importance of directing efficiency-enhancing investments toward highly connected logistics hubs. From a regional science perspective, the paper contributes by clarifying how infrastructure-induced productivity shocks propagate through spatially interconnected economies, offering policy-relevant insights into the territorial consequences of port modernization strategies.

## MAPPING ARTIFICIAL INTELLIGENCE EXPOSURE ACROSS REGIONS: EVIDENCE FROM BRAZILIAN LABOR MARKETS

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### Abstract

The rapid diffusion of artificial intelligence (AI) is reshaping labor markets worldwide, yet empirical evidence for developing economies remains scarce due to the lack of consistent national measures of technological exposure and the presence of strong regional heterogeneity. This paper develops a novel, data-driven measure of occupational and regional exposure to AI for Brazil and examines its spatial distribution and potential regional spillover patterns.

Adapting task-based approaches to technological exposure (Webb, 2019) and recent advances in computational text analysis, we construct a national index of occupational exposure to AI using natural language processing techniques applied to textual descriptions of Brazilian occupations (Classificação Brasileira de Ocupações, CBO) and titles of AI-related patents registered in Brazil. Semantic similarity between occupational tasks and patent descriptions is computed using tokenization, syntactic parsing, and cosine similarity metrics, generating an occupation-level indicator of potential exposure to AI technologies. This occupational index is subsequently aggregated to the municipal level by weighting occupational exposure with local employment and wage structures derived from administrative microdata from the *Relação Anual de Informações Sociais* (RAIS). The resulting indicator captures spatial heterogeneity in AI exposure across more than 5,000 Brazilian municipalities.

The empirical analysis combines descriptive statistics and Exploratory Spatial Data Analysis techniques, including global and local indicators of spatial autocorrelation, to identify clustering patterns and spatial dependence in AI exposure. The results reveal statistically significant spatial clustering, with municipalities exhibiting high exposure concentrated in economically dynamic regions and metropolitan labor markets, while low-exposure municipalities prevail in less diversified and peripheral regions. These spatial patterns are consistent with agglomeration forces, knowledge spillovers, and innovation asymmetries highlighted in the economic geography literature (Duranton and Puga, 2015).

To explore potential labor market implications, we analyze the association between municipal exposure indices and formal employment and earnings while accounting for regional controls and spatial dependence. The evidence suggests substantial regional heterogeneity and the presence of spatial spillovers across neighboring municipalities, indicating that technological diffusion is not spatially neutral and may reinforce pre-existing territorial disparities.

Overall, the paper contributes by providing the first nationally consistent measure of AI exposure tailored to Brazilian occupational structures using large-scale text mining techniques and by documenting its spatial distribution in a large developing economy. From a policy perspective, the results highlight the importance of territorially targeted strategies in workforce training, innovation policy, and regional development to mitigate unequal technological exposure and promote inclusive diffusion of AI.

## WINNERS AND LOSERS OF ARTIFICIAL INTELLIGENCE: GENDER AND RACIAL INEQUALITIES IN BRAZILIAN REGIONAL LABOR MARKETS

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### Abstract

This paper examines how exposure to artificial intelligence (AI) affects employment and earnings in the Brazilian formal labor market, with particular attention to gender and racial inequalities across regions. While AI adoption may enhance productivity and generate new employment opportunities, it may also intensify labor market segmentation if technologically exposed occupations disproportionately employ vulnerable groups (Acemoglu and Restrepo, 2020; Autor et al., 2022). Empirical evidence for developing economies remains limited, especially regarding intersectional dimensions of inequality.

The analysis relies on a novel index of occupational exposure to AI constructed using natural language processing techniques applied to Brazilian occupational descriptions and AI-related patent data, following a task-based framework (Webb, 2019). Occupational exposure is aggregated to the municipal level using administrative microdata from the *Relação Anual de Informações Sociais* (RAIS), allowing the construction of gender- and race-disaggregated measures of formal employment, earnings, and participation for 2010 and 2024.

The empirical strategy employs two-way fixed effects panel models that exploit within-municipality variation over time while controlling for unobserved time-invariant heterogeneity and common macroeconomic shocks. Interaction terms between AI exposure and gender and race indicators identify heterogeneous effects across demographic groups. Additional specifications analyze impacts on gender and racial gaps in employment and earnings, as well as on female participation in formal employment.

The results reveal substantial heterogeneity in labor market adjustment. For men, higher exposure to AI is positively associated with formal employment growth, suggesting dominant complementarity effects between AI-related technologies and male-intensive occupations. In contrast, women experience negative employment effects, indicating that substitution mechanisms prevail in female-intensive tasks. When disaggregating by race, Black men display relatively stronger employment gains than White men, whereas White women exhibit the largest employment losses, generating nuanced intersectional patterns. Although some estimates suggest a potential narrowing of racial differentials within gender groups, overall gender inequality in formal employment tends to widen as exposure to AI increases.

Earnings effects are smaller and more heterogeneous, which may reflect occupational sorting, institutional wage rigidities, and differential adjustment margins across regions. Overall, the findings indicate that technological diffusion interacts with existing regional labor market structures and occupational segregation, reinforcing gender disparities while producing complex distributional dynamics across space. The results have important policy implications for reskilling strategies, regional development policies, and gender-sensitive labor market interventions aimed at ensuring that AI diffusion does not exacerbate existing inequalities.

## TROPICAL CYCLONES AND FOOD PRICES: EVIDENCE FROM MEXICO

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### Abstract

Tropical cyclones are powerful weather phenomena originating over warm ocean waters, characterized by intense winds and heavy rainfall. When they make landfall, they can severely damage infrastructure, disrupt economic activity, and impair food production by destroying crops, harming livestock, and halting fishing. Supply chains are often disrupted, limiting the flow of goods—including food—into affected areas. Additionally, consumer behavior may shift temporarily, with households prioritizing basic needs like food, health, and shelter, potentially increasing demand. These combined effects—reduced supply and possible demand surges—can lead to upward pressure on food prices.

This paper examines the impact of tropical cyclones on food prices in Mexico, a country highly vulnerable due to its location between the Atlantic and Pacific Oceans, where cyclones frequently develop between May and November. Using monthly panel data from 55 Mexican cities on food price indices (part of the Consumer Price Index) and meteorological data on cyclone wind speeds from 2001 to 2023, the study estimates price responses through the Local Projections (LP) method. Wind speeds are modeled at the municipal level using a physical wind model and aggregated to the city level via population-weighted averages. The baseline specification controls for weather, city and time fixed effects as well a regional time trends.

Results show that a 100 km/h increase in maximum sustained wind speed leads to an immediate 0.6% rise in overall food prices, with effects persisting for four months before fading. This overall increase is mainly driven by the estimated increase on fruits and vegetables prices, especially fresh vegetables, whose prices jump 3.1% immediately and remain 2.0% higher a month later—up to six times the average monthly inflation for this category. Dry legumes show delayed effects, increasing 2.3–2.5% two to three months post-impact. The lack of an immediate effects on dry legumes could be explained by their storability with the lag effects possibly reflecting supply disruptions after initial stocks have been depleted.

The study also explores how infrastructure influences price sensitivity. Using the infrastructure component of an urban competitiveness index, the 55 cities in the sample were classified as low or high infrastructure cities. The estimation is then performed separately for each group. Results suggest that low-infrastructure cities experience, on average, larger price increases: food prices rise 0.9% (vs. 0.6% in high-infrastructure cities), and fresh vegetable prices spike 4.8% initially, compared to 2.4% in better-equipped cities, where effects fade quickly. This highlights infrastructure's role in enhancing food price resilience in the aftermath of a tropical cyclone.

The paper contributes to a growing literature on natural disasters and inflation, offering subnational, disaggregated evidence. It confirms short-term effects on food prices post-impact, aligns with previous findings, and underscores the importance of local data. Given climate change projections indicating stronger cyclones, these inflationary pressures may intensify, particularly in developing countries like Mexico. Understanding these dynamics is crucial for designing timely policies to stabilize food markets after extreme weather events.

## SEMI-ARID REGIONS OF LATIN AMERICA: FAMILY FARMING AND CLIMATE CHANGE

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### Abstract

Semiarid regions are characterized by scarce and highly variable precipitation, resulting in prolonged periods of drought. Latin America has four semiarid regions: the Chaco Americano (Argentina, Paraguay, Bolivia, and Brazil), the Brazilian Semiarid, Lara-Falcón (Venezuela), and the Central American Dry Corridor (Mexico, Guatemala, El Salvador, Honduras, Nicaragua, and Costa Rica). In these regions, the main economic activity is family farming, which is vulnerable to climatic conditions. In this context, the first objective of this study is to investigate the spatiotemporal evolution of climate variables, including precipitation and extreme temperatures, using both historical records and future climate simulations. The second objective is to analyze the adaptive capacity of family farming livelihoods to climate change across the semiarid regions of Latin America. The methodology for the climate analysis involved calculating the means of precipitation and minimum and maximum temperatures for six-year periods between 1987 and 2016. Future climate conditions were assessed using two Shared Socioeconomic Pathways: SSP245 (an intermediate scenario) and SSP585 (a pessimistic scenario), for the periods 2017-2035 and 2045-2065. To evaluate family farming systems, we applied the adaptive capacity factor of the Livelihood Vulnerability Index approach, using data from agricultural censuses, official sources, and case studies. The main findings indicate increasing climate vulnerability across Latin American semi-arid regions. The Central American Dry Corridor shows nearly twice the accumulated precipitation of the other regions, largely associated with hurricanes and intense rainfall events. For future scenarios, the models indicate increases in both minimum and maximum temperatures, especially under the high-emissions scenario (SSP585) and reductions of precipitation, particularly in the Central American Dry Corridor. Regarding adaptive capacity, the socio-demographic profile of these regions reveals low levels of education in the semiarid regions, except for the Chaco Americano. Agricultural activity is predominantly male-dominated in the semiarid regions; however, in Venezuela, women account for 55% of farmers. Across all regions, most farmers are older adults, raising concerns about generational succession in agricultural production. Livelihood strategies vary spatially: cattle production is the main source of income in the Chaco Americano and the Brazilian Semiarid, whereas, in the Dry Corridor, farming is predominantly subsistence agriculture. Social network indicators show marked regional disparities. More than 60% of farmers in the Chaco region receive technical assistance, while 91% of farmers in the Brazilian Semiarid lack access to this service. Access to the internet is increasing across the regions but remains uneven, especially in the Venezuelan semiarid. In conclusion, Latin American semiarid regions shared conditions of water deficit and high vulnerability to climate change, and their adaptive capacity depends on improving socioeconomic indicators.

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## RELOCATION IMPLICATIONS IN CHINA AND NORTH AMERICA: MEASURING SPILLOVER AND FEEDBACK EFFECTS BY POTENTIAL CHANGES ON INTERREGIONAL TRADE IN THE ELECTRONICS INDUSTRY

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### Abstract

In a global context where the trade conflict between China and the United States has escalated, and various factors have disrupted global supply chains, the U.S. industry has sought to relocate its production from Asia (especially China) to North America. This article addresses the question: What are the potential benefits of nearshoring in the region, and how can the results be maximized? Input-Output analysis examines the spill-over and feedback effects of replacing exports from China to North America in the United States or Mexico with the OECD's Inter Country Input-Output matrices [1] for 2020. While the impact of a potential elimination of trade between North America and Asia in the computer, electronic, and optical industries is significant, the effects within the North American region are enhanced if production tends to relocate to Mexico. This article contributes to the empirical analysis of the regional benefits of nearshoring. Mexico has opportunities to capture more significant benefits by implementing policies focused on productive development, innovation, education, and linkages with other industries that generate regional benefits and productive spillovers.

## **PARTICIPATORY AGRO-BIOTECHNOLOGICAL CO-CREATION: ANCESTRAL WISDOM AND ETHICS INTEGRATED INTO THE USE OF TECHNOLOGICAL TOOLS**

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### **Abstract**

Our ancestors's well-being and Indigenous knowledge are winning the battle against climate change applying historical cultural practices without the use of technological tools. Currently, it is common consciousness how artificial intelligence (AI) can exponentially improve information and applications in medicine and human health, but it is still not common to seek this technology to improve the planet health, especially to take action on climate change. The objective of this research is to understand how ancestral wisdom could be ethically integrated with technological tools to maintain the well-being of the planet. A systematic review of the literature published was conducted using Prisma methodological tool. The results found in the bibliographic analysis reflect the most relevant ideas related to the problem posed. Co-participation of citizens or communities is responsible for eliminating AI biases. This exemplifies how human validation, combined with an understanding paradigm shifts in history, can be two factors that determine the generation of truly useful knowledge for humanity. The traditional knowledge of Indigenous communities related to agriculture, water management, biodiversity conservation, and climate change adaptation can help address the world's growing challenges from a holistic perspective. Technological tools such as AI for data analysis, monitoring, and predictive modeling can complement this wisdom to contribute to the planet's sustainability. In an era of intense ecological loss, biodiversity conservation requires multidimensional development where the blending of traditional and modern wisdom can provide synergistic capabilities. Another fundamental concept for achieving this symbiosis relates to data governance. From a legal perspective, it is essential to invoke the United Nations Declaration on the Rights of Indigenous Knowledge (UNDRIP), the Biological Diversity Act signed in 2002, the Forest Rights Act signed in 2006, and international instruments such as the Nagoya Protocol, to understand the extent to which these legal instruments still leave a fundamental gap in establishing ownership, consent, and ethical use of this mastery. Therefore, the formulation of policies for the governance of indigenous sagesness is indispensable. In light of all these perspectives, this work proposes a paradigm shift from an extractive AI of knowledge to a co-leadership AI where ethics could play a significant role.

## ECONOMIC AND ENVIRONMENTAL IMPACTS OF SUSTAINABLE AVIATION FUEL POLICIES IN BRAZIL: A CGE ASSESSMENT OF CORSIA AND THE FUEL OF THE FUTURE LAW

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### Abstract

This paper evaluates the economic and environmental impacts of replacing conventional jet fuel with sustainable aviation fuel (SAF) in Brazil's civil aviation industry between 2027 and 2037, in line with the CO<sub>2</sub> reduction targets established by Brazil's Fuel of the Future Law (LCF) for domestic flights and by the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) for international flights. Although civil aviation accounts for a relatively small share of global CO<sub>2</sub> emissions (2.5%), its strong dependence on fossil fuels makes decarbonization particularly challenging. While SAF is identified as a central mitigation option under the Fuel of the Future Law and CORSIA, it is not yet produced at commercial scale in Brazil. Moreover, there are no economy-wide CGE studies for Brazil that evaluate these regulations while accounting for the production linkages between the air transport industry and the rest of the economy. To address this gap, we develop a dynamic computable general equilibrium (CGE) model calibrated to Brazil's Social Accounting Matrix (SAM) and detailed CO<sub>2</sub> emissions data, extending the SAM to explicitly incorporate a dedicated SAF-producing industry. The analysis considers five alternative SAF production pathways based on first- and second-generation feedstocks and evaluates two decarbonization scenarios consistent with LCF and CORSIA targets. The results show that emission targets in the air transport industry are achieved across all scenarios, but at the cost of reduced industry output, particularly under SAF pathways with higher abatement costs. At the macroeconomic level, GDP and welfare effects are negative and regressive, disproportionately affecting low-income households. Importantly, total CO<sub>2</sub> emissions increase due to indirect and spillover effects associated with the expansion of SAF-related activities and economy-wide production adjustments. These findings highlight a key policy trade-off. While LCF and CORSIA successfully reduce emissions within the aviation industry, their current implementation, without complementary policies, may generate unintended adverse economic and environmental spillovers.

## THE IMPACT OF SOLAR RUSH ON RURAL SUSTAINABILITY, FROM THE PERSPECTIVE OF HUNGARIAN FARMERS

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### Abstract

Climate policies on various geographical scales (global, European Union, national) and technological advancements resulting in the increasing profitability of solar power plants have led to "solar rush", a profit-driven, barely regulated land acquisition for the purpose of solar energy production. Solar rush can be interpreted as a specific form of green grabbing: former public spaces and agricultural areas are being appropriated to meet the land requirements of renewable energy infrastructure, usually for large international corporations. Based on such projects, peripheral areas, even suburban and peri-urban lands, are increasingly seen as "green sacrifice zones" that are being sacrificed in order to achieve climate goals.

In line with international trends, the number of solar power plants installed in Hungary has grown explosively in recent years (50-fold growth since 2015, reaching 7550 MW in 2025). Such projects are embedded into the peripheral (re)industrialisation of Central and Eastern Europe and require land projecting large-scale land-use transformations. Due to its geography (flat terrain, high sunshine duration) and relatively poor-quality soils, the Hungarian Great Plain's Sand Ridge sub-region within the Danube-Tisza Interfluve, is particularly targeted by solar rush. As a result of these processes, the Sand Ridge region is being integrated into the global economy as an energy-producing periphery. The fact that these lands are being taken out of the ownership of local farmers makes them vulnerable to investors who often live far away from the land in question, and also jeopardizes environmental and social sustainability in the affected areas.

We use Inárcs as a case-study area, a rapidly transforming settlement in the suburban zone of Budapest, on the northern edge of the Sand Ridge, where one of the largest solar power plants of Hungary has been built on formerly agricultural land. Our aim is to explore the impacts of solar energy projects on landscape transformation and the sustainability of local communities, and examine the possibilities for resistance from the perspective of local farmers. We use a mix of research methods: GIS-based analysis of agricultural statistics, interviews with local and national-level experts (6), oral history interviews (9), focus group/walk-along interview (1). The interview transcripts, supplemented with secondary sources, are subject to thematic analysis. The analysis reveals green grabbing strategies related to solar projects and impacts on rural sustainability, including unethical practices, enforcement and violence, land-use change and displacement. Our research also discovers the strategies employed by local farmers' resistance alliances. At the same time, it draws attention to the operational shortcomings and pro-capital stance of local and national governments, calling for greater democratic control over solar energy investments.

The ideas expressed here relate to the results of the research project "Marginalised space experience in the context of uneven geographical development" (project number 138713), implemented with support from the Hungarian Ministry of Innovation and Technology via the K\_21 funding programme of the National Research, Development and Innovation Fund.

## EL NIÑO AND ITS EFFECTS ON AGRICULTURAL PRODUCTIVITY: ECONOMIC IMPLICATIONS FOR AGRIBUSINESS IN THE IMMEDIATE REGIONS OF THE BRAZILIAN MIDWEST

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### Abstract

El Niño, a recurrent natural phenomenon, is characterized by the anomalous and persistent warming of the waters of the Pacific Ocean, extending from the Equator to the coast of South America. This warming, which lasts at least six months and involves temperatures at least 0.5 °C above the long-term average, results in climatic patterns marked by irregular precipitation and elevated temperatures. The increase in greenhouse gas emissions associated with climate change has intensified both the frequency and the severity of events such as El Niño. This intensification has significant consequences for agriculture, a sector that is particularly sensitive to changes in precipitation regimes and temperature patterns. Brazil is among the world's largest producers of agricultural commodities, with the Midwest region comprising the states of Mato Grosso, Mato Grosso do Sul, and Goiás standing out as a major production area for soybeans, maize, and cotton. However, according to reports from the National Supply Company, climatic instability and the uneven distribution of rainfall associated with El Niño in the Midwest can delay planting and compromise crop productivity. In this context, this study proposes an analysis that captures sectoral, regional, and spatial systemic effects on the local agribusiness production chain under a climate change scenario, with a focus on changes in agricultural productivity. In addition, the study develops an adapted interregional model to support future policy analyses for the Midwest region. To this end, the impact of El Niño on agricultural productivity in the Immediate Regions of the Brazilian Middle-West is estimated using a difference-in-differences econometric model. Based on these results, the AGRO-CO Computable General Equilibrium model is applied, constructed from the estimation of two input-output matrices for Brazilian agribusiness. The first matrix disaggregates agribusiness segments within the national matrix, explicitly identifying soybean, maize, and cotton. The second matrix, using the Inter-regional Input-Output Adjustment System (IIOAS) method, estimates an interregional matrix for the 53 Immediate Regions of the Middle-West. The interregional AGRO-CO computable general equilibrium model is static, bottom-up, and Johansen-type, and is based on the B-MARIA (Brazilian Multisectoral and Regional/Interregional Analysis Model). Simulation results indicate that the Midwest is economically vulnerable to agricultural productivity losses, such that climatic events affecting soybean, maize, and cotton production may result in significant economic losses for the region. Moreover, reductions in agricultural productivity tend to widen disparities between the Midwest and the rest of Brazil and intensify intraregional inequalities, particularly in areas more dependent on agriculture and more sensitive to productivity variations. Thus, this study contributes to the literature by providing an integrated analysis of regional disparities associated with climate impacts, offering evidence to support the formulation of public policies aimed at implementing adaptive measures to address the challenges posed by climate change, including those related to the El Niño phenomenon, whose frequency and intensity are expected to increase in the coming years.

## PRODUCING THE SEGREGATED CITY: URBAN DEVELOPMENT, WELFARE, AND UNEVEN GOVERNANCE IN SANTIAGO DE CHILE

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### Abstract

This presentation examines the relationship between social segregation, territorial inequality, and the partial replacement of the State's role in welfare provision by criminal organizations in highly marginalized urban areas of Santiago de Chile. Drawing on critical urban theory and the sociology of the state, the study explores how welfare policies are implemented in so-called "red zones"—territories characterized by extreme social complexity, entrenched poverty, and the strong presence of organized crime. The analysis situates these dynamics within broader processes of neoliberal urbanization, spatial segregation, and state retrenchment, engaging with the theoretical contributions of David Harvey on uneven geographical development, Loïc Wacquant on urban marginality and punitive governance, and Javier Auyero on everyday state practices in contexts of chronic deprivation. In addition, the paper incorporates insights from studies on narcoculture (Rossana Reguillo), highlighting how criminal organizations produce alternative forms of authority, belonging, and social regulation in segregated neighborhoods.

Empirically, the study is based on qualitative research conducted in Santiago de Chile, consisting of 52 semi-structured interviews with frontline workers responsible for implementing social welfare programmes in highly segregated urban areas. These professionals operate at the interface between the State and marginalized populations, often in contexts where criminal organizations mediate access to territory, resources, and safety. Data were analyzed using thematic analysis, allowing for the identification of recurring patterns in frontline practices, perceptions of the territory, and interpretations of their own role as state agents. The analytical framework is informed by scholarship on street-level bureaucracy and policy implementation, particularly the work of Taly Reininger, Gabriela Lotta, and Rik Peeters, which emphasizes discretion, coping mechanisms, and the moral judgments embedded in everyday welfare delivery.

The findings reveal a paradoxical dynamic. On the one hand, frontline workers develop adaptive strategies to navigate territorial violence, institutional scarcity, and informal power structures, enabling the partial success of welfare programmes in extremely adverse conditions. These strategies include negotiating with local actors, flexibilizing formal rules, and redefining programme goals to fit territorial constraints. On the other hand, these same practices often contribute—unintentionally—to the reproduction of social segregation and territorial inequalities. By normalizing differentiated forms of state presence and accepting criminal organizations as de facto intermediaries, welfare implementation can reinforce spatial stigmatization and fragmented citizenship.

The discussion underscores the relevance of these findings for rethinking the role of the State in addressing social segregation, particularly in relation to social housing policies and the urban land market. The presentation argues that welfare policies cannot be understood in isolation from broader urban and territorial dynamics, and that confronting segregation requires not only social programmes, but also structural interventions in housing, land, and urban governance.

## DEVELOPMENT, INEQUALITY, AND RISK: THE INTERACTION BETWEEN GDP PER CAPITA AND GINI ON HYDROLOGICAL DISASTER MORTALITY

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### Abstract

This study investigates the socioeconomic determinants of mortality resulting from hydrological disasters, focusing on the interaction between economic development and income inequality. The global scenario of worsening climate change represents a major threat to national and subnational governments, generating increasing human and economic costs (Hagen et al, 2022). A central driver of this threat is the documented rise in the frequency and intensity of hydrological disasters (Debortoli et al, 2017). While the consequences of these events are clear, they are experienced profoundly unequally, hitting developing nations and vulnerable populations most significantly (Mirza, 2003; Kim, 2012). Traditional literature suggests a strong negative correlation between economic development and mortality, as wealthier nations can finance public adaptations like dikes and early warning systems (Kahn, 2005; Toya and Skidmore, 2007; Mendelsohn, 2012). However, growth does not automatically translate into resilience, as resources may be diverted to post-disaster recovery rather than proactive adaptation (Mirza, 2003). Furthermore, large infrastructure projects in wealthy countries can paradoxically encourage the occupation of risky areas due to a false sense of security (Ferreira, Hamilton, and Vincent, 2013).

This research tests the hypothesis that inequality nullifies the protective effects of development. The analysis utilizes a panel dataset comprising 137 countries over 25 years, integrating data from EM-DAT, the World Bank, and the Standardized World Income Inequality Database (SWIID). The empirical strategy employs a Negative Binomial model with Two-Way Fixed Effects to handle the count nature of mortality data and the presence of overdispersion. The model controls for time-invariant country characteristics, global annual shocks, and disaster-specific variables such as duration and frequency. The results indicate that while economic growth generally reduces mortality, the interaction between GDP per capita and inequality is positive and statistically significant. This confirms that the harmful effect of income maldistribution on mortality worsens as a country's level of development increases, suggesting that in richer nations, the distribution of resources is a more critical determinant of lethality than in low-income nations.

These findings support the possibility of a collective action failure: in highly unequal societies, elites may secure private protection and capture existing public infrastructure, while lacking incentives to support the expansion of public protective goods that benefit the wider population (Anbarci, Escaleras, and Register, 2005). The trajectories observed in this study converge with recent empirical evidence suggesting that the aggravating effect of inequality becomes more severe in developed regions (Lin et al, 2024). Consequently, wealth does not guarantee automatic resilience when there is a mismatch between resource distribution and institutional capacity (van Bavel et al, 2018). The study concludes that disaster risk reduction must be integrated into a development agenda that promotes equity and strengthens collective action capacity.

## REGIONALIZATION OF URBAN STORMWATER SERVICES AND MUNICIPAL SPENDING: EVIDENCE FROM BRAZIL

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<sup>3</sup>Grant 2023/10215-6 - São Paulo Research Foundation (FAPESP), Brazil

### Abstract

Regional inequality and unequal access to public services, driven by institutional asymmetries, are crucial challenges for development in territorially heterogeneous countries like Brazil, where governance and financing of urban infrastructure strongly shape spatial disparities and urban resilience. The regionalization of public services emerges as a potentially relevant strategy to address the limitations faced by municipalities with different institutional and fiscal capacities (Ferreira; Munhoz, 2025). By encouraging the provision of services through regionalized blocks, this arrangement can promote institutional coordination, optimize the use of public resources, and expand municipal investment capacity. This study contributes to this agenda by investigating the potential effects of the regionalization of Urban Drainage and Stormwater Management (DMAPU) services on the spending behavior of Brazilian municipalities in the context of the New Legal Framework for Sanitation (Law No. 14,026/2020). The consolidation of the Sanitation Framework still needs progress regarding the goals of universalization, financing, and regulation of sanitation services, particularly in the dimension of urban drainage. Despite the increasing literature on the effects of regionalized service provision in water supply and sewage treatment (Oliveira; Saiani, 2024), significant gaps remain regarding the impacts of the regionalization of the DMAPU on municipal spending patterns in this sector. There are also few empirical studies on the effects of DMAPU services, partly due to recent legislation and a scarcity of data. Therefore, empirical literature still lacks evidence-based investigations that specifically analyze the effects of regionalization on urban drainage services. Thus, the main objective of this article is to evaluate the impacts of regionalization policies on municipal spending on these services. To achieve the objectives of this study, we rely on a panel dataset combining technical, operational, infrastructure, risk management, and municipal management information from the Urban Stormwater module of the National Sanitation Information System (SINISA-AP, formerly SNIS), complemented by institutional data from the Brazilian Institute of Geography and Statistics' Municipal Basic Information Survey (MUNIC). The analytical sample covers 1,407 Brazilian municipalities observed in 2019 and 2023. The empirical strategy is based on a Differences-in-Differences approach with fixed effects, comparing 98 municipalities (treated group) that adopted regionalization policies for urban stormwater drainage services after the enactment of Law and 1,309 municipalities that did not adopt regionalization (control). The results indicate the existence of a moderate association between the adoption of regionalization policies and expenses in the urban drainage sector. On average, municipalities that have implemented regionalization have 35–42% in expenditures relative to non-regionalized municipalities, conditional on controls and fixed effects. It is possible to suggest some plausible mechanisms. Regionalization may enhance planning and investment capacity by coordinating service provisions across municipalities, improving access to funding or acting as a trigger for correcting this structural underinvestment. In addition, the strong and significant effects of municipal revenue and population size suggest that fiscal capacity and scale remain key determinants of DMAPU expenditures. Within this context, regionalization appears to complement, rather than replace, local capacity by enabling municipalities to mobilize resources more effectively toward drainage infrastructure.

## FROM MEASUREMENT TO ACTION: A PRELIMINARY METHODOLOGICAL PROPOSAL FOR ARTICULATING MEASUREMENT AND AWARENESS-RAISING IN INSTITUTIONAL URBAN FOOD SYSTEMS IN ECUADOR

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### Abstract

Food waste is a key challenge for sustainability and well-being in urban food systems, especially in the Global South, where social inequalities, environmental pressures and institutional constraints converge. In this context, institutional canteens—such as those in schools and universities—occupy a strategic position, as they are located at the intersection between everyday consumption practices and organisational dynamics. However, in Latin America, empirical evidence on food waste in these spaces remains limited, which hinders coordination between grassroots initiatives, institutional management and public policy formulation. This study presents a preliminary systemic methodological proposal aimed at accompanying the quantitative measurement of food waste with awareness-raising processes, exploring its potential as a collaborative practice in institutional contexts in Ecuador.

The research adopts a mixed methodological approach that integrates three complementary components: (i) the measurement of waste through direct weighing and characterisation of food, following standardised criteria; (ii) contextual observation of consumption environments and service operational dynamics; and (iii) an awareness-raising component applied on an exploratory basis in school canteens. The proposed methodology has been implemented on an exploratory basis in the school canteen and partially in two university canteens, selected to represent different levels of food autonomy, organisational structures and age groups.

Measurements taken on consecutive days made it possible to characterise the volumes of waste and its composition. The results show a predominance of avoidable waste in the three cases analysed, with recurring patterns of rejection in categories such as salads, soups and certain carbohydrates. While university canteens have relatively stable levels of waste, mainly associated with portion management and menu planning, the school canteen shows higher levels of waste per diner and high variability, linked to sensory, age and behavioural factors.

In this context, the incorporation of the awareness-raising component made it possible to explore how the data generated by the measurement can be transformed into educational and communication inputs, encouraging reflection on consumption and waste without interfering with the normal functioning of the service. Rather than evaluating causal impacts or generalising results, the study highlights the potential of collaborative practices that combine technical measurement, institutional participation and awareness-raising actions as a basis for progressive and scalable interventions. From this perspective, institutional canteens emerge as intermediate spaces where it is possible to co-produce operational knowledge about food waste and translate it into collective learning without destabilising the functioning of the service. The study contributes to the debate on urban food systems and well-being in the Global South by proposing an adaptable and gradual methodological approach, aimed not only at quantifying waste, but also at strengthening institutional capacities and building bridges between local initiatives, organisational management and potential public policy frameworks.

## RURAL DEVELOPMENT IN CONFLICT: PUBLIC POLICY IMPLEMENTATION IN INDIGENOUS TERRITORIES OF SOUTHERN CHILE

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University of Chile, Chile

### Abstract

This presentation examines the complexities of implementing public policy in rural territories in southern Chile affected by sustained armed conflict between indigenous communities and the State. These territories—often labeled by public institutions as “red zones”—are marked by historical processes of dispossession, territorial inequality, militarization, and political contestation over land and natural resources. The presentation approaches public policy implementation not as a neutral or technical exercise, but as a deeply political process embedded in asymmetrical power relations, colonial legacies, and contested forms of territorial governance. The theoretical framework combines critical theory with perspectives on territorial inequality and indigenous misrecognition. Drawing on critical analyses of state power and spatial inequality, the study conceptualizes these territories as products of long-term processes of land dispossession, extractivist development, and monocultural productive models that privilege forestry and agribusiness over indigenous territorial rights. The analysis engages with scholarship on indigenous peoples’ struggles for land, autonomy, and resources, emphasizing how misrecognition and criminalization shape state–indigenous relations. These perspectives are complemented by critical approaches to street-level bureaucracy, which foreground the discretionary power of frontline workers and the moral, political, and affective dimensions of policy implementation in contexts of conflict and violence. Empirically, the presentation is based on qualitative research conducted in rural areas of southern Chile, drawing on 32 semi-structured interviews with frontline workers responsible for implementing state social programmes in highly complex and conflict-affected territories. These professionals operate at the interface between state institutions and indigenous communities, often under conditions of permanent tension, surveillance, and insecurity. The data were analyzed using thematic analysis, enabling an in-depth examination of how frontline workers interpret violence, territorial conflict, and indigenous demands, and how these interpretations shape their everyday practices. The findings reveal the profound ambivalence of frontline implementation in contexts of armed conflict. On the one hand, frontline professionals develop adaptive strategies to cope with the risks and uncertainties of working in violent territories. These strategies include flexibilizing programme rules, building informal relationships with community actors, and redefining intervention goals to ensure continuity of service provision and minimize harm. Such practices can create spaces of mediation and temporary trust, allowing welfare programmes to operate despite structural constraints. On the other hand, the analysis shows that these same practices may inadvertently reproduce inequalities and forms of domination. By prioritizing governability, security, or productivity over indigenous political claims, frontline implementation can reinforce patterns of misrecognition, depoliticize land struggles, and normalize the extractivist monoculture model imposed on indigenous territories. The presentation concludes by arguing that these findings are critical for rethinking the role of the Public Policy in contexts of territorial inequality and conflict. Understanding public policy implementation in indigenous territories requires addressing not only administrative capacity, but also the historical roots of dispossession, the political economy of land, and the limits of welfare interventions in the face of unresolved demands for territorial justice.

## FROM SHOCK TO RESILIENCE: RETHINKING ECONOMIC RECOVERY THROUGH INTEGRATED DEVELOPMENT AFTER COVID-19

[Daniel Zurita-Loma](#)<sup>1,2</sup>, [Andrés Palacio-Fierro](#)<sup>2</sup>, [Purificación Vicente-Galindo](#)<sup>1</sup>, [Patricio Álvarez-Muñoz](#)<sup>3</sup>

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### Abstract

The COVID-19 pandemic constituted one of the most severe and systemic shocks to the global economy in recent decades, simultaneously disrupting economic activity and exposing long-standing structural weaknesses related to institutional capacity, social well-being, and environmental sustainability. In the post-pandemic period, recovery has been predominantly evaluated through short-term GDP growth, reinforcing a rebound-centered narrative in which faster economic expansion is equated with successful recovery. This paper challenges that paradigm by advancing a multidimensional interpretation of post-COVID recovery, in which economic resilience is conceptualized as a structural configuration of economic, institutional, social, and ecological dimensions rather than as growth performance alone. The empirical analysis relies on a cross-country dataset covering the period 2020–2023, combining real GDP growth with indicators of subjective well-being, institutional quality, social cohesion, and ecological sustainability. Data are drawn from internationally comparable sources, including the World Bank, United Nations Development Programme, World Happiness Report, Worldwide Governance Indicators, Transparency International, and global ecological footprint accounts. Countries are included based on data completeness and comparability across dimensions, resulting in a diverse and quasi-balanced sample spanning different income levels and world regions. Methodologically, the study adopts an integrated multivariate framework designed to capture both structural relationships and temporal dynamics in the post-pandemic period. Exploratory factor analysis and principal component analysis are first employed to construct latent dimensions summarizing the multidimensional development space. To explicitly account for the three-way structure of the data—countries, indicators, and time—the analysis is complemented with STATIS and Tucker3 methods. STATIS is used to identify stable common structures across annual indicator matrices and to assess the consistency of development patterns over time, while Tucker3 decomposition allows for the joint examination of cross-country heterogeneity, dimensional interactions, and temporal evolution. The resulting latent structures are then linked to cumulative real GDP growth through regression models, and unsupervised clustering techniques are applied to identify typologies of post-COVID recovery. Preliminary results reveal a clear differentiation in recovery trajectories that challenges conventional narratives. Countries characterized by stronger institutional quality and higher levels of subjective well-being tend to exhibit more resilient and stable growth patterns, even when initial economic contractions were pronounced. By contrast, countries experiencing rapid GDP rebounds without parallel improvements in governance or social conditions cluster into less resilient recovery profiles, marked by greater volatility and weaker sustainability. Ecological performance further distinguishes recovery typologies, highlighting systematic trade-offs between short-term growth acceleration and longer-term resilience. Overall, preliminary findings indicate that institutions and well-being matter more for post-pandemic recovery than the pace of economic rebound. By challenging GDP-centered assessments and showing that rapid growth is neither a sufficient nor a reliable marker of recovery, this study calls for a resilience-based redefinition of recovery, with clear implications for research and policy that prioritize quality, sustainability, and institutional strength over speed.

## THE EFFECTS OF GOVERNMENT DEBT ON CAPITAL FORMATION (INVESTMENT): AN ANALYSIS FOR THE OECD COUNTRIES

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### Abstract

This study investigates the dynamic relationship between public debt and fixed capital formation (FCF) across OECD countries, with a focus on understanding how debt levels, fiscal conditions, interest rates, and institutional quality influence investment in physical capital. Using a panel dataset covering 1995–2022, the analysis incorporates a large cross-sectional dimension (N) and a short time dimension (T), capturing variations across countries while accounting for the persistence of long-term investment behaviour. The dataset includes key macroeconomic, fiscal, monetary, and institutional variables, such as debt-to-GDP ratios, interest payments, primary balances, short- and long-term interest rates, inflation, exchange rates, tax burdens, and the Economic Freedom Index, alongside event-specific dummies reflecting the Euro debt crisis, the subprime crisis, and the COVID-19 pandemic. The study employs the System Generalised Method of Moments (System GMM) estimator, following the Arellano–Bover/Blundell–Bond framework. The approach addresses endogeneity, simultaneity, and reverse causality, while correcting for heteroskedasticity and autocorrelation. Lagged dependent variables and endogenous regressors are instrumented using deeper lags in both level and difference equations, with a collapsed instrument matrix and time dummies included to mitigate weak instrument bias. Model validity is confirmed through Arellano–Bond tests for serial correlation, Hansen tests for over-identifying restrictions, and difference-in-Hansen tests for additional moment conditions, ensuring the robustness and consistency of the estimations. The results reveal strong positive persistence in fixed capital formation, highlighting that past investment significantly determines current investment decisions, consistent with the long-term and multi-year nature of capital projects. Debt-to-GDP ratios are generally insignificant once endogeneity is controlled, suggesting that moderate public debt does not directly crowd out investment. However, debt servicing costs, measured as interest payments relative to GDP, exhibit a negative association with FCF, supporting the debt overhang hypothesis: higher interest burdens increase financing risk and long-term borrowing costs, thereby discouraging investment. Long-term interest rates are robustly negative and significant, confirming that financing conditions are critical for capital formation, whereas short-term rates, inflation, and exchange rates are largely insignificant. Marginal negative effects of tax burdens indicate that higher taxation may reduce the profitability of long-term investment projects, while the Economic Freedom Index loses significance after controlling for country-specific effects, suggesting that institutional improvements influence investment gradually rather than immediately. Crisis dummies for the Euro debt crisis, the subprime crisis, and COVID-19 are insignificant, implying that the policy response and institutional resilience are more important for sustaining investment than the crises themselves. The findings carry important policy implications: ensuring long-term debt sustainability, reducing debt servicing costs, stabilising long-term interest rates, and maintaining sound institutional frameworks are crucial to supporting sustained fixed capital formation. Counter-cyclical fiscal policies during crises can further mitigate investment disruptions, while careful management of tax burdens promotes private investment incentives. This study contributes to the literature by demonstrating that fixed capital formation is largely determined by investment persistence and financing conditions, rather than by short-term debt levels or transitory economic shocks, underscoring the centrality of sustainable macroeconomic and fiscal policies in promoting long-run economic growth.

## NON-STRUCTURAL URBAN DRAINAGE AND THE POLITICAL ECONOMY OF URBAN RESILIENCE: A SCOPING REVIEW

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### Abstract

Accelerated urbanization and intensifying climate change have significantly exacerbated global water challenges, resulting in an increase in the frequency and magnitude of floods and the degradation of water quality. This scenario has rendered obsolete engineering interventions historically focused on the rapid evacuation of surface runoff through gray infrastructure made of concrete and steel. In response, new paradigms aiming for urban resilience have emerged, such as Integrated Urban Water Management, Water Sensitive Cities, Low Impact Development, and Nature-Based Solutions, consolidating the foundations of green infrastructure. However, the effective transition to these models faces complex barriers that transcend engineering, hindered by technical, managerial, financial, and, above all, political and institutional barriers. Addressing this gap, this study aimed to identify which non-structural (or structuring) urban drainage approaches have been examined in the Applied Social Sciences, as well as to map persistent thematic and methodological gaps in recent literature. To this end, a scoping review was conducted following the PRISMA-ScR protocol, based on structured searches in the Scopus and Web of Science databases and limited to publications in the fields of Economics, Public Administration and Business. A total of 1,277 academic records were retrieved. After removing duplicates (645), 582 articles were screened, of which 55 addressed non-structural drainage issues and were selected for full-text review. These studies were then classified into thematic macro-areas, with the most frequent being urban planning (34), stormwater management (34), governance (28), urban sustainability (27), and green infrastructure (25). The final analysis focused on 24 articles. The results indicate that, although technical solutions such as rain gardens and permeable pavements are widely recognized, their large-scale adoption is consistently hindered by institutional inertia and path dependency. The analysis showed that successful implementation depends critically on effective planning, inter-agency coordination, and sustainable financing, forming a tripartite foundation that links public policies, institutional arrangements, and regulatory frameworks. In addition, the evidence highlights the need for new financing mechanisms and valuation approaches for drainage assets in order to ensure the long-term economic sustainability of these services. Overall, the preliminary findings strongly suggest that overcoming institutional fragmentation and integrating urban drainage management into broader urban planning policies are not optional steps, but necessary conditions for advancing the construction of genuinely resilient cities.

## THE EFFECT OF RELATEDNESS AND DENSITY ON THE SURVIVAL OF ECUADORIAN FIRMS

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### Abstract

Analysing business survival is essential to understanding economic development, as business persistence improves employment, strengthens productive capacities, and stabilises local economic structures. In developing economies, high business mortality rates reveal deep structural weaknesses. According to the World Bank, nearly 50% of new businesses fail within their first five years, highlighting the importance of identifying the factors that determine whether businesses persist or exit the market. In Ecuador, this issue is particularly pronounced due to territorial heterogeneity and the uneven distribution of productive activity across cantons.

The literature has primarily focused on internal determinants, including firm size, age, and productivity. However, these factors only partially explain survival when the territorial context in which firms operate is overlooked. Recent advances in economic geography emphasise the role of productive relationships, highlighting how firms benefit from operating in environments where activities are cognitively and technologically connected. Building on this perspective, this study incorporates non-traditional determinants related to the local productive structure, including specialisation and productive density.

For our analysis, we use firm-level information from the Ecuadorian Superintendencia de Compañías, Valores y Seguros (SCVS) for the period 2008-2023 and combine these data with information at the sectoral-regional level from the Banco Central del Ecuador (BCE) and the Ecuadorian Institute of Statistics (INE). For the analysis, we rely on semi-parametric Cox's hazard, discrete-time models, and the accelerated failure time (AFT) model. Firm survival is calculated using information on firm exit, together with entry and duration. The year of entry of the firm is identified as the first year,  $t$ , in which the firm is observed, but not in any year prior to  $t$ . The year of exit of the enterprise is defined as the last year,  $t$ , in which the enterprise reported information, but not in years  $t + 1$ ,  $t + 2$ , ..., 2024. The duration of an enterprise is defined by counting the number of years the enterprise has been in operation, excluding its initial year of operation.

With regard to the firms' economic context, our preliminary results show that proximity and relatedness affect firm survival, even after controlling for classical firm-level indicators. The estimations indicate that higher levels of relatedness are associated with a lower risk of firm exit, while firm size—proxied by employment—also exerts a protective effect, reducing the hazard of failure.

## SOCIOBIOECONOMICS AND SUSTAINABLE DEVELOPMENT IN THE JALAPÃO REGION: STRENGTHENING THE VALUE CHAINS OF CERRADO PRODUCTS

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### Abstract

This study analyzes how strengthening the value chains of socio-biodiversity products from the Cerrado biome can contribute to the sustainable development of quilombola communities in the Jalapão region, in the state of Tocantins, Brazil. The research is grounded in the theoretical and analytical framework of sociobioeconomics, understood as a counter-hegemonic approach to development that integrates income generation, environmental conservation, and sociocultural valorization. This perspective emphasizes the articulation between social, bioterritorial, economic, and ecological dimensions, recognizing traditional communities as central actors in sustainable territorial dynamics.

Methodologically, this research is characterized as an applied, exploratory, and descriptive case study, based on an action research approach. Data collection was carried out through three complementary methodological cycles. The first cycle involved participatory workshops with members of quilombola communities, aimed at collectively identifying productive practices, challenges, and local potentials. The second cycle consisted of semi-structured interviews with extractivists and community leaders, allowing a deeper understanding of social organization, traditional knowledge, and governance arrangements within socio-biodiversity value chains. The third cycle included the application of structured questionnaires to local technicians and professionals from the Nature Institute of Tocantins (Naturatins), providing technical and institutional perspectives. This methodological design enabled the triangulation of empirical data, technical information, and traditional knowledge.

The results indicate that socio-biodiversity value chains in the Jalapão are strongly grounded in traditional ecological knowledge, collective organization, and management practices aligned with Cerrado conservation. Products such as buriti, fava-d'anta, sucupira, and jatobá play a central role in local livelihoods, food security, and cultural reproduction. However, the study identifies persistent structural constraints that limit the consolidation and expansion of these chains. These include logistical precariousness, dependence on intermediaries, limited value addition, lack of certifications, insufficient infrastructure for storage and transport, and fragile institutional support. Such constraints restrict access to fairer markets and reduce the potential for income generation and territorial development.

The findings highlight that, although the economic potential of socio-biodiversity value chains is significant, it remains underutilized due to institutional, logistical, and market barriers. Strengthening these chains requires territorially grounded and participatory public policies that recognize the protagonism of traditional communities, promote institutional integration, and support value addition, certification processes, and collective commercialization strategies. The study concludes that sociobioeconomics offers a robust framework for promoting sustainable development in traditional territories, as it reinforces the interdependence between economic viability, environmental conservation, and cultural continuity. Valuing the standing Cerrado and recognizing quilombola communities as strategic agents are essential for fostering a just, resilient, and socially rooted development model in the Jalapão region.

## SOCIOCULTURAL FACTORS IN THE PRICING OF GOLDEN GRASS HANDICRAFTS: A CASE STUDY IN QUILOMBOLA COMMUNITIES OF JALAPÃO (TO)

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### Abstract

This study analyzes the factors that influence the pricing of golden grass handicrafts produced by women from quilombola communities in the Jalapão region, in the state of Tocantins, considering the cultural, social, and economic aspects that shape price formation. The bibliographic framework draws on the sociology of Pierre Bourdieu, particularly the concepts of cultural, social, and symbolic capital, in order to understand the economy of symbolic goods. Complementarily, the concept of embeddedness developed by Karl Polanyi is employed, which posits that the economy of these communities is rooted in social and territorial relations, allowing price formation to be interpreted beyond the instrumental rationality of traditional microeconomics. The study starts from the assumption that artisanal activity cannot be priced solely on the basis of profit-maximization models, given the context of community relations, territorial identity, and traditional knowledge that permeate this activity.

Methodologically, this is a case study with a qualitative approach, grounded in action research and participatory research, establishing a subject–subject relationship between researcher and participants. The investigation was carried out with the quilombola communities of Prata and Mumbuca and with the Community Association of Artisans and Small Producers of Mateiros, through semi-structured interviews, participatory pricing workshops, and field observation, enabling knowledge to be co-produced by the researcher and the artisans. The research was conducted between November 2023 and February 2025. A total of 53 artisans participated directly in the study, predominantly adult and elderly women, with strong territorial and familial ties to golden grass handicraft production.

The results show that the pricing of handicrafts constitutes a “total social fact,” as discussed by Bourdieu, encompassing dimensions of gender, territory, and ancestry. Furthermore, pricing is marked by the invisibility of costs, particularly those related to raw material losses during the production process and the devaluation of artisanal labor, which is often confused with profit, generating invisible losses for the artisans. The research also demonstrates that working time is fragmented due to the overlap between productive and domestic activities, making it difficult to measure and contributing to the undervaluation of the artisans’ labor. In response to these challenges, the study resulted in the creation of the “Artisan’s Notebook,” a social technology aimed at recording production and strengthening the artisans’ productive autonomy.

It is concluded that the pricing of golden grass handicrafts constitutes a social and symbolic practice in which prices incorporate intangible values associated with traditional know-how, territorial identity, and community relations. In this context, the isolated application of microeconomic rationality proves insufficient to ensure the economic sustainability of the artisans, making an approach that recognizes the economy as a socially embedded phenomenon necessary.

## DEPOPULATION AND AGEING IN POLAND. CAN SOCIAL PROGRAMS STOP NEGATIVE DEMOGRAPHIC TRENDS?

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### Abstract

The long-term population decline is a common demographic trend in many developed countries with low fertility. Many recently published papers suggest that long-term decline, combined with the high ageing of the population, is the leading cause of the persistent and widespread depopulation of Europe. Depopulation processes in Poland affect the most peripheral areas, small towns, and rural communes, as well as areas with economic stagnation. Areas with a negative foreign emigration balance are also at risk of further depopulation. To counteract the decline in birth and fertility rates, several socially oriented programs aimed at supporting families have been introduced in Poland. As a result, social care has become the most costly of all public expenses in Poland, especially after 2015. This expenditure has been growing the fastest in recent years. Given the value of family social benefits, Poland ranks third in the EU. The work aims to assess the demographic effects of social programs in Poland (initiated after 2005, with a focus since 2016), particularly emphasising the spatial dimension and urban-rural relations. Firstly, the dynamics of demography, fertility ratio and population pyramids in Poland have been analysed. Secondly, attention has been paid to assessing changes in the population and the labour market in the regional context before and after the program's implementation. Thirdly, a possible impact of COVID-19 and other shocks on demography was considered. The work uses data from Statistics Poland and the Ministry of Family, Labour, and Social Policy. The methods include spatial analysis, descriptive statistics, panel data modelling, and demographic indicators. The paper also seeks to identify the influence of economic and social factors, including cultural factors, on birth rates in Polish regions. Preliminary analyses indicate that the social programs have not affected the steady increase in the birth rates in Poland. The introduction of additional social programs has not slowed the accelerating decline in birth rates. At the same time, Polish regions are experiencing the growing problem of an ageing population, which was temporarily and surprisingly stopped by the COVID-19 pandemic.

## COMPREHENSIVE HYDROLOGICAL ASSESSMENT OF THE SAN MIGUEL AND SANTO TOMÁS AJUSCO MICRO-BASIN, CDMX

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### Abstract

Humanity knows that natural resources are limited and that the environmental impact of its activities is increasingly aggressive and irreversible. These observations have given rise to the concept of a green economy; a development model based on the efficient use of natural resources. It seeks to balance economic growth with environmental preservation, promoting sustainable activities through environmentally friendly technologies.

Watersheds are complex systems that combine physical, biological, and human characteristics. Each subsystem influences the others, creating an interconnected system within and between subsystems. These interrelationships allow for water flow, biomass generation, and human sustenance. Therefore, their analysis requires a holistic approach that considers these interconnections; modifying one component of a subsystem affects the entire system. Watershed management is the methodology for achieving a balanced exploitation of natural resources and, due to its functional homogeneity, constitutes the planning unit and the foundation of environmental management.

The watershed is complex due to its interconnections: soil, vegetation, fauna, and human activities influence the integrity and health of each other, including rivers and aquifers. The flow of mass and energy through the system drives regeneration and self-organization; subsystems in crisis generate new properties and elements to return to equilibrium, with the goal of keeping the system alive.

A hydrological balance was performed on the micro-watershed encompassing the communities of San Miguel and Santo Tomás Ajusco, Mexico City. Due to its location and environment, the water supply was assured in the past, but the increase in real estate developments downstream has increased demand and led to overexploitation of the micro-watershed, generating a deficit for the community.

The functioning of the micro-watershed was determined to establish the volumes of water in each subsystem and the time they remain at that point, in order to develop a management plan that guarantees supply to the community, exporting only the surplus.

The rainfall-runoff relationship was numerically modeled as a mixed watershed. The natural phase is estimated using the Soil Conservation Service Curve Number method; the urban phase is calculated using the Rational Method in a coupled geographic information system. The design storm is estimated using the Gumbell Probabilistic Fit Function for different return periods. The hydrograph is constructed from runoff volumes, determining direct and baseflow.

Preliminarily, surface water availability represents 43% of the hydrograph volume, infiltration 27%, and evapotranspiration 30%, which is significant given that it is a protected natural area. The time of concentration is 2.57 hours, and the baseflow is up to six months (data under review). Based on this information, it is concluded that to retain water in the watershed for a longer period and, therefore, increase its availability, a management plan focused on infiltration should be implemented.

## FROM SLASH-AND-BURN TO SUSTAINABLE LIVELIHOODS: HOUSEHOLD LAND-USE DECISIONS IN JAVA'S FOREST VILLAGES

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### Abstract

Deforestation in Indonesia, driven largely by unsustainable agricultural practices, imposes substantial environmental and economic losses. Nowhere is this more visible than in Java's forest villages, where households rely on land-based livelihoods and make production decisions under tight resource constraints. This study investigates why slash-and-burn agriculture persists even when its ecological costs are well understood. Drawing on six months of fieldwork in Blora and Ngawi, the project employs a mixed-methods design that integrates household surveys, qualitative interviews, and direct community engagement. The analytical framework builds on the Theory of Planned Behavior to assess how beliefs, social expectations, and perceived constraints shape agricultural choices, and it evaluates how poverty, limited capital, and local governance institutions influence the feasibility of adopting alternative technologies. An agent-based approach is used to examine how individual decisions scale into spatial patterns of land use. The study seeks to identify the micro-foundations of environmentally damaging production methods, to map opportunity sets for livelihood change, and to analyze how local networks, including village authorities and forestry officials, affect technology adoption. In doing so, the research links individual decision-making to broader spatial patterns of environmental degradation and provides micro-level evidence relevant to Indonesia's long-term low-carbon development strategy.

Preliminary results show that Blora and Ngawi forest communities are overwhelmingly agrarian, with roughly three quarters earning less than 120 US dollars per month and about two thirds attaining only primary schooling or less. These constraints correlate strongly with continued reliance on burning as a low-cost land-clearing method. More than half of respondents report burning to prepare land, and roughly two thirds did so in the past year, typically each planting season. Intentions data reveal a striking inconsistency: a small majority plan to burn again in the coming year, yet nearly 40 percent state an intention to prepare land without burning. This tension points to the interaction of social norms, credit and liquidity constraints, and limited access to mechanization. Attitudinal responses also reflect this ambivalence: while 40 percent view burning harmful, the rest consider it useful or pragmatic under current resource scarcity. The evidence suggests that environmental preferences are present but secondary to binding financial and technological constraints. These results point toward community-driven interventions that lower the private costs of adopting non-burn alternatives through peer demonstration and targeted support.

## OPERATIONALIZING NON-TECHNOLOGICAL INNOVATION: A DATA-DRIVEN MAPPING OF CULTURAL AND CREATIVE INDUSTRIES IN EUROPEAN SMART SPECIALISATION

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### Abstract

Non-technological innovation is central to inclusive development, particularly in rural and peripheral regions where growth often relies on cultural assets and social organization rather than formal R&D. Innovation policy nonetheless remains structurally biased toward technological outputs, and this bias can reinforce spatial inequality. The gap is evident in the EU's Smart Specialisation Strategies (S3). S3 aims to support diverse innovation pathways, yet its guidance and evaluation routines remain better suited to technological domains.

Cultural and Creative Industries (CCIs), which an important form of non-technological innovation in non-urban regions, highlight this limitation. CCI support in S3 faces a dual legibility problem. Conceptually, CCI subsectors lack codified indicators of relatedness comparable to patent citation patterns, so evidence on sector relatedness remains limited for smart diversification. Strategically, the broad and shifting scope of CCIs, combined with inconsistent administrative classifications, obscures the content of support and weakens accountability. These gaps create a strategic and empirical dilemma. Diversification can generate complementarities but can fragment scarce resources, while specialization can build critical mass but can increase lock-in. Addressing this dilemma requires evidence on how regions actually invest in CCIs.

This paper introduces a data-driven framework to operationalize non-technological innovation within S3 by reconstructing CCI support from project-level evidence. We analyze S3 project summaries from the European Commission's Kohesio database and apply BERTopic to cluster projects through semantic similarity. Each cluster is characterized by representative keywords that summarize its core features. Relatedness is operationalized through shared features across clusters rather than co-patenting. Overlap in distinctive keywords is treated as evidence of cognitive proximity, enabling a relational mapping of CCI activities without reliance on industrial codes.

The framework delivers two analytical advances. For conceptual mapping, we construct a keyword co-occurrence network from topic descriptors and apply Louvain community detection to identify CCI subsectors and their linkages. For strategic assessment, we evaluate regional investment behavior using Revealed Comparative Advantage (RCA) to measure relative prioritization and the Herfindahl-Hirschman Index (HHI) to measure specialization versus diversification across CCI subsectors. Results show that cultural production and promotion form the core of European CCI portfolios, and tourism functions as a structural bridge connecting heritage-oriented activities with community-led initiatives. Spatial patterns reveal three investment logics: broad national distribution, large regional concentration, and selective specialization. The analysis also identifies frequent misalignment between stated priorities and observed allocations, including false positives and missed opportunities. Higher CCI prioritization correlates with stronger subsector concentration, suggesting that many regions resolve the diversification-specialization dilemma through concentration rather than related diversification. This pattern raises concerns that, without clearer diversification maps, S3 may steer non-urban regions toward narrow trajectories and limit benefits associated with related variety. The findings support context-sensitive policy mixes and monitoring tools that link priority statements to observable investment trajectories.

## THE IMPACT OF POLLUTION ON CRIMINAL BEHAVIOR

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### Abstract

A growing literature examines the relationship between air pollution and criminal behavior, yet existing evidence remains mixed. One key challenge is identification: pollution may simultaneously affect both the demand for crime through cognitive or behavioral channels, and the supply of criminal opportunities through changes in outdoor activity and policing intensity. Disentangling these channels is difficult because pollution shocks often affect both mechanisms at the same time, confounding interpretation of reduced-form estimates.

We address this challenge using a novel institutional setting in South Korea. The Korean government issues high-pollution alerts based on particulate matter concentrations, with discrete threshold rules that trigger policy responses such as school closures, restrictions on outdoor activity, and public warnings to remain indoors. Over our study period, the government implemented revisions to these threshold rules, altering the frequency with which alerts are issued for a given underlying pollution level. These policy changes directly affect the number of potential targets and guardians in public space, while leaving ambient pollution, and therefore any physiological or cognitive response to pollution, unchanged.

We combine high-frequency crime data with pollution measures and alert issuance records to implement a difference-in-discontinuities research design. Specifically, we compare crime responses at identical pollution concentrations before and after threshold changes, isolating variation in alert-driven behavioral responses that operate through target availability rather than cognitive impairment. This design allows us to separately identify opportunity-based effects from pollution-induced behavioral effects, a distinction that has been difficult to achieve in prior work.

Our preliminary results indicate that pollution alerts reduce crimes, consistent with a contraction in criminal opportunities when public activity declines. Ongoing work is exploring how these effects vary across different types of crimes to further tease out mechanisms. Our findings have broad implications for interpreting the relationship between pollution and crime. Our results suggest the effect is largely driven by differences in opportunity, suggesting that policing efforts and other types of activities may help reduce crime rates.

## REGIONAL DEVELOPMENT IN BRAZIL: TEMPORALITY OF REGIONAL POLICIES

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### Abstract

This article examines the historical trajectory and temporal dynamics of regional development policies in Brazil, paying particular attention to how the “regional question” has alternated between centrality and marginalization on the national development agenda. The main objective is to analyze the evolution of regional planning policies from the beginning of the 20th century to the post-2016 period, highlighting the conceptual changes, institutional arrangements, and political-economic contexts that shaped state intervention in regional inequalities. The study addresses a central question: how and why have regional disparities persisted in Brazil, despite successive political initiatives aimed at territorial integration and balanced development?

Methodologically, the article is based on a qualitative and historical approach, combining an extensive literature review with the analysis of official government documents, political milestones, and institutional reports related to regional planning. The analytical strategy employs a temporal perspective structured through timelines, which allow the identification of key moments of “immersion” and “emergence” of the regional question in Brazil. This approach allows for a comparative reading of different political cycles, including the pre-SUDENE period, the developmentalist phase associated with planning inspired by CEPAL, the experience of authoritarian planning under military governments, the neoliberal turn of the 1980s and 1990s, the reactivation of the regional agenda in the 2000s with the National Regional Development Policy (PNDR), and the subsequent weakening of regional planning after 2016.

The analysis is based on secondary data from official statistics, planning documents, legislation, and policy guidelines, complemented by classical and contemporary theoretical contributions to regional development, including structuralist, Keynesian, and critical political economy perspectives. Special attention is given to the role of the State, the federal pact established after the 1988 Constitution, and the tension between national integration strategies and localist or market-oriented approaches.

The main results indicate that regional development in Brazil has never consolidated as a long-term state policy. Instead, it has been characterized by institutional discontinuity, fragmentation of instruments, and recurring shifts between centralized planning and market-oriented strategies. While periods such as the creation of SUDENE and the launch of the PNDR represented important conceptual advances, their implementation was limited by political resistance, weak coordination between levels of government, and a lack of stable financing mechanisms. More recent initiatives, such as the National Integration Routes, suggest a renewed emphasis on productive inclusion, but with reduced state capacity and limited transformative potential.

The article concludes that, without robust institutional structures, effective coordination, and sustained public investment, regional inequalities in Brazil are likely to persist or deepen. Reframing the regional question as a national structural problem remains a crucial challenge for contemporary development policy.

## COOPERATION, TRADITIONAL PRODUCTION, AND REGIONAL SUSTAINABILITY IN ENVIRONMENTAL CONSERVATION CONTEXTS: AN INTERDISCIPLINARY APPROACH FROM THE TEHUACÁN-CUICATLÁN BIOSPHERE RESERVE, MEXICO

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### Abstract

Protected natural areas are territories where environmental conservation objectives converge with complex social and economic dynamics. In these spaces, rural communities face the challenge of generating livelihoods that are compatible with protecting the environment. In this context, the social and solidarity economy has been proposed as an analytical and organizational approach that allows for the articulation of territorial sustainability, community organization, and responsible use of natural resources.

The objective of this study is to analyze the role of the Tehuacán-Cuicatlán Biosphere Reserve in Mexico and the sustainability of its communities based on a case study of the Oro Blanco Cooperative, which is dedicated to artisanal salt production.

The research was conducted using a mixed methodological strategy (quantitative-qualitative) based on a case study. Semi-structured interviews were conducted with members of the cooperative, field observations of production practices were made, and documentary analysis of environmental and organizational regulations related to the management of the protected natural area was carried out. This research provides an interdisciplinary perspective from the field of geoscience engineering, linking technical analysis of the territory, natural resources, and geo-environmental processes with a human, social, and cultural approach focused on the communities that have historically inhabited and managed these territories. From this perspective, the research recognizes that geoscientific knowledge cannot be separated from social practices, traditional knowledge, and community dynamics that influence the use, management, and conservation of natural resources.

On the other hand, from a social and territorial perspective, the study integrates the principles of social and solidarity economy to analyze how a cooperative organization articulates technical knowledge, ancestral knowledge, and forms of community organization. This approach broadens the scope of geoscience engineering toward a professional practice that is more sensitive to local realities, recognizing communities as key players in decision-making about the territory and not merely as beneficiaries of technical interventions.

Finally, this study contributes to redefining the role of geoscience engineering as a profession committed not only to technical efficiency and resource management, but also to social justice, territorial sustainability, and respect for cultural diversity. The work shows that engineering can and should engage in dialogue with the social sciences and local knowledge to generate comprehensive, relevant, and ethically responsible solutions in the context of protected natural areas.

## SPATIAL MAPPING OF SUSTAINABLE AVIATION FUEL (SAF) PRODUCTION: APPLICATION TO LOCATIONS IN NORTHEASTERN BRAZIL

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### Abstract

In 2023, the aviation sector emitted approximately 950 Mt of carbon dioxide (CO<sub>2</sub>), representing roughly 2.5% of global emissions and exceeding 90% of pre-COVID-19 levels (IRENA, 2025). IATA data (2025) indicates that, absent technological innovation or the adoption of stringent decarbonization policies, sectoral emissions will rise by 2050 driven by increasing demand for air travel. Principal mitigation strategies include the progressive substitution of conventional aviation kerosene (Aviation Kerosene – QAV/Jet A-1) by Sustainable Aviation Fuel (SAF) (Shahriar; Khanal, 2022), and the use of Certified Emission Reductions (CERs) in carbon credit market. IATA (2025) reports that, depending on the production pathway, SAF can reduce total life-cycle CO<sub>2</sub> emissions by approximately 80%, compared to conventional jet fuels; in addition, it contains fewer impurities than current technologies. Thus, SAF has been proposed as a direct replacement for conventional aviation fuels. Despite recent cost declines, SAF production remains relatively expensive, constraining its competitiveness vis-à-vis conventional fuels and underscoring the need for fiscal incentives and robust carbon pricing. Some jurisdictions have emerged as leaders in SAF development due to production scale, regulatory mandates, infrastructure investment, or offtake agreements with airlines companies. In Brazil, accumulated experience in production of transport biofuels and abundant biomass endow the country with comparative advantages for SAF production, though intra-national disparities in production conditions must be considered. This study examines the economic potential for SAF production from sugarcane in Brazil's Northeast, emphasizing logistics optimization and scenario analysis that incorporates transport costs. Results indicate that the Northeast—historically marked by pronounced socioeconomic inequality—accounts for a substantial share of national sugarcane output and therefore generates significant bagasse volumes. *Ceteris paribus*, national QAV demand implies a theoretical SAF production potential of approximately 2,791.22 kton year, of which about 25.01% would be located in the Northeast. The spatial concurrence of medium and large sugarcane processing centers (>500 kton year), estimated SAF demand at medium and large airports, and the federal highway network in the region made it possible to identify sites with technical and economic viability for SAF plants. These findings inform policy measures for aviation decarbonization while supporting regional economic development.

## TRAFFIC-RELATED AIR POLLUTION AND EDUCATIONAL OUTCOMES: EVIDENCE FROM BARCELONA'S LOW EMISSION ZONE

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### Abstract

Low Emission Zones (LEZs) have become a central policy instrument to address urban air pollution across European cities. While a growing literature documents their effects on air quality, traffic, and health outcomes, much less is known about their implications for human capital formation. This paper examines whether reductions in traffic-related air pollution induced by Barcelona's Low Emission Zone (ZBE) lead to improvements in students' educational performance.

The analysis relies on administrative data from standardized competency tests administered annually to all students in 6th grade of primary education and 4th grade of lower secondary education in Catalonia. These data are combined with detailed information on the exact geographic location of public and publicly funded private schools. Educational outcomes are linked to high-resolution air pollution estimates from the CALIOPE modelling system, which provides nitrogen dioxide (NO<sub>2</sub>) concentrations at a spatial resolution of 25 meters, as well as coarser measures of NO<sub>2</sub>, PM<sub>2.5</sub>, and PM<sub>10</sub>, together with meteorological inputs. The empirical analysis focuses on the period surrounding the implementation of the ZBE, comparing pre-policy years (2017–2019) to post-policy years (2022–2024), while excluding 2020–2021 to avoid confounding effects related to school closures and learning disruptions during the COVID-19 pandemic.

The empirical strategy exploits the highly localized spatial footprint of the ZBE. Rather than relying on a binary treatment indicator, exposure to the policy is modelled as a continuous function of distance from the ZBE boundary, capturing spatially heterogeneous reductions in traffic-related pollution and allowing for spillover effects. Identification is achieved within a difference-in-differences framework with school fixed effects and year fixed effects, comparing changes in outcomes across schools that experienced larger versus smaller pollution reductions following the implementation and subsequent tightening of the ZBE. To isolate the pollution channel, the analysis further exploits policy-induced variation in NO<sub>2</sub> exposure to estimate the effect of traffic-related air pollution on educational performance.

Preliminary results show substantial spatial heterogeneity in NO<sub>2</sub> exposure across schools and a clear post-policy decline in traffic-related pollution among schools located closer to the ZBE. Reduced-form estimates indicate modest but statistically meaningful improvements in standardized test scores in more exposed schools relative to less exposed ones. Estimates that isolate policy-driven reductions in NO<sub>2</sub> suggest that traffic-related air pollution negatively affects educational performance, consistent with pollution impairing learning through health and cognitive channels. Overall, the findings highlight that urban environmental policies may generate important co-benefits for human capital accumulation and educational outcomes, particularly in dense metropolitan areas where exposure to traffic-related pollution is highly uneven across space.

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## MEASURING SPATIAL ACCESSIBILITY TO HEALTH SERVICES FOR PUBLIC POLICY DESIGN: AN INTEGRATED E2SFCA FRAMEWORK FOR TERRITORIAL PLANNING IN QUITO ECUADOR

[Alex Bajaña, Pablo Sarango](#)

Centro de Investigación Estadística ERGOSTATS, Ecuador

### Abstract

This paper presents an applied methodological framework to measure spatial accessibility to health services, explicitly oriented toward public policy design and territorial planning. Using the city of Quito as the study case we construct an accessibility index based on the Enhanced Two-Step Floating Catchment Area (E2SFCA) method, integrating demographic information, health facility capacity, and the spatial distribution of services with sector-level economic indicators derived from open and administrative data sources.

The framework links accessibility outcomes with the economic dynamics of health service provision, enabling an assessment of whether the spatial configuration of supply aligns with population distribution and potential demand. Results identify persistent territorial disparities, structural mismatches in resource allocation, and priority areas for policy intervention. The study contributes to regional science by operationalizing integrated spatial and economic data into reproducible indicators for evidence-based health planning and strategic investment.

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## PORTS, GANGS, AND HOMICIDES: THE IMPACT OF ORGANIZED CRIME ON VIOLENCE IN ECUADOR

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Escuela Politécnica Nacional, Ecuador

### Abstract

Ecuador was once regarded as an “island of peace,” but since 2019 it has become one of the most violent countries in Latin America. This paper examines two key drivers of this transformation: (i) the impact of organized crime following the 2020 assassination of Jorge Luis Zambrano, leader of Los Choneros, which fragmented Ecuador’s main criminal organization and sparked violent disputes over drug-trafficking routes; and (ii) the geographic role of port and coastal areas in escalating violence. Using provincial data from 2014–2024 and three difference-in-differences models, we compare provinces with strategic trafficking points to the rest of the country. Results reveal a sharp post-assassination rise in homicides, showing that organized-crime violence intensifies around key drug-export corridors.

## FINANCIAL BEHAVIOR AND BUSINESS MATURITY IN ECUADORIAN COMPANIES: INSIGHTS FROM A BEHAVIORAL FINANCE PERSPECTIVE

[Tania Mireya Pazmiño Santana<sup>1</sup>](#), [María Isabel Sánchez Pazmiño<sup>1,2</sup>](#)

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### Abstract

This study analyzes the relationship between the financial behavior of companies, as reflected by their managers, and the business maturity of Ecuadorian companies, from a behavioral finance perspective. The research question is: To what extent does the financial mindset of managers influence the level of business maturity?

A non-experimental, cross-sectional, and correlational design was used, based on data from the 2024 FAEDPYME Survey, administered to 1,066 companies. Twenty-one Likert-type items were selected and grouped into two theoretical dimensions: financial behavior (mindset oriented toward poverty, the middle class, and wealth) and business maturity (vulnerability, permanence, growth, and sustainability). Exploratory and confirmatory factor analyses were applied to validate the dimensions. Spearman's rank correlation coefficient was used to identify the relationship between variables, and multiple linear regression was used to measure the predictive effect.

The results show a significant positive correlation between both dimensions ( $\rho = .608$ ;  $p = .000$ ) and a 40% explanatory effect of business maturity attributable to financial behavior ( $R^2 = .401$ ;  $\beta = .633$ ;  $p = .000$ ). It is concluded that companies whose managers exhibit a wealth-oriented financial mindset achieve higher levels of maturity and sustainability, while those with a poverty-oriented mindset tend to stagnate.

These findings highlight the need to promote financial education and a shift in managerial mindset as strategic factors for improving business growth, competitiveness, and long-term sustainability.

## THE MEGAPROJECTS OF THE MEXICO PLAN AND URBAN SERVICES IN CITIES

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### Abstract

In early 2025, the current Mexican federal administration published the document known as Plan México, presented as a central instrument of industrial policy aimed at boosting the country's economic and productive development. This plan proposes the creation of several strategically located industrial corridors, as well as the development hubs associated with these corridors. These hubs are conceived as territorially defined areas designated for specific industrial uses, determined by the productive vocation, comparative advantages, and economic potential of each region.

The megaprojects promoted by the federal government through Plan México have the potential to generate significant impacts on regional development, as they will not only transform the economic dynamics of the cities or states where they are implemented, but will also influence the productive, logistical, and territorial structure of the country as a whole. In this sense, the magnitude of these projects demands a comprehensive vision that integrates industrial policy with urban and regional planning, particularly in the areas surrounding industrial corridors and development hubs.

One of the main challenges associated with implementing these megaprojects is the need to anticipate and guarantee the adequate provision of basic services for the population that will live in or migrate to these areas. The simultaneous construction of industrial and urban infrastructure demands coordinated planning that considers fundamental aspects such as access to decent housing, sufficient educational services, healthcare, water supply, mobility, and connectivity. The absence or inadequacy of these services could exacerbate existing social problems and generate new forms of territorial vulnerability.

The main objective of this research is to recognize how pre-existing territorial inequalities can predispose and exacerbate the vulnerability of certain regions to the implementation of the megaprojects of Plan Mexico. These inequalities are explained not only by the productive vocation or the industrial and infrastructural capacity of each region, but also by the level access to basic services and urban amenities. In this context, megaprojects should be conceived not only as engines of economic growth, but also as agents of territorial transformation with long-term impacts on the configuration of space.

The proposed methodology involves analyzing the availability and coverage of basic services in urban centers closest to the development hubs outlined in the Mexico Plan. It will also assess the accessibility and road mobility of industrial corridors, considering their connectivity with existing transportation networks. This analysis will identify the megaprojects with the greatest territorial disadvantages and vulnerabilities.

Finally, recognizing these inequalities is fundamental to prioritizing efforts, public resources, in order to reduce social risks, prevent the deepening of regional gaps, and promote a more balanced, inclusive, and sustainable development for the local population.

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## SPATIAL ANALYSIS OF THE MACRO-FINANCIAL DETERMINANTS OF THE COUNTRY RISK OF THE PACIFIC ALLIANCE COUNTRIES AND ECUADOR

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Escuela Politécnica Nacional, Ecuador

### Abstract

The country risk of an emerging economy responds not only to its own macroeconomic conditions, but also to what happens in its neighbors and in the international environment. This research examines the macro-financial determinants associated with country risk in Chile, Colombia, Mexico, Peru, and Ecuador during 2015-2023, using SAR and SDM spatial econometrics models. This approach allows the direct effect of each variable to be separated from the regional transmission effect. Two models with connection matrices representing different regional mechanisms are estimated: one based on maritime transport connectivity and the other on economic cycle synchronization. Diagnostic tests confirm significant spatial dependence under both matrices. The results show that inflation, external debt, trade openness, and labor informality are associated with increases in country risk, while growth is associated with reductions. Inflation stands out with a regional transmission effect greater than its direct effect. Labor informality operates as a macro-financial determinant with significant regional transmission, with particular importance in Ecuador and Peru, where it exceeds 59 percent. The results suggest that country risk responds to macro-financial conditions, the international context, and interdependence with neighboring economies.

## NATIONAL TRANSFER ACCOUNTS AND INTERGENERATIONAL REDISTRIBUTION IN ECUADOR

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### Abstract

Demographic shifts in Ecuador, particularly population aging, are set to produce significant economic and fiscal consequences. Historically, the country benefited from a demographic dividend, as the working-age population grew faster than the dependent population, easing fiscal pressures. However, preliminary estimates suggest that this fiscal demographic window may have closed around 2015 (Rosero-Bixby, Roldán, & Carvajal, 2015). Ecuador is thus entering a phase of negative demographic dividend, with potential fiscal stress from increasing age-related public expenditures. This study seeks to quantify the fiscal effects of these demographic changes. Guided by the framework of generational economics (Lee & Mason, 2011), we would construct updated National Transfer Accounts (NTA) for Ecuador to simulate age-specific impacts on tax revenues and public transfers for education, health, and pensions.

The demographic transition in Ecuador reflects a broader trend among developing countries: declining fertility and mortality rates, leading to an aging population. Between 1970 and 2040, the proportion of individuals under 20 years is projected to fall from 55% to 27%, while the share of those over 60 will double from 9% to 18% (United Nations, 2022). Unlike industrialized nations, Ecuador lacks robust institutional mechanisms to manage this demographic shift (Velín-Fárez, Landy Soria & Palán Buenaño, 2024). These dynamics raise urgent questions about the sustainability of public programs and the intergenerational equity of fiscal systems. The discipline of generational economics offers a framework for analyzing these issues through the study of lifecycle economic flows and the institutions that mediate them (Lee, 1994; Mason et al., 1999).

This study adopts the NTA methodology as outlined by the United Nations (2013), leveraging Ecuador's preliminary estimates from 2006 and 2011 (Rosero-Bixby et al., 2015) and updating them using microdata from household surveys (ECV, ENIGHUR) and macroeconomic data from the Central Bank of Ecuador. The accounts include lifecycle economic profiles—age-specific consumption and labor income—and corresponding lifecycle deficits, which are financed via public transfers, private transfers, and asset-based reallocations. By applying age-specific profiles to demographic projections, we would estimate the fiscal demographic dividend under a status quo scenario in which profiles remain constant.

**EXPECTED CONTRIBUTION:** This research will produce the first internationally validated set of NTAs for Ecuador and provide empirical evidence on the long-term fiscal consequences of demographic change. It aims to inform public debate on sustainable and equitable policies, including reforms to pensions, healthcare, taxation, and long-term care.

## MULTIVARIATE CHARACTERIZATION OF THE TEXTILE SECTOR IN LOJA (ECUADOR) BETWEEN 2019 AND 2023

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### Abstract

Ecuador's economic structure has long been shaped by agricultural activity, yet in recent years new productive forces have started to emerge. One of the most notable is the textile sector, which is gaining ground even in regions traditionally known for farming and tourism, such as the province of Loja. Although Loja has a smaller economic footprint compared to industrial centers like Guayas, its textile activity offers valuable insight into how less industrialized territories attempt to diversify and strengthen their regional economies.

Using official data from the National Institute of Statistics and Census (INEC) for the period 2019–2023, this study analyzes variables related to textile production, sales, exports, sectoral productivity, employment, wages, and the number of establishments at both local and national levels. To synthesize these multiple dimensions and uncover underlying patterns, Principal Component Analysis (PCA) was applied, allowing the identification of the main forces shaping the performance of the textile sector in Loja and its relationship with the broader Ecuadorian context.

Two principal components account for most of the variance. The first captures productive scale and enterprise density, while the second reflects local labor dynamics and internal market behavior. The findings show that Loja consistently lags national averages in employment, wages, and the number of establishments—signaling structural challenges in productivity, technology adoption, and competitiveness.

Yet the results also highlight a promising opportunity: Loja's emerging textile industry has the potential to become a strategic engine for regional development. With targeted investments in technology, skills, and business capacity, the sector could contribute meaningfully to local well-being and more balanced regional development.

In summary, this study does more than characterize a sector: it encourages reflection on the pathways through which provinces such as Loja can advance toward a more sustainable, evidence-based industrial development, leveraging their productive capacities.

## HUMAN TALENT MANAGEMENT STRATEGIES IN ECUADORIAN MSMEs: AN ESG APPROACH FOR SUSTAINABLE AND RESILIENT COMPETITIVENESS

María Isabel Sanchez-Pazmiño<sup>1,2</sup>, [Tania Mireya Pazmiño Santana](#)<sup>2</sup>, Jaime Luis Cadena Echeverría<sup>2</sup>

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### Abstract

This study explores into the benefits of human talent management strategies implemented by Ecuadorian MSMEs and their alignment with optimizing competitiveness, resilience, and ESG sustainability. Based on the Ibero-American MSME Report 2024 from the Ibero-American MSME Observatory and FAEDPYME, the research surveyed 7,762 companies, 1,422 of which are located in Ecuador. Likert-type scales were used to assess job shortages ( $\alpha=0.812$ ), hiring barriers ( $\alpha=0.848$ ), knowledge and skills acquisition ( $\alpha=0.936$ ), actions to meet human capital needs ( $\alpha=0.898$ ), and retention measures ( $\alpha=0.843$ ). Continuing education programs, adopted by 76.8% of MSMEs, can translate into an expected average increase of 12% in labor productivity within the first six months of implementation. This approach contributes to both improving intellectual capital and reducing internal turnover by approximately 8%. This strategy reinforces the social dimension of ESG sustainability by promoting the professional development and well-being of employees, consolidating an inclusive work environment aligned with global social responsibility standards. On the other hand, internal reorganizations (promotions and reassignments), used by 68.7% of companies, optimize the allocation of skills and can reduce adaptation times in new positions by up to 15%, contributing to operational efficiency and strengthening internal governance by institutionalizing performance evaluation and monitoring processes. This fosters an agile organizational structure capable of responding resiliently and quickly to market changes, a critical element for competitiveness in emerging economies. Additionally, external recruitment, practiced by 60.8% of SMEs, expands access to specialized profiles and diversifies talent by approximately 22%, promoting innovation and the transfer of best sectoral practices. Thus, this approach supports the economic dimension of sustainability by boosting competitive advantages and improving technological adaptability, resulting in sustained average revenue growth of up to 9% annually. Similarly, outsourcing specialized services, implemented by 46.1% of the companies studied, reduces operating costs by up to 6% and frees up internal resources for strategic projects. This strengthens administrative efficiency and allows for a clearer focus on high value-added activities. Furthermore, by outsourcing critical functions, SMEs improve their governance practices through formalized contracts and third-party oversight, aligning themselves with ESG criteria of transparency and ethics throughout the value chain. Similarly, academic partnerships, established by 41.0% of companies through agreements with universities, facilitate knowledge transfer and the incorporation of applied research practices, potentially increasing the percentage of internal process innovation by 18%. Therefore, this type of collaboration strengthens the social dimension by linking the productive sector with academia and promotes environmental sustainability by introducing technologies and methodologies that reduce resource consumption and waste generation. In short, these strategies foster the development of a more resilient, competitive, and sustainable MSME ecosystem. The fusion of internal actions such as education, work environment, and professional development programs, combined with external actions such as specialized recruitment, outsourcing, and educational partnerships, generates resilient synergies that increase productivity, enhance sustainability, and strengthen the social responsibility of organizations. Additionally, public support for technical training and the reduction of hiring barriers enhances these benefits, creating a beneficial cycle that boosts innovation, governance, and ESG performance of MSMEs at the national level.

## LONGITUDINAL ANALYSIS OF SUBJECTIVE WELL-BEING AND ITS PSYCHOSOCIAL IMPLICATIONS IN MEXICAN CITIES AND POOR URBAN PERIPHERIES

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### Abstract

Gross domestic product (GDP) is commonly used to measure material well-being. However, income inequality and poverty contradict this metric. In this regard, renowned economists Stiglitz, Sen, and Fitoussi (OECD, 2009) have recognized the need to use the concept of subjective well-being (SWB) as a complementary measure to assess a country's progress. SWB is the result of individuals' self-assessment of their life satisfaction and sense of fulfillment, taking into account their emotional state. So, how can material resources be an effective means of achieving a satisfactory level of both material and subjective well-being? The Mexican Urban Subjective Well-being Model (MBSU), developed by Reyes-Morales et al. (2020; 2024), analyzes the answer to this question.

Psychosocial changes were analyzed longitudinally in Mexico and in informal peripheral settlements (IPS) in the metropolitan area of Oaxaca City (MAOC), the largest urban center in the state of Oaxaca, Mexico. Data from the Self-Reported Wellbeing Survey (BIARE) conducted by the National Institute of Statistics and Geography (INEGI) (2016) in Mexico's main cities, and data obtained from the IPS, were used. During this period, structural changes occurred, such as the replacement of the neoliberal model with the welfare model at the end of 2018 and adjustments in households and local economies to cope with the COVID-19 pandemic. While the effects have already been addressed at the macroeconomic level, the analysis of psychosocial changes is only just beginning.

The MUSWBM is based on the OECD-INEGI BS proposal and has been tested with good results (Reyes-Morales et al., 2020; 2024). The effects of MB are primarily reflected in a significant poverty reduction and COVID-19 cases through psychosocial factors. The results indicate that MUSWBM in Mexico is a function of sense of accomplishment (SF), while life satisfaction (LS) and affective balance (AB) are explanatory variables. Furthermore, religion in the country diverged from SF, constituting an opposing concept. In healthcare institutions (HCIs), religion exhibited this same behavior in 2017. AB, representing emotional balance, was achieved in 2023 in the country and did not affect SF in HCIs. MB can be identified as the main factor that restored emotional balance, along with household reorganization strategies in HCIs.

**BALANCE OF HUMAN CAPITAL EXPORTING COUNTRIES:  
REMITTANCES AND WELFARE**

**Aldrin Villalobos, Rafael Garduño**

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**Abstract**

Numerous studies agree on the positive effects of immigration on the receiving country. This study explores the resulting equilibrium in terms of well-being for those countries that export human capital. Using remittance data, it examines the mechanism by which the domestic economy adapts to the loss of human talent.

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## POLICY SHIFT OR POLITICAL PUNISHMENT? DISENTANGLING SECTORAL TRENDS FROM CLIENTELISTIC TARGETING IN CHILEAN FOUNDATION FUNDING (2008-2024)

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### Abstract

Distinguishing between legitimate policy reorientations and clientelistic resource allocation is the central identification challenge in the study of distributive politics. When a new government alters funding streams to non-profit foundations, does this reflect a broad shift in sectoral priorities (e.g., pivoting from culture to housing) or the targeted rewarding of political allies? This paper proposes a robust identification strategy to isolate "pork barrel" transfers by disentangling legitimate policy shocks from partisan favoritism.

Using a comprehensive dataset of government transfers in Chile (2008-2024), we exploit four executive transitions characterized by sharp ideological reversals (Left-Right alternations). We tackle the identification problem by constructing sector-specific counterfactuals. We classify foundations into functional clusters (e.g., education, health, urban development) and estimate the baseline funding trend for each sector across government changes. Our core hypothesis posits that genuine civil society organizations should follow the "parallel trend" of their functional peers, adjusting to new aggregate policy priorities.

In contrast, we identify "pork barrel vehicles" as those entities exhibiting statistically significant deviations from their sector's mean trend immediately following a turnover in power. Specifically, we look for foundations that defy the sectoral gravity—surging when their sector is being cut, or collapsing when their sector is expanding—correlated with the political alignment of the municipalities they serve.

By applying a Difference-in-Differences (DiD) framework with sector-by-year fixed effects, we isolate the "political premium" from the "policy trend." This allows us to filter out funding changes driven by legitimate government agendas and pinpoint the specific subset of foundations used as discretionary tools for territorial influence. The findings offer a nuanced methodology for auditing the third sector, revealing that political manipulation often hides behind the veil of broad policy adjustments.

## DIGITAL TRANSFORMATION WITHOUT INCLUSION? DIGITAL CAPABILITIES AND TERRITORIAL DYNAMICS OF REGIONAL DEVELOPMENT IN ECUADOR

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### Abstract

Digital transformation is widely promoted as a key driver of productivity, competitiveness, and regional development. However, unequal access to digital skills and capabilities can significantly limit its territorial impact and reproduce existing social and spatial inequalities. This paper analyzes how digital inclusion conditions the capacity of territories to benefit from digital transformation processes, arguing that digitalization without inclusive capability development leads to uneven and fragile regional development outcomes.

The study is based on the long-term experience of the project Digital Inclusion: Democratizing Access to ICT for Priority Groups, implemented by the Escuela Politécnica Nacional in Ecuador since 2014 across urban and rural territories. The project targets social groups facing structural barriers to digital participation, including adults over 35, older adults, persons with disabilities, public-sector teachers, migrants, and communities in conditions of territorial exclusion. Its methodological approach combines service-learning, adaptive digital skills training, and territorial accompaniment by university students, emphasizing practical competencies related to mobile technologies, online services, digital financial tools, and secure interaction with public platforms.

The empirical analysis draws on data collected through standardized pre- and post-intervention surveys applied across 22 editions of the project, covering more than 1,200 participants in diverse territorial contexts. These surveys assess access to digital devices, frequency and purpose of internet use, perceived digital autonomy, and the ability to engage in productive, educational, and institutional digital activities. The results reveal persistent territorial and social disparities in digital capability development, strongly associated with age, educational attainment, income level, and urban-rural location.

Findings indicate that while basic access to connectivity has improved, significant gaps remain in the effective and strategic use of digital technologies for employment, entrepreneurship, education, and interaction with public institutions. From a regional development perspective, this limited appropriation of digital tools constrains productivity gains and weakens the potential of digital transformation to foster balanced territorial dynamics. The study highlights that territories with lower levels of digital skills accumulation are less able to integrate into emerging digital economic and institutional processes.

The paper contributes to regional science debates by linking digital transformation, digital inclusion, and territorial dynamics, emphasizing that productivity and competitiveness gains from digitalization depend on inclusive and context-sensitive digital capability development. It concludes that universities can play a strategic role as territorial actors, supporting digital transformation processes through socially embedded interventions that strengthen human capital and promote more resilient and equitable regional development pathways.

## MICROECONOMIC AND SOCIAL TRANSFORMATIONS IN POOR PERIPHERAL SETTLEMENTS IN THE METROPOLITAN AREA OF OAXACA CITY, MEXICO

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### Abstract

Major economic, political, and social transformations are taking place around the world, which began to intensify with the war in Ukraine and have accelerated with trade wars and the COVID-19 pandemic. This context largely explains the economic crisis affecting industrialized countries and, consequently, most countries that export raw materials. Mexico is responding by strengthening social and wage policies to reduce income inequality and poverty, with development projects and trade agreements.

But what is happening to urbanites in informal settlements on the outskirts of cities? These areas are home to poor urbanites who have endured exclusion from housing policy and social security because they belong to the informal sector of the economy, low wages during the neoliberal period, and the effects of the COVID-19 pandemic. This analysis covers the period from the end of the neoliberal era to the early post-pandemic years, using the household economy model (HEM) (Reyes-Morales & Gijón Cruz, 2011; Reyes-Morales et al., 2015). This model was fed with data from 2016 and 2022 from a probabilistic survey conducted in informal settlements in the metropolitan area of Oaxaca City (MAOC).

The household economies of these settlements went from being heavily dependent on housing indicators, sociodemographic characteristics, environmental diseases, occupations, and, to a lesser extent, savings and government transfers in 2016. In 2022, the household economy became monetized because wages and net income from family businesses had a significant weight in the HEM equation. The local economy strengthened to compete with the rest of the MAOC and meet local demand for goods and services; it also generated most of the local employment. This was due, in part, to wage increases and transfers received through social programs; and, in part, to the lockdown during the COVID-19 pandemic, which strengthened local trade and construction. At the same time, poverty was reduced and the weight of spending on education increased. Urbanites on the periphery improved their material well-being and access to modern communications, but precarious housing still predominates.

## WILL THE GREEN TRANSITION DEEPEN REGIONAL DIVIDES? EVIDENCE FROM MOBILITY INTENTIONS ACROSS EUROPEAN REGIONS

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### Abstract

The transition toward a climate-neutral economy represents a profound structural transformation with highly uneven spatial impacts. While the European Green Deal emphasizes a "Just Transition," there is growing concern in economic geography that the uneven distribution of green assets versus decarbonization risks may reinforce existing territorial inequalities. Theoretical frameworks suggest that "left-behind" regions—characterized by high transition vulnerability and low opportunity—may face accelerated brain drain, while green leaders attract human capital. However, empirical evidence linking these structural green metrics to individual mobility decisions remains scarce.

This paper empirically investigates whether the green transition is reshaping human mobility patterns within the European Union and whether these dynamics threaten to amplify regional convergence or divergence. We utilize novel microdata from the MOBI-TWIN survey (N=9,352), fielded in late 2023 across the EU. To overcome the distortions in realized migration caused by the COVID-19 pandemic, the analysis focuses on migration intentions across different time horizons (short-run vs. long-run). We link these individual aspirations to a set of NUTS2 regional indicators that disentangle three distinct dimensions of the transition: Green Transition Performance (RGTP), Green Transition Opportunities (RGTO), and Green Transition Vulnerability (RGTV).

Using multilevel logit models with random intercepts for regions, we test the "push-pull" hypothesis of the green transition. The results indicate that mobility intentions are driven primarily by destination-side "pull" factors rather than origin-side "push" factors. Specifically, regions rich in green opportunities (RGTO)—characterized by strong innovation capacities and institutional assets—exert a robust positive effect on migration intentions. Crucially, this association strengthens as the time horizon expands, suggesting that green opportunities drive structural, long-term spatial sorting rather than temporary adjustments.

Furthermore, the paper explores the mechanism of individual heterogeneity. We find that respondents with stronger pro-environmental preferences are not only more mobile in general but are specifically more sensitive to regional green profiles in the long run: they are more attracted to high-performance regions and more averse to vulnerable destinations.

From a policy perspective, these findings suggest that the green transition is not spatially neutral and risks deepening the demographic divide between opportunity-rich hubs and vulnerable territories. Consequently, Cohesion Policy must go beyond merely compensating for transition risks (vulnerability); it must actively foster place-based capabilities and opportunities in lagging regions to prevent a structural drain of human capital.

## CLIMATE CHANGE, EMISSIONS, AND NATURAL DISASTERS: AN EMPIRICAL ANALYSIS OF CLIMATE JUSTICE ACROSS COUNTRIES

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### Abstract

The Sixth assessment cycle of the Intergovernmental Panel on Climate Change provides unequivocal evidence that climate change has been intensifying at an accelerated pace, both in scale and magnitude, with growing impacts on economic, social, and environmental systems (IPCC, 2022). Consistent with this diagnosis, data from the Emergency Events Database, maintained by the Centre for Research on the Epidemiology of Disasters at the University of Louvain, indicate a marked increase in both the frequency and severity of natural disasters (UCLouvain, 2023). The concept of climate justice occupies a central analytical role by highlighting the historical and contemporary asymmetries among countries regarding responsibility for greenhouse gas emissions and exposure to the adverse impacts of global warming (Shue, 1993; Page, 2008; Gardiner, 2011). Developed countries, whose growth trajectories since the Industrial Revolution have been closely associated with energy-intensive industrialization and high consumption patterns, account for the largest share of global carbon dioxide emissions. In contrast, developing countries, characterized by lower levels of industrialization, contribute relatively less to global warming but exhibit greater climate vulnerability due to structural constraints related to income, inequality, rurality, and institutional capacity (Veyret, 2003; Mata-Lima et al., 2013). The core problem addressed in this study is to verify the extent to which structural differences among countries, expressed through income levels, productive structure, carbon intensity, and adaptive capacity, simultaneously explain responsibility for CO<sub>2</sub> emissions and human vulnerability to the impacts of natural disasters. The objective is to analyze, in an integrated manner, the interactions among carbon dioxide emissions, productive structure, adaptive capacity (vulnerability), within the climate justice framework. The study is grounded in three central hypotheses: (i) higher-income countries with a larger industrial share exhibit higher levels of CO<sub>2</sub> emissions but lower human vulnerability to climate-related disasters; (ii) developing countries, although lower emitters, display greater exposure and sensitivity to the impacts of extreme climate events; and (iii) these asymmetries are reinforced by dynamic feedback mechanisms linking productive structure, socioeconomic development, and climate vulnerability. Methodologically, the study employs panel data for a broad set of countries over the period 1970–2022, combining socioeconomic and environmental information from consolidated international databases. Initially, correlation analyses are conducted to identify structural patterns among CO<sub>2</sub> emissions, poverty, productive structure, inequality, and natural disaster indicators. Subsequently, a Panel Vector Autoregression (PVAR) model is estimated, in which all variables are treated as endogenous, allowing the capture of dynamic interdependencies over time, following the framework proposed by Holtz-Eakin, Newey, and Rosen (1988) and Abrigo and Love (2016). The empirical results support the proposed hypotheses. A negative and statistically significant correlation is observed between poverty and CO<sub>2</sub> emissions, as well as between emissions and the share of agriculture, forestry, and fisheries in GDP. By contrast, emissions are positively correlated with GDP per capita, the industrial share, and fossil energy consumption. Furthermore, the number of people affected by natural disasters on a per capita basis shows a negative correlation with emissions and income levels, and a positive correlation with poverty, rurality, and inequality, with variations across income groups and regions.

## HUMAN CAPITAL AND SUSTAINABLE REGIONAL DEVELOPMENT: EVIDENCE FROM COLLEGE ENROLLMENT PATTERNS IN WEST VIRGINIA

[Saman Herath Bandara](#)

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### Abstract

Human capital development is a fundamental driver of sustainable regional development, influencing economic growth, labor market resilience, and long-term community wellbeing. Higher education plays a particularly important role in strengthening regional competitiveness by enhancing workforce skills, innovation capacity, and income potential. However, access to higher education is not evenly distributed across regions, often reinforcing existing socioeconomic and spatial inequalities. This study examines regional patterns of college enrollment in West Virginia to better understand how economic and educational factors shape human capital formation and sustainable regional development outcomes.

The analysis uses secondary county-level data covering the period from 2001 to 2024, aggregated into five regions of West Virginia: Metro Valley, Mid-Ohio Valley, Mountain Lakes, Greenbrier Valley, and Potomac Highlands. These regions differ substantially in terms of population density, economic structure, and educational infrastructure, making them well suited for regional comparison. College enrollment is used as a proxy for human capital accumulation and serves as the primary outcome variable. Key explanatory variables include the number of high school graduates, average household income, number of high schools, employment in education services, and the share of the adult population with a college degree. Together, these variables capture both supply- and demand-side influences on post-secondary participation.

To account for both time dynamics and unobserved regional characteristics, the study employs panel data regression techniques. This methodological approach allows for a more robust assessment of how changes in economic conditions and educational capacity over time influence college-going behavior across regions. Preliminary results indicate persistent regional disparities in enrollment outcomes. Metro Valley and Mid-Ohio Valley consistently demonstrate higher college enrollment rates, reflecting stronger economic conditions, greater educational capacity, and higher concentrations of education-related employment. In contrast, regions such as Mountain Lakes and Potomac Highlands exhibit lower enrollment levels, suggesting structural barriers related to income constraints, limited educational infrastructure, and geographic isolation.

These findings highlight the importance of regionally targeted policies aimed at strengthening human capital development as a pathway toward sustainable and inclusive regional growth. Investments in educational infrastructure, improved access to secondary and postsecondary institutions, and policies that support household economic stability may help reduce regional disparities in college participation. By linking education outcomes to broader regional development and wellbeing objectives, this study contributes to the regional science literature and provides empirical evidence to inform policymakers, educators, and planners seeking to promote sustainable development in Appalachia and other regions facing similar educational and economic challenges.

## TOURISM AND AGRITOURISM AS CATALYSTS FOR REGIONAL ECONOMIC DEVELOPMENT IN WEST VIRGINIA: EVIDENCE FROM RESIDENT PERCEPTIONS

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### Abstract

West Virginia is actively seeking strategies to stimulate economic growth, with tourism and agritourism emerging as sectors with significant potential to support regional development. The state's natural landscapes, cultural heritage, and agricultural resources provide opportunities to attract visitors, promote local entrepreneurship, and generate employment. This study examines residents' perceptions of tourism and agritourism and identifies socio-economic factors influencing participation in these activities across the state.

Data were collected through a pre-tested survey of over 200 residents and stakeholders, including farmers, agribusiness operators, educators, and community members. The survey captured participation in tourism and agritourism over the past 12 months, attitudes toward local attractions, marketing practices, technology use, collaboration, and perceptions of economic benefits to local communities. Likert-scale questions were used to measure the intensity of engagement and overall sentiment regarding tourism's role in supporting rural development, local businesses, and economic growth. Descriptive analysis showed that most respondents hold positive views of West Virginia's tourism offerings, while highlighting the need for enhanced financial and policy support to improve visibility, accessibility, and quality of initiatives.

To identify factors driving participation, a logit regression model was applied. The dependent variable measured whether respondents had engaged in tourism activities in the past 12 months. Independent variables included age, gender, household income, and satisfaction with current tourism offerings. Results indicate that younger residents and those expressing higher satisfaction with existing tourism initiatives are more likely to participate, while household income and gender also influence engagement patterns in nuanced ways. These findings highlight the role of demographic and socio-economic factors in shaping tourism and agritourism participation and suggest which groups may benefit most from targeted interventions.

This study contributes to regional science and rural development literature by providing empirical evidence on tourism and agritourism as drivers of economic growth in a predominantly rural state. Findings suggest that programs and policies focusing on financial support, training, marketing, and collaborative networks can enhance participation, strengthen local businesses, and generate broader economic benefits. Furthermore, the research underscores the importance of integrating tourism and agritourism into regional development strategies to leverage West Virginia's natural and agricultural assets sustainably.

By combining resident perceptions with quantitative analysis, this study offers actionable insights for policymakers, development agencies, and community organizations, providing practical pathways to foster sustainable economic development through tourism and agritourism in rural Appalachia.

## THE ROLE OF WASTEWATER INFRASTRUCTURE IN ENVIRONMENTAL QUALITY AND SUSTAINABILITY IN RURAL AREAS

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### Abstract

The development of wastewater infrastructure plays a fundamental role in improving environmental quality and supporting sustainable development in rural areas, where inadequate sanitation remains a major environmental and public health challenge. In rural settlements, the absence or low coverage of sewerage networks often results in diffuse pollution of soil and shallow groundwater, primarily through leaching from uninsulated septic tanks and untreated wastewater disposal. The aim of this research is to assess groundwater quality changes associated with the development of sewerage infrastructure with a particular focus on rural areas in Hungary. In Hungary, the EU Urban Waste Water Treatment Directive (UWWTD) has served as the primary regulatory framework for sewerage network expansion and wastewater treatment modernization, leading to substantial infrastructure development over the past decade, however, significant spatial disparities in coverage persist. The secondary utility gap decreased substantially over time, from 41.1% in 2000 to 22.65% in 2010, reaching 11.4% by 2024. In counties characterized by small settlements, this proportion remains above 20%. The investigated settlement, Báránd, is located in Hajdú-Bihar County within the Nagy-Sárrét microregion, an area designated as nitrate-sensitive. Consequently, this agglomeration is subject to enhanced nutrient management measures in accordance with Directive 91/676/EEC (Nitrates Directive). The sewerage network in the settlement was completed between 2014 and 2015, after which the majority of households were connected to the system. Water quality investigations have been conducted continuously since 2011 and are still ongoing; therefore, the impact of sewerage implementation on water quality can be assessed using long-term monitoring data by comparison with pre-implementation reference periods. The monitoring network comprises 40 groundwater wells, where water samples are analyzed for the principal pollutants associated with domestic wastewater. Results demonstrate that prior to sewer network construction, the shallow groundwater was severely contaminated and characterized by extremely high nutrient concentrations, particularly nitrate (NO<sub>3</sub>-), ammonium (NH<sub>4</sub>+), and phosphate (PO<sub>4</sub>-), which frequently exceeded national and international threshold values. In several monitoring wells, nitrate concentrations exceeded 500 mg/L, indicating severe contamination associated with wastewater infiltration. Spatial patterns revealed localized contamination hotspots linked to household-level wastewater disposal practices. Following the establishment of sewerage infrastructure and the connection of the majority of households to the sewer network, a clear improvement in groundwater quality was observed. Average nitrate concentrations declined significantly over the monitoring period, and the proportion of sampling points exceeding the 50 mg/L nitrate limit decreased significantly. Statistical analyses confirmed a strong relationship between increased sewerage coverage and reduced groundwater contamination. These findings provide evidence that sewer network expansion effectively reduce pollution. However, the area remains contaminated, showing that groundwater quality improvement can only be expected over several decades. Beyond water quality improvements, the results highlight the broader role of wastewater infrastructure in enhancing environmental quality and rural sustainability. Reduced nutrient loading contributes to the protection of soil and aquatic ecosystems, while improved groundwater quality supports public health. Addressing remaining infrastructure gaps, is essential for achieving sustainable water resource management, safeguarding environmental quality, and supporting the long-term resilience and wellbeing of rural communities.

## AGGLOMERATION AND PRODUCTIVITY IN THE SERVICE SECTOR: UNRAVELING SPATIAL SPILLOVERS IN ECUADORIAN REGIONS

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### Abstract

Spatial concentration of economic activity plays a central role in regional development processes and has long been associated with productivity gains through agglomeration economies. However, the effects of agglomeration are not spatially neutral and may generate uneven outcomes across territories, particularly in developing economies dominated by low- and medium-productivity service sectors. This paper examines the relationship between agglomeration and labor productivity in the service sector from a spatial perspective, with a particular focus on the existence and direction of interregional spillover effects. Using a balanced panel dataset of 221 cantons in Ecuador over the period 2012–2020, the study analyzes whether service-sector agglomeration enhances productivity locally and how it affects neighboring territories. Ecuador provides a relevant case study due to its rapid urbanization, strong concentration of services in a few metropolitan areas, and persistent territorial inequalities. As services account for more than half of national employment and value added, productivity dynamics in this sector are closely linked to regional wellbeing and sustainable development. Labor productivity is measured as value added per worker, while agglomeration is primarily captured through a location quotient of the service sector. Additional measures of concentration are employed to assess robustness. The empirical strategy combines generalized least squares panel estimations with spatial econometric techniques, notably a Spatial Durbin Model (SDM), which allows for the identification of both direct (within-canton) and indirect (spillover) effects. To address potential endogeneity between productivity and agglomeration, the analysis further applies a spatial generalized two-stage least squares estimator, using exogenous exposure to natural hazards as an external instrument. The results show that agglomeration is positively associated with service-sector labor productivity at the local level, indicating that specialization and concentration generate productivity gains within cantons. However, once spatial interactions are explicitly modeled, a contrasting pattern emerges: agglomeration produces statistically significant negative spillover effects on neighboring cantons. These findings suggest the presence of interregional competition mechanisms, whereby core areas attract skilled labor, firms, and investment at the expense of surrounding territories, weakening their productive performance. As a result, the overall effect of agglomeration at the regional system level is close to neutral, reflecting a balance between local benefits and spatial losses. From a regional science perspective, these findings highlight the importance of incorporating spatial dependence into productivity analyses, as ignoring spillovers may lead to incomplete or misleading conclusions. From a policy standpoint, the results challenge the assumption that promoting agglomeration in large urban centers automatically leads to inclusive and sustainable regional development. Instead, they point to the need for place-based and polycentric development strategies that strengthen productive capacities in peripheral regions, foster regional linkages, and reduce excessive territorial polarization. By providing subnational evidence from a developing-country context, this study contributes to broader debates on wellbeing, sustainability, and territorial cohesion. It underscores that productivity-enhancing strategies in the service sector must be spatially informed in order to support more balanced regional development and improve long-term socioeconomic wellbeing.

## THE LONG-TERM IMPACT OF BRAZIL'S BOLSA FAMÍLIA PROGRAM ON EDUCATION AND LABOR MARKET OUTCOMES

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### Abstract

This paper investigates the long-term effects of exposure to the Bolsa Família Program (BFP), Brazil's flagship Conditional Cash Transfer (CCT), on human capital accumulation and labor market outcomes. Using linked administrative data on over 7 million individuals born between 1996 and 1998, we estimate the impacts of childhood exposure to BFP on schooling attainment by age 18, formal labor market (FLM) participation, and formal earnings observed up to age 21. Identification relies on variation in program rollout and eligibility across municipalities, and is reinforced by robustness checks and an instrumental variable strategy based on municipality-level registration intensity. Results show that maximum exposure to BFP increases the probability of completing at least middle school by 25 percentage points and the probability of FLM participation by 4 percentage points. Earnings effects are more sensitive to model specification and timing, with point estimates ranging from slightly negative to modestly positive. These findings suggest that BFP improves long-term human capital outcomes and facilitates integration into higher-productivity labor market segments.

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## TRAPPED OR MOVING UP? THE DYNAMICS OF POVERTY IN THE UNITED STATES

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### Abstract

This study examines the dynamics of poverty in America, distinguishing between persistent and temporary poverty through an asset-based approach. Traditional poverty measures often fail to capture long-term poverty persistence, overlooking key structural factors determining economic mobility. We argue that some individuals experience temporary poverty due to short-term economic shocks, while others remain trapped in poverty due to insufficient capital endowments. By incorporating asset-based poverty measurement, we can better differentiate between these groups and identify targeted policy interventions. Capital endowments play a crucial role in shaping individuals' economic positions and their ability to escape poverty. Those in persistent poverty lack the necessary assets to achieve sustained financial stability, whereas those in temporary poverty possess sufficient assets to recover from economic setbacks. This distinction is essential for policy design, as persistent poverty requires structural interventions that help individuals surpass critical asset thresholds, while temporary poverty can be addressed with short-term income support policies. The research is conducted in three phases. First, we construct an asset index to measure structural and stochastic poverty levels. Second, we analyze household characteristics to distinguish between structural and temporary poverty. Third, we investigate asset thresholds required for households to transition out of poverty, using regression models and poverty transition matrices. This study offers a more precise framework for identifying long-term poverty risks. The findings will help design more effective policies, ensuring that interventions align with the distinct needs of structurally and temporarily poor households.

## DOES THE USE OF CONTRACEPTIVE METHODS REDUCE WOMEN'S SUBJECTIVE WELL-BEING? TERRITORIAL INEQUALITIES AND PUBLIC POLICY IMPLICATIONS IN ECUADOR

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### Abstract

The design of public policies in sexual and reproductive health requires empirical evidence that assesses not only the benefits of contraceptive methods, but also their potential unintended effects on women's well-being, particularly in contexts characterized by pronounced territorial inequalities in access to health services and social resources. In the Ecuadorian context, the relationship between contraceptive use and subjective well-being has received limited attention from a quantitative, policy-oriented, and territorially sensitive perspective.

This study examines the effect of contraceptive use on subjective well-being among women of reproductive age in Ecuador, taking into account underlying territorial disparities that shape women's health experiences. The analysis uses data from 52,409 women aged 10 to 49 years drawn from the 2018 Ecuadorian National Health and Nutrition Survey (ENSANUT). Contraceptive use is defined as the treatment variable (yes/no), while subjective well-being is operationalized based on women's self-reported health status (poor, fair, good). To analyze the relationship between contraceptive use and subjective well-being, the study applies Propensity Score Matching techniques, estimating the average treatment effect on treated women. The matching procedure controls for age, employment status, educational attainment, number of children, body mass index, ethnicity, marital status, and selected territorial characteristics, and verifies covariate balance and common support in order to reduce selection bias associated with observable characteristics.

The results indicate that contraceptive use is associated with a statistically significant reduction in subjective well-being among comparable women. This adverse effect persists after accounting for individual and contextual factors, suggesting that the relationship cannot be explained solely by personal characteristics and may be influenced by territorial conditions such as unequal access to quality sexual and reproductive health services and follow-up care.

From a public policy perspective, the findings highlight the importance of incorporating a territorial lens into the design of family planning policies in Ecuador. The results challenge approaches that focus exclusively on expanding access to contraceptive methods and underscore the need for more comprehensive sexual and reproductive health strategies that address territorial inequalities. In particular, policies should integrate systematic components of information provision, follow-up, and psychosocial support tailored to local contexts in order to improve women's subjective well-being and enhance the overall quality and effectiveness of public interventions in this field.

## ECOLOGICAL AMENITIES AS BRIDGING MECHANISMS: HOW THE "PARK CITY" RESHAPES INNOVATION NETWORKS AND TALENT MOBILITY IN CHENGDU

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### Abstract

The emergence of a regional innovation center is increasingly determined by its structural position within global knowledge networks rather than the mere accumulation of localized resources. Chengdu's "Park City" paradigm represents a pioneering spatial intervention that integrates ecological amenities into the urban fabric, yet the generative mechanism through which this restructuring facilitates the formation of a central innovation hub remains underexplored. This study focuses strictly on the formation mechanism of Chengdu as an innovation network center, investigating how the "Park City" construction serves as a critical "bridging infrastructure" that densifies local networks and elevates the city's centrality.

Drawing on network science and evolutionary economic geography, we propose a coevolutionary framework where ecological scenes—such as integrated greenways and open creative interfaces—act as "bridging mechanisms" that reduce social transaction costs and facilitate the crossing of "structural holes." To test these hypotheses, we conduct a longitudinal analysis of Chengdu (2018–2024) utilizing multi-source big data, including co-patent networks and talent mobility trajectories. By applying Exponential Random Graph Models (ERGM), we quantify the impact of "Park City" spatial nodes on the probability of tie formation, specifically testing the correlation between ecological proximity and the centralization of innovation actors.

Our findings reveal that "Park City" amenities function as catalysts for network bridging, providing the physical foundation for a "preferential attachment" process. This increased internal connectivity reinforces Chengdu's status as a core node, effectively mitigating network lock-in and fostering a self-organizing innovation center through enhanced knowledge diffusion. Ultimately, this research contributes to the understanding of regional innovation systems by demonstrating that the "Park City" is not merely an urban beautification project but a strategic spatial instrument that physically engineers the network connectivity required for a global innovation center.

## GOVERNANCE AND WELL-BEING IN THE MUNICIPALITIES OF THE INTEROCEANIC CORRIDOR OF THE ISTMO OF TEHUANTEPEC

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### Abstract

Governance is a term that refers to the direction carried out by actors who, by regularly forming part of the State structure, and who are involved in the process of designing, executing and evaluating matters of public interest. It is defined as the action of governing using associative and collaborative forms between governments, and between governments and citizens. The purpose of governance is to achieve lasting positive results, sustainable with the environment, socially balanced, and respecting the relationship between the State, society and the market. In this context, the entities that belong to the public administration are recognized agents, through which the State directs the affairs of society, so that, through adequate management and planning of the territory, positive levels of prosperity are achieved, both for the territory, as well as for its inhabitants. Although it is a term that can be considered subjective, well-being is possible to measure by taking it as the level of personal satisfaction of basic benefits and services, as well as work and cultural issues.

Currently, in Mexico several megaprojects are being developed that aim to trigger economic growth and combat social poverty. Between these is the Interoceanic Corridor of the Isthmus of Tehuantepec, a multimodal logistics platform that connects the Pacific Ocean and the Gulf of Mexico, crossing southeastern Mexican states such as Oaxaca, Veracruz, Tabasco and Chiapas. This project integrates the modernization of a railway network, ports, tracks, regions, and the creation of industrial development hubs to create a more efficient merchandise transport route between Asia and North America, Europe and the Caribbean.

For all the above, the present investigation has the objective of analyzing how the government has affected the well-being of the main municipalities in the region of the Isthmus of Tehuantepec, Oaxaca, within the period 2000-2020. It uses a quantitative methodology, designed with indices structured based on documented information from various government institutions. Firstly, it carries out a strategic analysis of the study municipalities and, secondly, a correlation analysis.

Hypotheses are proposed. The first one establishes that the weaknesses and threats in the municipalities analyzed are more significant than their opportunities and strengths. The second support that government has a positive and significant effect on the well-being of studio municipalities. For its verification, descriptive statistical and regression methods are applied; Furthermore, the dimensions that conform to the indices were restructured to proceed with the FODA analysis. Finally, in general, the results state that there is a high positive association between the analyzed variables; as well as the weaknesses and threats that have a greater presence in studio municipalities. The information is of great importance for decision-making in matters of ordering and territorial planning, to promote an adequate development process, as well as improving the levels of well-being in the region of the Isthmus of Tehuantepec.

## WHO BURDENS THE WELFARE STATE? MIGRATION AND AGEING IN HEALTHCARE, HOUSING, AND EDUCATION DEMAND

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### Abstract

Political discourse attributes pressure on European welfare systems to foreign nationals, yet projections of service demand rarely examine citizenship. This gap matters because citizenship is the category around which social acceptance and perceived entitlement to public goods are organised, and the explicit target of exclusionary policy. Here, we develop a structural demographic model projecting healthcare, education, and housing demand in Austria through 2050, disaggregated by citizenship status and region across an ensemble of migration scenarios. By convolving EUROPOP population projections adapted to distinguish nationality at the NUTS-3 level with cohort-specific per-capita utilisation rates, we decompose total demand into contributions from Austrian and foreign populations and isolate the relative roles of population volume, ageing, and behavioural change

We find a sectoral decoupling with distinct regional signatures. In healthcare, native ageing dominates demand growth, contributing 4.6 times more than migration, with total demand varying by only 3.6 percentage points across scenarios. The spatial correlation between migrant settlement patterns and rising healthcare demand is near zero: the most acute pressures materialise in rural, low-migration regions rather than in urban centres targeted by political rhetoric. In housing, migration accounts for the sector's entire net growth, with demand varying by more than 40 percentage points across scenarios and concentrated in metropolitan hubs. In education, aggregate demand contracts nationally regardless of migration assumptions, yet spatial concentration rises even as the sensitivity of demand to new arrivals collapses over time, indicating that future educational needs are increasingly attributable to births within the settled foreign population rather than cross-border flows. The capital, Vienna, crosses a majority-foreign student threshold by 2050 and is the only region where the direction of demand is scenario-dependent; in all other regions, contraction is structurally inevitable.

These findings challenge monolithic service "overburden" narratives and show that the geography of service demand follows sectorally distinct logics. Restricting migration may ease housing pressure in urban centres, but cannot address structurally inevitable healthcare costs concentrated in ageing rural regions, while potentially deepening education contraction.

## WATER REUSE AND REGIONAL RESILIENCE UNDER CLIMATE STRESS: EVIDENCE FROM PORTUGAL

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### Abstract

Water scarcity has intensified across Southern Europe due to climate change, recurrent droughts, and growing pressures from agriculture, tourism, and urban demands. In this context, water reuse has emerged as a key pillar of the circular economy, supporting resource efficiency, climate adaptation, and regional resilience. Despite a relatively advanced regulatory framework aligned with EU Regulation (EU) 2020/741, effective implementation remains limited in several countries, including Portugal. This paper examines the current state of water reuse in Portugal from a descriptive and governance perspective, focusing on national performance and regional challenges. Drawing on official data from national (ERSAR/RASARP) and European sources, the study employs descriptive statistical analysis, territorial benchmarking, and proxy indicators (e.g., population density, GDP per capita) to assess treated wastewater volumes, licensed reuse capacity, and effective reuse rates. A SWOT analysis synthesizes structural strengths, weaknesses, opportunities, and threats at the regional level. Results indicate that water reuse remains marginal, with an effective national rate of approximately 1.2% of total treated wastewater (based on 2022 baseline and confirmed through 2024–2025 assessments), heavily reliant on centralized systems and non-agricultural applications (e.g., golf courses, public gardens, urban services). Regional asymmetries are pronounced: higher potential exists in water-stressed southern regions (Algarve, Alentejo) for irrigation, yet implementation lags due to infrastructural dispersion, governance fragmentation, and misalignment between stress levels and project distribution. The findings reveal a substantial gap between regulatory ambition and practical uptake, driven by governance, economic, and social barriers. The paper discusses implications for regional development, highlighting water reuse's role in bolstering agricultural resilience, urban water security, and climate adaptation. Policy recommendations emphasize territorially differentiated strategies, improved multi-level coordination, economic incentives, strategic infrastructure investments (e.g., WWTP relocation), and public acceptance measures to unlock the circular economy potential of water reuse in Portugal.

## HOW DIGITALIZATION DRIVES SUSTAINABLE DEVELOPMENT: A STRUCTURAL MODEL OF INNOVATION AND THE SDGS

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### Abstract

Digitalization has become a fundamental enabler of innovation, providing the technological infrastructure, connectivity, and capabilities necessary for knowledge creation and diffusion. At the same time, innovation plays a pivotal role in advancing sustainable development by translating digital capacities into economic, social, and institutional progress aligned with the Sustainable Development Goals. Despite widespread recognition of the strategic importance of digital transformation and innovation, empirical evidence explaining how digitalization-driven innovation contributes to sustainable development across countries remains limited.

This study examines the interrelationships between digitalization, innovation, and sustainable development using cross-national data. Digitalization is conceptualized as a foundational condition for technological transformation, captured through indicators of universal access and meaningful connectivity. Innovation is framed as a multidimensional construct encompassing enabling environments and realized outputs in knowledge and technological advancement. Sustainable development is assessed through selected SDGs related to education, economic growth, and institutional quality.

The proposed relationships are analyzed using Partial Least Squares Structural Equation Modeling. The findings demonstrate that digitalization significantly strengthens innovation capacity, and that both digitalization and innovation contribute positively to sustainable development outcomes. Innovation emerges as a key mediating mechanism, highlighting the importance of strengthening digital infrastructure and innovation ecosystems to advance sustainable development.

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## REGIONAL TAX COMPETITION AND THE LOCATION OF ECONOMIC ACTIVITY

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### Abstract

This study challenges the conventional wisdom that subnational tax policy is an effective tool for attracting firm-level economic activity. Using municipal business tax rates in Germany as a proxy for local fiscal policy, we analyze firm responses across three dimensions—assets, sales, and employment—providing a more comprehensive assessment than the single-dimensional capital-based measures common in the literature. Employing a Two-Way Fixed Effects (TWFE) model, we find that tax increases have no statistically or economically meaningful impact on firm activity. These null results are robust to a dynamic difference-in-differences (DiD) specification, which further reveals that even transient negative effects dissipate quickly. Our findings suggest that local tax competition is an ineffective instrument for stimulating regional economic growth.

## INSTITUTIONAL MARKETS, TERRITORIAL CAPACITY AND THE PARADOX OF DECENTRALIZATION: EVIDENCE FROM THE GLOBAL SOUTH

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### Abstract

Regional development literature has long argued that decentralization will provide for greater localized government, allowing for endogenous growth through territorialized markets. But recent studies have shown that in peripheral regions in the Global South that are experiencing decentralization without adequate physical and institutional capacity, it may lead to the reproduction and possibly intensification of regional inequality. This paper explores this paradox using the example of the implementation of an institutional procurement policy in the Brazilian Cerrado region at a time when federal mandates require a minimum of 45% of the value of goods and services to be sourced locally (Law 15,226/2025).

This study explores the paradox of decentralization through the implementation of institutional procurement policy in Palmas, Brazil.

Using the Brazilian National School Feeding Program (PNAE), the study analyzes how a federal mandate requiring public schools to purchase at least a certain percentage of their food locally from family farmers functions in practice. As an institutional market designed to shorten supply chains and integrate local economies, the PNAE has recently raised the mandatory procurement percentage, which has placed new demands on local governance, logistics and coordination capacity.

As such, the effectiveness of the PNAE as a regional development instrument is contingent upon territorial capacity to implement it through adequate institutional arrangements and infrastructural support.

Methodologically, the study employed a qualitative single case study with embedded units of analysis (Yin). The data were triangulated using three sources: documentary analysis of procurement calls and associated legislation (2024 – 2025); semi-structured interviews with 11 strategically selected actors involved in different stages of implementation; and interpretive review of institutional reports and local regulations. The goal of the methodology was analytical representativeness, capturing governance dynamics across multiple territorial scales.

Findings indicate a significant difference between the way in which the policy was designed and the actual ability of local governments to achieve the desired outcomes of the policy. Specifically, while the regulation emphasizes the inclusion of perishable sociobiodiversity products in the purchasing process, the lack of basic logistical infrastructure (such as cold storage facilities at schools) forces delivery and transfer to occur in a disorganized manner and imposes high transaction costs on small producers. School-level financial autonomy is not supported by adequate logistical or technical assistance, generating incomplete decentralization. The institutional configuration produces contractual insecurity, coordination failures and increasing market concentration among better-capitalized cooperatives able to absorb logistical burdens.

The evidence demonstrates that institutional markets cannot generate self-sustaining regional development without complementary infrastructure, coordination mechanisms and sustained governance capacity. The study contributes to regional science by showing how decentralization without territorial capacity undermines the objectives of development-oriented public policies.

## SCHOOLS AS INSTITUTIONAL INFRASTRUCTURE IN RURAL PERIPHERAL REGIONS: A BIBLIOMETRIC ANALYSIS OF SOCIOECOLOGICAL RESILIENCE AND TERRITORIAL DEVELOPMENT (2020–2025)

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### Abstract

Peripheral rural regions in the Global South are characterized by lower levels of institutional density, inconsistent presence of the state and increased exposure to socio-ecological vulnerability, including climate variability, degradation of natural resources and demographic instability. In these low-density territories, public infrastructure is typically sparse and fragmented, increasing reliance on locally embedded institutions. Although there has been considerable research conducted using the paradigm of Regional Science regarding the role of infrastructure and productive systems in peripheral areas, the role of schools as key components of institutional infrastructure for supporting socio-ecological systems in rural areas has received limited attention. Therefore, this paper addresses this gap by mapping how recent scientific literature relates institutional capacity, education and territorial development in vulnerable rural contexts. This study uses a bibliometric approach to analyze 50 peer reviewed journal articles published between 2020 and 2025 in SciELO, Scopus and Web of Science indexed journals. The bibliometric data are analyzed using VOSViewer and Bibliometrix (R Studio) to examine temporal changes in publication frequency, geographic distribution of authorship, and keyword co-occurrence networks. The results indicate a high degree of geographic clustering of authors in European and East Asian institutions, and only 14% of the analyzed publications explicitly address rural peripheral regions in the Global South. Cluster analysis reveals that the term "resilience" is primarily linked to "crisis management" and "emergency response," while remaining largely disconnected from long-term regional planning or territorial cohesion frameworks. Four thematic clusters emerge from the analysis: institutional capacity and governance; education and crisis resilience; territorial inequality and spatial justice; and community empowerment. These results demonstrate that although resilience is increasingly regarded as a development paradigm, there is little evidence that schools can be viewed strategically as an anchor institution to contribute to the long-term sustainability of rural socio-ecological systems. Instead, they are predominantly treated as sectoral policy units operating outside territorial governance structures. In the rural peripheral areas with lower institutional density, where there is less to no other institution; (public) schools are among the very few remaining examples of stable and long lasting government presence in local communities. The role of the school extends beyond that of an educational facility; schools are also platforms for circulating information, coordinating community responses, and supporting community adaptation to social/ecological stressors. This research builds on the regional science agenda by redefining schools as institutional anchors in rural socio-ecological systems. From the policy perspective, this reframed understanding has important implications: Rural Development Strategies in the Global South should view schools not just as a service provider, but as a foundational structure of territorial resilience and governance.

## REGIONAL LABOUR MARKET TRANSITIONS IN THE GREEN AND DIGITAL ERA: EVIDENCE, POLICY LESSONS AND TERRITORIAL RISKS

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### Abstract

The twin transition toward climate neutrality and digitalisation is reshaping labour markets across Europe, producing simultaneous processes of job creation and destruction (JCD) with highly uneven territorial effects. Regions dependent on carbon-intensive activities or characterized by structural weaknesses face disproportionate adjustment pressures, raising concerns about widening spatial inequalities and political discontent. This paper synthesises evidence from a systematic literature review covering more than 140 studies on labour market transitions, active labour market policies (ALMPs), and regional development strategies related to the green and digital transitions. The review identifies six major policy domains shaping regional outcomes: education and lifelong learning systems, labour market adaptation mechanisms, migration and mobility policies, territorial cohesion measures, research and innovation support, and smart specialisation strategies adapted to regional diversity. The analysis highlights the central role of regional context in shaping labour market outcomes. Evidence shows that job creation often depends on incumbent firms and SMEs, while job destruction is frequently associated with plant closures and structural decline. The net employment impact of shocks varies geographically, with employment effects often concentrated in specific sectors and places. Active labour market policies emerge as a key instrument, but their effectiveness varies substantially across regions and programme types. Training programmes, wage subsidies, and job search assistance produce heterogeneous results depending on institutional capacity, targeting quality, and local labour market conditions. Building on these findings, the paper develops a conceptual framework linking regional resilience, labour market adjustment mechanisms, and place-based policy design. The framework emphasises the importance of multilevel governance, stakeholder engagement, and regionally differentiated strategies to prevent territorial divergence and ensure inclusive transitions. The contribution of the paper to regional science lies in integrating labour market policy analysis with territorial development theory and providing a structured synthesis of policy lessons relevant for regions undergoing structural transformation. The findings have implications for cohesion policy, just transition strategies, and regional innovation systems, particularly in coal and industrial regions facing deep restructuring.

## INSURANCE FOR ADAPTATION TO HYDROLOGICAL ANOMALIES: A PROPOSAL FOR AN INTEGRATED ASSESSMENT MODEL

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### Abstract

The Brazilian economy is highly dependent on water resources. Agribusiness accounted for 24% of the country's GDP in 2023 (CEPEA, 2024), and soybeans alone represented 14% of national exports in 2021. Agriculture, livestock, forestry, fishing, and aquaculture were responsible for 94.5% of Brazil's consumptive water use in 2017, with rainwater as the primary source (88.5%), followed by surface water (9.4%) (IBGE & ANA, 2020). Against this backdrop, this study estimates the direct, indirect, regional, and interregional economic impacts of hydrological anomalies (droughts) on agriculture across Brazil's 12 Hydrographic Regions (HRs). To achieve this objective, we develop and apply an Integrated Assessment Modelling (IAM) framework composed of four components: (i) econometric estimates drawn from the existing literature; (ii) projections of precipitation and temperature anomalies from three climate models under two climate scenarios (SSP2-4.5 and SSP5-8.5) for the period 2015-2100; (iii) a Computable General Equilibrium (CGE) model (B-MARIA-12RH) that captures direct, indirect, regional, and interregional economic effects of productivity shocks under uncertainty; and (iv) a Hydrological Risk Transfer Model (MTRH-SHS). The results show that climate anomalies driven by climate change generate substantial and spatially heterogeneous economic impacts on Brazilian agriculture over the study period. Under SSP2-4.5, the largest average agricultural contractions between 2015 and 2100 (at 2015 prices) occur in the Paraná (BRL -616 million), Amazon (BRL -306 million), Paraguay (BRL -161 million), Tocantins/Araguaia (BRL -140 million), Parnaíba (BRL -93 million) and São Francisco (BRL -90 million) regions. Some regions, such as East Atlantic, Southern Atlantic and Southeastern Atlantic exhibit modest gains, but these are small compared to losses in major agricultural hubs. Under SSP5-8.5, losses intensify considerably, particularly in Paraná (BRL -932 million), Amazon (BRL -549 million), Paraguay (BRL -226 million), Tocantins/Araguaia (BRL -212 million), Parnaíba (BRL -120 million), Northeastern Atlantic - Eastern (BRL -115 million) and São Francisco (BRL -110 million), reflecting stronger temperature increases and precipitation anomalies. These shocks propagate through the economy, generating negative impacts on Gross Regional Product (GRP). Under SSP2-4.5, the largest relative GRP losses occur in Paraguay (-0.37%), Parnaíba (-0.32%), and the Amazon (-0.19%). Under SSP5-8.5, these losses deepen to -0.52% in Paraguay, -0.42% in Parnaíba and -0.35% in the Amazon. Building on these results, the required insurance premiums rise markedly under SSP5-8.5, ranging from around R\$100 per hectare in the Southern Atlantic to more than R\$1,500 per hectare in the Parnaíba region. Elevated premiums are also observed in Paraguay, Amazon and Paraná regions. Overall, the findings demonstrate that hydrological anomalies pose a significant threat to Brazil's agricultural sector and regional economies, especially under high-emissions scenarios. While insurance mechanisms can play an important role in adaptation.

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## URBAN WELFARE ANALYSIS USING WITHIN-CITY DATA

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### Abstract

This paper presents an analysis of welfare in Brazilian cities and regions by introducing a Spatial Cost of Living Index (SCOL) that utilizes detailed household expenditure data at the within-city area level. By adjusting consumption-based welfare indicators for regional price differences, the study provides a more accurate depiction of poverty and inequality across urban landscapes. The findings reveal significant variations in living costs among Brazilian states, metropolitan areas and non-metropolitan cities, impacting poverty assessments. The analysis underscores the limitations of relying solely on nominal income or expenditure figures, as incorporating spatial price variations alters poverty headcount ratios and reshapes the understanding of regional disparities. Ignoring cost of living differences puts 8.3 million individuals living in the capital cities and surrounding metropolitan areas above the adjusted poverty line; conversely, 4.5 million individuals living in the non-metropolitan cities are wrongly classified as being below the adjusted poverty line. Sensitivity tests confirm the robustness of SCOL-adjusted estimates across various poverty thresholds.

## POWERING COMMUNITIES: AN INNOVATIVE METHODOLOGY FOR UNDERSTANDING BARRIERS AND ENABLERS

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### Abstract

This study examines the development of the “Better-Prepared for Green-Energy Neighborhood” initiative in the Ramot neighborhood of Be’er Sheva, Israel. As the city’s first community-level energy resilience project, the initiative places strong emphasis on public engagement, awareness-building, and collaborative planning. Our research, conducted during the early exploratory phase, focuses on outreach strategies, stakeholder partnerships, the mapping of objections, and mechanisms designed to foster cooperation. Community energy models in urban environments rely on shared photovoltaic generation and battery-based energy storage systems to enhance local sustainability and resilience. When deployed collectively, such systems mitigate peak-load charges, expand operational flexibility, improve cost efficiency, and enable partial grid independence during disruptions. Compared with individually owned household storage systems, community-level energy storage has multiple advantages: better resilience, optimized and scalable battery capacity, improved economic viability, and strengthened social cohesion through shared benefits and democratized access to renewable-energy technologies.

Despite their promise, the implementation of community energy storage in urban areas faces substantial regulatory, technical, and financial barriers. Public resistance—often shaped by concerns about the visual and environmental effects, and place-based concerns associated with NIMBY dynamics—poses a major challenge. Additional obstacles include the high upfront investment costs and the need for innovative and trustworthy business models that ensure the project’s economic feasibility, technical reliability, and adherence to safety standards.

To investigate residents’ perceptions and stakeholder dynamics, we collaborated with the Israel Electric Corporation and the Be’er Sheva Municipality. To assess levels of awareness, attitudes, and engagement among the neighborhood’s several thousand residents—including perceived benefits, concerns, and knowledge gaps—and to promote democratic, consensus-oriented collective action, we employed a survey instrument based on a novel deliberative technology. This technology enables rapid and inclusive decision-making about both straightforward and normatively contested issues, offering a scalable model for deliberative democracy.

The algorithm used in this study introduces a deliberative framework designed to support meaningful participation at scale. It combines three methodological innovations: (1) the open and continuous generation of proposals, allowing participants to introduce new alternatives throughout the process; (2) the ability of the participants to express their preferences continuously, ranging from strong opposition to strong support; and (3) the real-time aggregation of information using the consensus algorithm, which calculates scores as Mean – SEM (standard error of the mean), producing a confidence-adjusted estimate of collective agreements that penalizes uncertainty and safeguards minority viewpoints.

Although the study focuses on the Ramot neighborhood, its insights may inform similar initiatives in Be’er Sheva and other urban settings. By offering an empirically grounded and participatory model for community-driven energy resilience, the findings contribute to broader discussions on inclusive, equitable, and socially robust energy transitions.

## WHEN DENSITY TRAVELS: THIRD PLACES AND THE RECONFIGURATION OF AGGLOMERATION ECONOMIES

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### Abstract

The rapid diffusion of hybrid work has renewed debate about whether agglomeration economies remain anchored to dense metropolitan cores. This paper examines whether the spatial relationship between third places and knowledge-intensive service (KIS) firms has been reconfigured in the aftermath of a major global disruption. Focusing on all Italian municipalities in 2019, 2021 and 2024, we investigate how patterns of co-location between coworking spaces and KIS firms have evolved across urban, intermediate and rural contexts. Using cross-type Kd-functions, we estimate changes in spatial interaction intensity between coworking spaces and KIS firms across multiple distance bands. Municipalities are classified according to the DEGURBA framework, enabling a systematic comparison of agglomeration dynamics across different degrees of urbanisation. The results reveal a spatial rewiring rather than a simple dispersal. While strong clustering persists in metropolitan areas, post-2019 dynamics show a marked increase in inter-type spatial interaction in intermediate and non-urban municipalities. In particular, middle-sized cities display growing short- and medium-distance co-location between third places and KIS firms, suggesting that agglomeration externalities are becoming less exclusively dependent on large urban cores. The evidence suggests that density is not disappearing but being spatially reconfigured, with growing inter-type interaction between coworking spaces and KIS firms outside large metropolitan cores. Rather than a simple process of dispersal, the results reveal a redistribution of agglomeration patterns across urban hierarchies.

## ECONOMIC IMPACTS AND RECOVERY DYNAMICS OF NATURAL DISASTERS: A CGE ANALYSIS FOR THE FLOODS IN RIO GRANDE DO SUL

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### Abstract

The frequency and severity of natural disasters caused by extreme climate events have risen over recent decades. The floods that occurred in April and May 2024 in Rio Grande do Sul were the most severe climate event in recent Brazilian history, with significant economic impacts on the state. In the Porto Alegre metropolitan area, rainfall reached 600 mm, surpassing the historical average by more than 200%. According to a report by Cepal et al. (2024), the disaster affected 323 municipalities, impacting about 2.40 million people, both directly and indirectly. The direct economic damage to productive sectors and families was estimated at BRL 41,29 billion.

This paper aims to assess the direct and indirect economic impacts of floods in Rio Grande do Sul, as well as the role of state policies in promoting economic recovery. Understanding the full consequences of natural disasters is essential for planners and policymakers to develop better strategies for risk management and to implement suitable resilience measures, providing valuable information for maintaining the functionality of the economic system and supporting its recovery process. In terms of policy response, state authorities have adopted governance measures and created the Rio Grande do Sul Fund (FUNRIGS) to carry out actions aimed at rebuilding the state's economy. The fund's resources amount to BRL 6.92 billion and are allocated to finance projects focused on improving infrastructure, resilience, and social relief.

To achieve this goal, we employ a dynamic interregional computable equilibrium model calibrated for Rio Grande do Sul. The model's dynamic structure enables us to identify the regional system's ability to absorb the immediate impacts of the climate shock and its recovery path over time. In the first scenario, we simulated the direct and indirect economic effects of sectoral losses in the capital stock caused by the flood event. Data from Cepal et al. (2024) are used to calibrate the shocks in this scenario. In the second scenario, we include shocks that reflect FUNRIGS' expenditures, which are translated into increases in public consumption and capital stock investments in the sectors benefiting from the fund.

The results for the first scenario show a 2.26% decrease in Rio Grande do Sul's GDP for 2024, with a ten-year recovery to pre-shock levels. Most of this impact is due to disruptions in transport infrastructure, education, and trade sectors, which affect the entire productive system. The results for the second scenario indicate that projects financed by FUNRIGS partially mitigate this impact, reducing the GDP decline to 2.18% and achieving full economic recovery in nine years. Our findings suggest that public resources should be increased to accelerate economic recovery, and the fund's expenditure should focus on enhancing the resilience of infrastructure sectors.

## ACCESS TO FOOD SERVICES IN NON-METROPOLITAN AREAS: A CLUSTER-BASED APPROACH IN QUEBEC'S REGIONS

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### Abstract

Food security is a concept that has sparked academic debate for nearly half a century. Since its emergence in the 1970s, the concept has evolved from a vision focused almost exclusively on agricultural production, deemed insufficient, to approaches that seek to understand the difficulties of access (Sen, 1983). Since then, research has primarily focused on individual behaviors, household characteristics, and the socioeconomic determinants that influence access to sufficient and nutritious food. While these approaches have helped to document inequalities and guide social policies, they tend to reduce food insecurity to a problem of individual vulnerability, thus neglecting the role of the environment and territorial dynamics in the construction of these inequalities.

However, places determine how individuals experience access to food (Bowen et al., 2002), and the spatial distribution of accessibility is important for understanding the phenomenon of food insecurity (Dutil, 2012). Yet, ignoring these dynamics also means ignoring the territorial structures, local resources, and governance models that shape public action and local initiatives. Food security is based on four pillars (availability, access, quality, and stability of supply) (FAO, 2006). Nevertheless, current methods for identifying vulnerable areas rely primarily on distance to a single food supply point (grocery store) according to ultimately arbitrary distance thresholds (1 km in urban areas and 16 km in rural areas) and therefore do not allow for the integration of these pillars. The project therefore proposes a first step in this direction by suggesting an access measure based on the concentration and description of food service offerings, rather than on access to a single service point. The presentation aims to provide a territorial perspective on the renewed food supply in a non-metropolitan context. It offers an analysis based on the lived experience of the food supply in various regional county municipalities (MRCs) of Quebec and compares it with individuals' travel patterns (demand).

The analysis identifies and characterizes service concentrations to assess the availability, stability, and diversification of services (using the DBSCAN algorithm). Assessment roll data is used to categorize buildings according to their use code (food services). Assuming one dwelling per household, the distance to residences is then based on travel patterns (commuting time to work) within the relevant statistical areas. Finally, communities are categorized according to their level of access to food services (access to a service cluster, access to a single service, or no access). Socioeconomic statistics complete the picture.

Rooted in a peripheral/rural context, the project aims to understand the role of the environment and territorial structuring dynamics in food access. Complementing traditional measures, it seeks to contribute to developing action plans to strengthen food security in non-metropolitan areas.

## **“A NETWORK OF OBSERVATORIES TO MONITOR THEM ALL”: CHALLENGES OF DEPLOYING A REGIONAL MONITORING SYSTEM IN A NON-METROPOLITAN CONTEXT ACROSS THE PROVINCE OF QUEBEC**

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### **Abstract**

Since the major reform of Law on land use planning and development (Bill16, 2023), Quebec's MRCs (a supra-local governance level) have been asked to revise their Land use and development plan while establishing a monitoring system to assess the impact of public policies on regional development trajectories, a completely new initiative for non-metropolitan areas. Far from a traditional top-down governance approach, the current policy proposes a set of major updated guidelines to address contemporary challenges (climate hazards, housing, transportation...). Communities have the responsibility to build their own development projects and public policies for regional actions. A network of five observatories is deployed to assist them in this mission. Supported by the Quebec university network (UQ) and the Ministry of municipal affairs (MAMH), the structure aims

to support the non-metropolitan regions (87 MRCs on a total of 107) areas in this titanic task. Monitoring of human activity is understood as the ability to understand socioeconomic development and analyze the capacity of communities to transform their environment (Xu et al., 2016). While the literature highlights the challenges of setting a monitoring system, for Hoernig and Seasons (2004: 81) the Monitoring is one of the most controversial points of impact assessment: there is “no universal solutions to this challenge”. While the official mission of the observatories is to synthesize and share knowledge related to the sustainable planning and development of territories, its main mandate is to provide MRCs with reliable tools and data to inform their analyses, guide their planning exercises, and support their decision-making. The network is taking a role of training planning teams in establishing a monitoring system, drawing inspiration from successes, but also from pitfalls, from experiences around the world in an ambitious partnership approach with multiple territorial actors. The presentation discusses the province's planning and development challenges and the expected transformations caused by the law amendments. We explain why and how this project can transform regional planning while discussing the challenges of developing a network of observatories and supporting MRCs in building such monitoring system in a mixed rural-urban context. Underlying this is the discussion of the contribution of a network of Quebec universities, originally established to contribute to the development of peripheral regions.

## BETA CONVERGENCE ANALYSIS OF BANK BRANCHES DISTANCE. A MICRO LEVEL EXAMINATION OF SPATIAL DYNAMICS

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### Abstract

Over the past two decades, the banking sector has experienced profound structural changes, marked primarily by a significant reduction in the number of bank branches. This decline has been driven by a combination of technological advancements, evolving consumer preferences, which have collectively reshaped the structure of bank branch networks (DeYoung et al., 2019). Against this backdrop, this study examines whether bank branches are converging toward a new equilibrium in terms of both density and spatial distribution, aligning with the empirical evidence on banking density consolidation documented in the existing literature (Alessandrini et al., 2010).

Building on this literature, we first verify the hypothesis of an unconditional  $\beta$ -convergence process in the distribution of bank branches. Convergence theory, originally developed in the context of economic growth (Barro and Sala-i-Martin, 1992), has already been applied to the banking sector to examine whether disparities in branch density diminish over time as markets move toward a steady-state equilibrium (Alessandrini et al., 2010). If the  $\beta$ -convergence hypothesis is confirmed, it would suggest that branch networks are gradually adjusting toward a new equilibrium state, driven by structural changes in the financial sector and competitive market dynamics.

This study focuses on the 100 largest municipalities in Italy, offering a comprehensive and diverse sample for examining the spatial and structural dynamics of the banking sector. Italy serves as an ideal testing ground for this analysis due to the significant variation in macroeconomic conditions across its regions.

We estimate an unconditional  $\beta$ -convergence model to evaluate whether the number of bank branches across different geographical areas is converging toward a steady-state equilibrium. This approach enables us to examine whether differences in branch density are decreasing over time, in line with recent trends observed in banking markets.

Preliminary results indicate that branch density is approaching a new equilibrium, as evidenced by a negative and statistically significant  $\beta$  coefficient. However, this convergence does not extend to the spatial component, particularly the distance between the two nearest bank branches, which shows no significant convergence. While the findings on branch density align with existing literature and empirical evidence, the absence of convergence in the spatial component warrants moving forward with the second stage of our analysis.

In the second stage of our analysis, we advance by estimating a panel conditional  $\beta$ -convergence model to identify the key determinants influencing the physical distance between bank branches. The analysis of unconditional and conditional  $\beta$ -convergence offers insights into whether the banking sector is moving toward a new spatial equilibrium and highlights the role of regional and institutional characteristics in shaping this process. The results carry significant policy implications, particularly in terms of ensuring adequate access to financial services and understanding the potential impacts of branch consolidation on local economic activity and financial inclusion. While the overall decline in branch numbers may enhance cost efficiency for financial institutions, it could also deepen financial exclusion in underserved areas, underscoring the need for a balanced and strategically located branch network.

## DOMESTIC TOURISM AND REGIONAL INEQUALITY IN BOLIVIA

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### Abstract

The tourism sector has considerable potential to promote regional development. Regions endowed with attractive landscapes and historical heritage, but lacking substantial industrial activity, often turn to tourism as a source of income and employment. While there is little doubt that tourism generates income for host regions, the magnitude of this effect may be constrained by the seasonal nature of tourism-related employment and by the sector's concentration in activities with limited forward and backward linkages. Moreover, the income-generating benefits of tourism may be partially offset by environmental and social costs, such as increased waste production and the degradation of natural landscapes. In the context of domestic tourism, additional issues arise. A key question is whether tourism expenditures produce a net benefit for the national economy or merely redistribute income across regions. This issue is closely related to the source of financing for tourism spending, specifically, whether it primarily reflects a substitution of current consumption in tourists' regions of residence or a substitution of future consumption through reduced savings. Another important consideration is whether domestic tourism has a progressive distributional impact. Tourism is often characterized by residents of more developed regions traveling to less developed ones, which may help reduce regional disparities in a manner similar to fiscal redistribution mechanisms. However, tourism expenditures result from voluntary consumption choices made by individuals and therefore do not constitute market distortions. In contrast, many government redistribution programs may introduce distortions and, as a result, be less efficient. Bolivia continues to exhibit pronounced regional inequalities. In this context, it is relevant to examine the potential of domestic tourism as a mechanism for reducing these disparities. Insights from such an analysis could inform policymakers in the design and implementation of incentive programs. These effects can be examined using regional input-output analysis. The objective of this project will be to build a domestic tourism database using microdata from Instituto Nacional de Estadística, specifying inflows and outflows of expenditure by region. This information will be combined with a regional input-output matrix for Bolivia and used to evaluate not only the potential of domestic tourism for generating and distributing income and jobs, but also its impacts on environmental variables. Based on the findings of previous studies which apply a similar methodology, the project is expected to find that domestic tourism has a limited impact on nationwide income generation, while producing significant distributional effects across regions. In addition, tourism is expected to generate negative environmental impacts in the receiving regions. The results of this project can contribute to informed policy discussions by clarifying the trade-offs between the economic and environmental consequences of domestic tourism.

## GREEN BIOREFINING OF AGRICULTURAL BIOMASS: RESULTS, APPLICATIONS AND REGIONAL PERSPECTIVES

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### Abstract

During the slow and transformation-intensive process of the green transition, increasing opportunities emerge for the wider adoption of innovative and novel technologies such as green biorefining. The conceptual foundations of green biorefining were already established in 1917 through the work of Karl Ereky in Hungary. Later, the research of Norman W. Pirie played a central role in bringing international attention to the concept. However, throughout the 20th century, fluctuations in energy prices and prevailing global economic development pathways did not favor the large-scale implementation of green biorefining technologies. Today, several European Union member states operate green biorefinery facilities employing innovative technologies to produce products such as feed protein and biogas. Green biorefining can be well integrated into the principles of a circular economy.

Green biorefining is based on the processing of fresh, wet plant biomass as a valuable renewable raw material. Feedstocks include perennial crops such as alfalfa and Jerusalem artichoke, as well as green cereals and leguminous forage crops, in smaller proportions, green residues from horticultural production may also be utilized, depending on availability. Through processing steps involving physical and chemical treatments, valuable components such as proteins, vitamins, minerals, and phytonutrients are concentrated into separated fractions. Similar to petroleum refining, biorefining generates multiple product streams—press cake fiber, green juice, leaf protein concentrate (LPC), and plant whey (phytoserum)—which serve as potential inputs for diverse industrial sectors and offer a wide range of utilization pathways. In contrast to fossil-based systems, the raw materials used in green biorefining originate from renewable sources.

Traditionally, green biorefining has focused on the production of feed protein. However, achieving economic viability requires the utilization of generated products at the highest possible added value. Promising application areas include the food, cosmetic, and pharmaceutical industries. Global demand for plant-based food ingredients is continuously increasing, and meeting this demand is no longer limited to seed-based sources alone. Since 2012, the European Food Safety Authority (EFSA) has recognized alfalfa-derived leaf protein concentrate (LPC) as a safe food ingredient.

Countries with tropical climates and high agricultural potential—such as Brazil, Argentina, and Ecuador—represent largely untapped opportunities for green biorefining. With suitable crops (e.g., perennial grasses and legumes), high primary biomass yields can be achieved year-round, ensuring continuous feedstock supply for biorefinery operations.

As a potentially emerging industrial sector, green biorefining can significantly contribute to enhancing the sustainability and productivity of agriculture.

## TEMPORAL DISRUPTIONS IN RETAIL LOCALIZATION: MARKET AREA DYNAMICS OF SUPERMARKETS AND PHARMACIES IN GERMANY AND IRELAND POST-2015

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### Abstract

Localization theory is one the more well-established theoretical concepts in urban economics and economic geography, where the role and size of the market, cost of transport, production, wages, etc., have been included in models describing establishments of anything from small service businesses on neighbourhood scale to global value chains for a considerable time. Theoretical and methodological development has focused on improving the analytical framework for better understanding how to improve competition or gain competitive advantage for firms, but surprisingly few studies have matched market areas and hotelling type of competition over time. In this study, we study the location patterns of supermarkets, chemists and pharmacies in Germany and Ireland from 2015 and onwards, where we estimate market area and market area change over time.

The results suggest that temporal changes in numbers and market area at any time disrupts near market equilibrium in year(s) to follow, in which both an increase in closure and opening of competitors can be detected. The results also show that the pandemic triggered changes in localization patterns that have not settled/returned to pre-pandemic status.

## UNDERSTANDING THE TYPOLOGIES OF RURAL STAYERS: EVIDENCE FROM RURAL ALBANIA AND KOSOVO

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### Abstract

Migration and staying put are strongly interconnected temporary decisions. Rural out-migration seems to be the norm for achieving success and a “good life”. However, despite the promises of a better life elsewhere, 48% of Albanians and 60% of Kosovars stay in rural areas. Staying put at a time when migration is considered the norm is a phenomenon that needs to be analysed. Moreover, rural out-migration represents a significant loss of both human and social capital, often leading to persistent labour and skills shortages. Addressing these challenges requires policies that focus on those who have decided to stay, as well as policies that move beyond one-size-fits-all approaches to rural revitalisation

Although staying put and immobility are often used interchangeably, they do not precisely refer to the same phenomenon. The difference between staying put and immobility is that staying put does not necessarily imply immobility. In this study, we refer to rural stayers as both immobile villagers who have never left their village and also stayers who have left and returned. The main objective of the study is to explore the heterogeneity of rural stayers considering five multidimensional factors related to staying put, such as: anticipated emotional factors to leave, constraints to migrate, perceived limited financial success, convenience of staying in the village, and attachment to the village and rural lifestyle.

Regarding the analytical approach, latent class analysis (LCA) is considered to be the most appropriate approach to study the heterogeneity of rural stayers. In comparison to other clustering methods, LCA can better capture the heterogeneity as it is based on the assumption that data are generated by a mixture of underlying probability distributions. Class membership was modelled as a function of multidimensional factors related to staying and individual-level covariates, including gender identity and marital status. In addition, the perceived place satisfaction was included in the model as a cofounder.

Data were collected through face-to-face questionnaires during the summer of 2025 over a period of two months in each country. Of the total 1,020 respondents, 50.5% were surveyed in Albania and 49.5% in Kosovo. The application of stratified random sampling has been considered the most appropriate sampling procedure, as the population may have significant regional and/or demographic diversity. To identify respondents, a random walk sampling procedure was employed in both countries.

Using LCA, we have demonstrated high levels of heterogeneity among rural stayers, particularly stuck (35.2%), satisfied (39.3%) and acquiescent stayers (25.5%). Significant differences are observed for each indicator, and this is shown in the answer paths, which are always inverse between stuck and satisfied stayers, showing that staying for satisfied stayers is a choice, considering the strong attachment to the village, while stuck stayers lack opportunities to migrate. From sociodemographic perspective, men who are married or living with their partner and perceive a high life satisfaction, in general terms and specifically with regard to staying, have a high probability to belong to the class of satisfied rural stayers.

## LOCAL SOCIAL CAPITAL AND MIGRANT INTEGRATION: MULTILEVEL EVIDENCE FROM EUROPEAN REGIONS

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### Abstract

This paper investigates the role of local social capital in shaping intercultural integration outcomes of migrants across European regions. While migrant integration has been widely studied from labor market and institutional perspectives, less attention has been paid to how the regional social environment, particularly generalized trust, civic engagement, and social connectedness, influences migrants' subjective and relational integration. From a regional science perspective, social capital constitutes a territorially embedded resource that may foster inclusion, resilience, and long-term sustainability.

Using the most recent rounds of the European Social Survey (ESS), we construct multidimensional indicators of migrant integration covering: (i) sense of belonging to the host country, (ii) perceived discrimination, (iii) life satisfaction and subjective wellbeing, and (iv) trust in institutions. Migrants are defined as foreign-born individuals and second-generation respondents where identifiable. Local social capital is measured at the regional level (NUTS-2/NUTS-1 depending on data availability) through aggregated indicators of generalized trust, participation in voluntary associations, frequency of informal social interaction, and bridging social ties. These contextual indicators are computed excluding migrants to mitigate reflection bias.

Methodologically, the paper adopts a multilevel econometric framework in which individuals are nested within regions. This approach allows us to disentangle individual-level determinants (education, employment status, income satisfaction, length of stay, citizenship status) from contextual regional characteristics.

Preliminary hypotheses are threefold. First, migrants residing in regions with higher generalized trust and stronger civic engagement report higher levels of belonging and life satisfaction. Second, bridging forms of social capital (e.g., participation in heterogeneous associations) are more strongly associated with reduced perceived discrimination than bonding forms. Third, the integration gap between migrants and natives narrows in high-social-capital regions, suggesting a contextual equalizing effect.

The expected contribution is threefold. Empirically, the paper provides cross-country comparable evidence on the regional embeddedness of intercultural integration using harmonized microdata. Methodologically, it integrates multilevel and spatial approaches to capture both vertical (individual–region) and horizontal (region–region) interactions. From a policy perspective, the findings inform place-based integration strategies by highlighting that sustainable migrant inclusion is not solely a function of labor market performance, but also of intangible regional assets such as trust and civic participation.

## ACCESSIBILITY AND COMMERCIAL AGGLOMERATION AROUND THE MEXICO CITY–TOLUCA INTERURBAN TRAIN

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### Abstract

The México–Toluca Interurban Train (TIMT) was conceived as a mobility project designed to reduce travel times between the city of Toluca and Mexico City, responding to the growing demand for metropolitan commuting. Beyond its transport function, the railway infrastructure modifies urban accessibility patterns and may generate externalities on the location and concentration of economic activities near its stations. This study examines changes in economic units (EUs) around the Zinacantepec, Toluca, Metepec, and Lerma stations through longitudinal analysis at three time points: 2010 (pre-project), 2020 (construction phase), and 2025 (post-operations onset). Following the Transit-Oriented Development (TOD) framework, 1 km radius influence areas were delineated around each station along with four control zones on the same road corridor, in order to approximate a spatial counterfactual. Data from the DENUÉ were restricted to micro, small, and medium-sized enterprises (MSMEs) in the commerce and services sectors. Indicators analyzed include total number of EUs, intercensal growth rate, sectoral composition by activity branch, and the Shannon diversity index at the branch level. Statistical significance of differences was assessed through an independent samples t-test and a difference-in-differences model estimated by OLS. Results show generalized EUs growth across all corridor areas between 2010 and 2025, with no statistical evidence of a differentiated effect attributable to the railway node. The Shannon index remained stable in most areas, with the exception of Lerma, where it declined consistently in association with the commercial specialization of the neighboring municipality of San Mateo Atenco. These results are attributed to the brevity of the system's operating period, exogenous pandemic disruptions, and the pre-existing consolidated character of the commercial corridor. The study establishes a quantitative baseline for future evaluations and contributes to the debate on the conditions under which transport megaprojects trigger local economic agglomeration dynamics.

## ECONOMIC REPERCUSSIONS OF RURAL TOURISM ACROSS MUNICIPALITIES IN BRAZIL'S NORTHEAST REGION

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### Abstract

Rural tourism represents a unique economic sector offering leisure, gastronomic, and hospitality goods and services deeply connected to the natural and cultural heritage of host communities. As a result, this activity possesses substantial potential to stimulate local economies while promoting the conservation of natural resources and the appreciation of indigenous cultures and traditions. Despite this potential, quantitative evidence on its economic impacts in Brazil remains limited. The primary objective of this study is to investigate the economic repercussions of rural tourism across municipalities in Brazil's Northeast Region, focusing on its effects on agricultural value added and employment generation.

Empirical analysis employs a quasi-experimental framework based on Propensity Score Matching (PSM). Municipalities with the presence of rural tourism activities in 2017 are treated as the intervention group, while structurally comparable municipalities without such activities form the control group. Matching is performed using a comprehensive set of observable covariates capturing agricultural productive structure, demographic characteristics, and geographic accessibility. The dataset combines information from the 2017 Agricultural Census with employment data from the Annual Social Information Report (RAIS) and municipal economic indicators from IBGE. Three outcome variables are analyzed: agricultural gross value added, employment in tourism-related sectors, and total formal employment. After matching, weighted least squares regressions are estimated to obtain the average treatment effect on the treated (ATT).

The results indicate that rural tourism exerts positive and statistically significant economic effects across all analyzed outcomes. Municipalities with rural tourism show, on average, higher agricultural value added, suggesting that tourism stimulates demand for local products and enhances value creation within the agricultural sector. The strongest effect is observed in tourism-related employment, where treated municipalities exhibit substantially higher job levels in accommodation, food services, and related activities. Rural tourism also contributes to broader labor market expansion, with positive impacts on total formal employment, reflecting multiplier effects across sectors such as retail, services, and construction.

Overall, the findings support the view that rural tourism functions as a complementary development strategy rather than a standalone growth engine. Its economic benefits are most pronounced when embedded in municipalities with sufficient infrastructure, productive scale, and access to consumer markets. The study contributes to the literature by providing robust quantitative evidence on the economic role of rural tourism in Brazil's Northeast and offers policy-relevant insights. Public policies that foster rural tourism alongside investments in infrastructure, market connectivity, and productive diversification are more likely to generate sustainable local development outcomes.

## SUSTAINABLE FOR WHOM? GENTRIFICATION IN A CENTRAL AND EASTERN EUROPEAN CONTEXT

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### Abstract

In exploring the drivers of gentrification within the framework of uneven development, researchers typically assign a significant role to both global and local scales. In this presentation, we argue that the household scale (and indeed the individual) is also indispensable for a more nuanced understanding of this spatial process. By shifting the analytical focus from the frequently central figure of the gentrifier to the perspectives of marginalised groups –specifically working-class households and individuals – and by examining their everyday lives, experiences, and practices, it becomes evident that gentrification is not a sustainable urban strategy for them, even when deployed as a global strategy (see Smith, N. 2002).

Beyond exploring these claims from an epistemological perspective, this presentation also analyses several of their ontological implications through the findings of empirical research. The former outlines the advantages of integrating the concepts of gentrification (in a narrower sense) and uneven geographical development (in a broader sense) with the study of everyday life. This offers a fresh perspective for international academic discourse, where uneven development has predominantly featured as a political-economic theory.

Our empirical research is situated in two originally working-class neighbourhoods in the Hungarian cities of Debrecen and Pécs (Nagysándortelep and the Zsolnay district). As part of our specific approach, we contrast the spatial experiences and everyday practices of marginalised individuals and households – elicited through narrative interviews – with historically shifting waves of state- and capital-led development-underdevelopment, and investment-disinvestment. The narratives of the interview partners not only reveal the lived experiences of contemporary gentrification among individuals and groups but also trace the everyday realities of the state-socialist period through the memories of the eldest participants. Consequently, our integrated approach uncovers ‘space-time’ specificities (Massey, D. 1994) that highlight the crucial role of a further decisive scale alongside the household, local, and global: the ‘regional’. This multiscale investigation, situated within the CEE context, allows for a better understanding of both the impact of gentrification (occurring spontaneously in our study areas) on workers and their subsequent ‘counter-actions’.

The presentation is based on the results of the ‘Marginalised Space Experience in the Context of Uneven Geographical Development’ research project (No. 138713), which has been implemented with the support provided by the Ministry of Innovation and Technology of Hungary from the National Research, Development and Innovation Fund, financed under the K\_21 funding scheme.

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## COAL GEOGRAPHY AND TERRITORIAL CAPITAL IN BOYACÁ (COLOMBIA)

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### Abstract

This study analyzes the geography of coal in the department of Boyacá (Colombia) from a regional science perspective, focusing on the relationship between geological and geographical potential, mining activity, and social economic conditions at the municipal scale. Boyacá is one of Colombia's historically important coal regions and still concentrates a significant coal endowment. However, the coal industry is also structurally fragile due to its exposure to price volatility, which affects the stability of production, local revenues, and investment capacity. In this context, the paper asks whether the spatial concentration of coal potential and mining activity is associated with stronger territorial conditions, or whether it coexists with uneven and fragile local development patterns. The analytical approach combines regional economic geography with territorial capital framework to examine how natural resource endowments interact with local socioeconomic and infrastructural conditions. Rather than testing a causal hypothesis at this stage, the paper develops an exploratory territorial characterization of the current coal context, identifying patterns, contrasts, and potential mismatches.

To identify spatial concentration and territorial contrasts, the paper uses exploratory mapping, hotspot-oriented techniques, kernel-density-based Geographical Information System (GIS) visualizations, and comparative municipal profiling. Four dimensions are integrated at the municipal level: Firstly, geological coal potential; based on coal quality attributes such as ash content, sulfur content, calorific value, and fixed carbon according to American Society for Testing and Materials (ASTM) international classification, combined with kernel density analysis to identify concentration patterns in coal quality conditions. Secondly, mine accessibility; using distance to the primary road network, populated centers, and logistics points, incorporating a Digital Elevation Model (DEM) based treatment of topographic constraints to capture the effect of terrain on access and circulation. In third lieu, mining activity, using production volume and royalties, data of 2024, interpreted considering the social organization of mining and the institutional specificities of the Colombian sector, including the persistence of small-scale and artisanal dynamics and broader extractivist tensions. And finally, socioeconomic conditions, using indicators linked to territorial capital, including economic dependence, demographic projections based on the 2018 National Population and Housing Census and projections, and the Multidimensional Poverty Index (MPI/IPM). Data from geological, sectoral, and municipal statistical sources are harmonized and represented through thematic cartography.

This strategy allows a first territorial reading of coal geography in Boyacá incorporating accessibility and local particular conditions. Provisional findings suggest a remarkable spatial concentration of coal potential and mining activity in a subset of municipalities, confirming the territorial relevance of coal in Boyacá within the broader decarbonization and energy transition debate that currently challenges the coal sector in Colombia. At the same time, preliminary evidence points to substantial heterogeneity in territorial capital conditions across coal municipalities. The paper contributes a municipality-level framework for discussing resource-based regional fragility and informing future analyses of territorial resilience and transition pathways in coal-dependent regions.

## COAL SPECIALIZATION AND SPATIAL INEQUALITY IN BOYACÁ (COLOMBIA)

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### Abstract

This paper examines the territorial significance of coal in the Boyacá Department, Colombia. Boyacá remains one of Colombia's key coal-producing regions, and coal continues to shape local productive structures, fiscal dynamics, and municipal trajectories. However, the regional relevance of coal does not necessarily imply homogeneous territorial benefits. The paper addresses a central question in resource-based regional development: whether coal specialization is associated with positive local linkages or whether it coexists with persistent territorial fragilities and uneven outcomes.

This study is grounded in regional economic geography and the territorial capital approach, which holds that territorial performance depends not only on natural resource endowments but also on how these are articulated with institutional, fiscal, social, and local organizational capacities. From this perspective, coal specialization may constitute a productive advantage and a source of municipal income, but it does not by itself guarantee positive local linkages or homogeneous improvements in welfare. At present, in the context of energy transition and decarbonization, this compels us to examine coal not only as a resource or an extractive activity, but as a factor shaping differentiated territorial trajectories, including possible combinations of productive specialization, relative fiscal strength, and persistent multidimensional poverty.

In a methodological frame, we analyze municipal differentiation across the 123 municipalities of Boyacá. We assemble a composite territorial framework based on four municipal sub-indicators: 1, coal mining specialization, capturing the degree to which local extractive activity is concentrated in coal relative to other mining activities; 2, coal importance, combining the number of mining titles and mining royalties paid in each municipality; 3, fiscal performance, using the official Fiscal Performance Index produced by Colombia's National Planning Department (DNP); and 4, multidimensional poverty, using the Multidimensional Poverty Index (MPI/IPM) reported by DANE. Together, these dimensions represent productive specialization, sectoral weight, municipal fiscal capacity, and social conditions with 2024 official data. Each sub-indicator is standardized and analyzed through Exploratory Spatial Data Analysis, including Global Moran's I, to identify overall spatial autocorrelation, and Local Indicators of Spatial Association (LISA) to detect local clusters and spatial outliers. Finally, Principal Component Analysis (PCA) is used to examine the covariance structure among the four dimensions across the municipalities, identify the dominant axes of variation, and provide an empirical basis for interpreting the relative weight of each component in the territorial configuration. The results are represented through thematic cartography and municipal comparative profiling.

A working expectation is that the two coal-related dimensions of specialization and sectoral importance will be strongly associated in coal municipalities, while their links with fiscal performance and multidimensional poverty will be more heterogeneous. The contribution of the paper lies in providing a municipal-scale framework to evaluate coal-related territorial linkages, spatial inequality, and the differentiated challenges of energy transition in a coal-dependent region.

## URBAN AGRICULTURE AS A TERRITORIAL PLANNING INSTRUMENT IN AGRIFOOD SYSTEMS: SHORT FOOD SUPPLY CHAINS AND STRUCTURED SUSTAINABILITY TRANSITIONS IN A GLOBAL SOUTH METROPOLIS

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### Abstract

Urban agriculture in Global South cities has increasingly evolved into a structured planning instrument embedded within metropolitan governance frameworks. In the Metropolitan District of Quito, Ecuador, the AGRUPAR (Participatory Urban Agriculture) program operates as a municipal policy integrating agroecological production, technical assistance, and direct commercialization through short food supply chains (SFSCs). Rather than functioning as dispersed community initiatives, these activities form a territorially coordinated agrifood system linking peri-urban production zones with urban consumption nodes. This paper examines AGRUPAR as a regional planning mechanism and analyzes the operational role of SFSCs in supporting structured sustainability transitions at the metropolitan scale. Agroecological bio-fairs are assessed as commercialization nodes where production volumes, spatial distribution, logistical organization, and market exchange intersect. These nodes are approached as components of urban infrastructure influencing material circulation, distribution efficiency, and system-level coordination within metropolitan agrifood systems. The study is based on a mixed-method case analysis including structured surveys applied to 69 producers, direct field observations, and consolidated records from 52 weekly markets during 2024. Results indicate high institutional continuity, regular technical supervision, and stable producer participation across multiple districts. Production units are spatially distributed across northern sectors and peri-urban valleys, forming a network characterized by reduced intermediation and localized distribution loops. Short food supply chains contribute to demand alignment, lower transaction distances, and improved traceability within the metropolitan food system. However, commercialization spaces also emerge as structurally sensitive leverage points where infrastructure availability, data management, and logistical planning directly affect territorial efficiency. Variations in equipment provision and coordination mechanisms influence the performance of these nodes and the optimization of product circulation. From a regional planning perspective, AGRUPAR illustrates how urban agriculture can function as an instrument for structured sustainability transition. In this context, sustainability is understood as the intentional alignment of production, commercialization, and spatial planning processes under measurable environmental and operational criteria. The transition observed reflects deliberate institutional design aimed at improving system performance rather than spontaneous adaptation. The case provides empirical insight into how SFSCs can be institutionalized as territorial infrastructures within metropolitan governance structures in Global South contexts. By conceptualizing commercialization spaces as strategic planning nodes within urban distribution networks, the study contributes to regional science discussions on spatial coordination, resource flow optimization, and adaptive metropolitan planning in emerging urban agrifood systems.

## CONSTRUCTION OF SUBJECTIVE WELL-BEING INDICES FOR ECUADORIAN CITIES: THE CASE OF LOJA

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### Abstract

The multidimensional approach to well-being argues that urban quality of life cannot be assessed solely on the basis of monetary variables; rather, it must incorporate subjective perceptions and evaluations regarding everyday life, relationships with the community, and the natural environment. In Ecuador, despite the relevance of these approaches for guiding local public policies, there is a lack of comparable methodologies across cities based on citizen perception data. This study proposes and validates a methodology to construct subjective well-being indices that are applicable and comparable across Ecuadorian cities, using the city of Loja as a case study.

The research conceptualizes urban well-being through three integrated components: personal well-being (PW), associated with life satisfaction and the socioeconomic environment; community well-being (CW), related to satisfaction with the community, social capital, and trust in government; and environmental well-being (EW), linked to concerns about pollution and the conservation of natural environments. These sub-indices are subsequently consolidated into a Multidimensional Urban Quality of Life Index (MUQLI), which synthesizes both the horizontal nature of well-being (integration across domains) and its vertical structure (the internal configuration of dimensions and indicators).

Methodologically, index construction is based on survey data and follows a staged process: (i) data cleaning and normalization of responses; (ii) dimensionality reduction through Confirmatory Factor Analysis (CFA) to identify latent factors representing each dimension; (iii) weighting of components according to their statistical relevance; (iv) construction of the PW, CW, and EW sub-indices; and (v) weighted aggregation to obtain the MUQLI on an interpretable scale ranging from 0 to 100. Validation procedures assess the consistency and robustness of the indices to ensure that they accurately reflect well-being perceptions in Loja and can be extended to other cities.

The contribution of this study is twofold: (1) methodological, by developing a replicable tool for measuring urban subjective well-being in Ecuador; and (2) applied, by providing evidence-based inputs for local public policies aligned with citizens' perceived needs and with the goals of inclusive and sustainable cities. Furthermore, the proposal seeks comparability with representative cities across the country to enable spatial and temporal analyses of urban well-being.

## SPATIAL PROXIMITY AND ACCESSIBILITY PATTERNS OF X-MINUTE CITIES

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### Abstract

The 15-minute city concept has gained prominence in urban planning as a framework linking proximity, mobility, and quality of life at the intra-urban scale. An open question is whether this concept remains meaningful when applied to spatially connected urban regions or national urban systems. To address this issue, the X-minute city concept allows proximity thresholds to vary with spatial context, mobility conditions, and service distribution. This paper develops an operational framework to examine spatial accessibility patterns from an X-minute city perspective, using the Netherlands as a national-scale case study. Accessibility is analyzed at the building level using OpenStreetMap data and a combination of object-based k-nearest-neighbor measures, distance-decay functions, inequality metrics, Average Nearest Neighbor analysis, and quantile regression. Concepts from central place theory are employed as an interpretive lens to understand service clustering and accessibility patterns, rather than as a formal model to be tested. The results show pronounced spatial disparities in accessibility between urban and rural areas, as well as substantial variation within cities. Major urban centers such as Amsterdam, Rotterdam, and Utrecht exhibit high accessibility levels due to dense service provision, while peripheral and rural areas face systematically lower accessibility. Accessibility outcomes also differ sharply across population groups. Elderly residents and groups reliant on walking experience the highest levels of inequality, with accessibility distributions remaining highly uneven at short-distance thresholds. Cycling expands the range of effective activity spaces and reduces inequality, but does not offset structural disadvantages in areas with sparse service provision. The findings point to the limits of uniform proximity targets and reveal the need for context-sensitive accessibility planning that explicitly accounts for service distribution, mobility constraints, and population heterogeneity within national urban systems.

## INCREASING RESILIENCE IN THE FIELD OF TRAINING THROUGH LOCATION-BASED SOLUTIONS POWERED BY NEW TECHNOLOGIES (THE BPREPARED PROJECT)

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### Abstract

Resilience is becoming increasingly central to the future of communities, as societies face growing environmental, social, and economic uncertainties. Accordingly, a rising number of policy actions at European and national levels now explicitly address resilience-building as a strategic priority. However, resilience is inherently territorially differentiated: regions vary significantly in their exposure to risks, institutional capacities, and socio-economic conditions. Therefore, resilience strategies must be tailored to local and regional contexts. One key dimension of resilience is preparedness through education and training. In recent years, innovative training solutions have emerged, leveraging digital technologies to enhance learning effectiveness and engagement. These include virtual reality environments, interactive digital platforms, and serious games designed to simulate complex crisis scenarios.

The presentation reports on an experimental application development project funded by the European Union's Horizon Europe programme. The developed application family (BPREPARED) supports disaster preparedness training adapted to diverse European territorial contexts, enabling users to engage with region-specific civil protection scenarios in immersive and practice-oriented learning environments. This project also outlines new policy solutions to enhance resilience through these new educational technologies.

BPREPARED (101121134 HORIZON Europe) is an interdisciplinary research and innovation project designed to strengthen societal resilience and institutional preparedness in the face of complex and cascading crises. Responding to the increasing frequency and intensity of climate-related hazards, public health emergencies, technological disruptions, and geopolitical instability, the project aims to develop an integrated framework that enhances anticipatory governance, adaptive capacity, and coordinated response mechanisms across sectors and governance levels.

The project brings together academic institutions, public authorities, civil protection agencies, and technological partners to co-create evidence-based tools and strategies that support proactive risk management. BPREPARED adopts a systemic approach to preparedness, recognizing that contemporary crises are interconnected, multi-scalar, and often characterized by deep uncertainty. By combining data-driven modelling, participatory foresight methods, and policy innovation, the project seeks to bridge the gap between scientific knowledge, operational decision-making, and community-level resilience practices. Beyond technological innovation, BPREPARED contributes to policy development by formulating actionable recommendations for national and European preparedness strategies. It aligns with key EU priorities related to disaster resilience, climate adaptation, digital transformation, and security policy integration.

Ultimately, BPREPARED aims to shift preparedness from a reactive paradigm toward a forward-looking, anticipatory model of resilience governance. And governance in this context shall be understood from a multilevel territorial governance approach by fostering also cross-sectoral collaboration, enhancing data-informed decision-making, and embedding societal engagement into crisis management systems.

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## DIRAS, A PROBABILISTIC METHODOLOGY FOR MULTI-PERIL SYSTEMIC RISK ASSESSMENT: THE CASE OF STUDY OF COSTA RICA

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### Abstract

This paper introduces DIRAS (Direct and Indirect Risk Assessment System), a novel probabilistic methodology for multi-peril systemic risk assessment that integrates conventional probabilistic risk modeling with a Computable General Equilibrium (CGE) framework. The approach enables the quantification of both direct and indirect disaster impacts in a coherent probabilistic manner, explicitly accounting for the propagation of damage across the entire economy.

DIRAS combines hazard modeling, exposure characterization, and vulnerability functions from traditional probabilistic risk assessment with an economy-wide CGE model that simulates regional/sectoral interactions, supply-chain disruptions, price adjustments, among others. By probabilistically propagating disaster-induced damages into the CGE model, DIRAS captures how shocks to infrastructure, housing, public services, and productive sectors translate into systemic economic losses. The methodology therefore moves beyond physical damage estimation and allows for the assessment of cascading and feedback effects, including reductions in production capacity, labor market disruptions, fiscal pressures, and welfare impacts.

The paper exemplifies the methodology by presenting the application of DIRAS to study the systemic and cascading impacts caused by earthquakes in Costa Rica.

## REGIONAL POVERTY GAPS: A SPATIAL ANALYSIS ON CONVERGENCE AND STRUCTURAL DETERMINANTS IN AN EMERGING ECONOMY

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### Abstract

The Sustainable Development Goals (SDGs) renewed global commitments to reducing poverty and improving well-being, yet progress has been uneven across territories. Latin America remains one of the most unequal regions worldwide and continues to exhibit high poverty rates (Amarante et al., 2025). Structural constraints, low productivity growth, informality, and limited redistributive capacity weaken the transmission of economic growth into broad-based welfare gains (Kanbur & Lustig, 1999; López-Calva & Lustig, 2010; Ferreira et al., 2020). As development economics has long emphasized, macroeconomic stability and aggregate growth are necessary but not sufficient for inclusive development. Cross-country evidence confirms this heterogeneity. Poverty trajectories have diverged sharply across Latin America: while some countries achieved substantial reductions, others remained trapped in high-poverty contexts even during expansionary periods (Agostini et al., 2008; Ravallion, 2011). Mexico, for example, has experienced alternating episodes of poverty reduction and renewed inequality (Iñiguez-Montiel, 2014). These patterns illustrate that growth alone does not guarantee sustained poverty alleviation. Colombia provides a relevant case for examining the tension between aggregate progress and persistent spatial inequality. Although national monetary poverty declined to 31.8% in 2024, large territorial disparities remain (DANE, 2025). Chocó reports a poverty rate of 67.4%, while Bogotá, D.C. records 19.6%, a gap of 47.8 percentage points. Regional dynamics are equally uneven: Cesar registered the largest reduction (-6.6 pp relative to 2023), whereas Magdalena experienced the largest increase (+1.4 pp). Historical evidence also highlights the sensitivity of welfare outcomes to macroeconomic shocks. During the 1999–2000 slowdown, poverty rose from 56.38% to 62.37% amid fiscal instability (Caballero, 2000). By 2010, poverty had fallen to approximately 45.4% as economic recovery strengthened. These fluctuations reinforce the view that growth is necessary but insufficient for poverty reduction where structural and spatial inequalities endure (Dollar & Kraay, 2002; Bourguignon, 2004). These stylized facts motivate a spatial perspective. Poverty is not randomly distributed; it reflects local endowments, institutional quality, infrastructure, and market access, and often exhibits spatial dependence and heterogeneity (Anselin, 2001; Henderson, 2003; Rey & Montouri, 1999; López-Bazo et al., 2004). Where institutions are weak and mobility constrained, deprivation may become self-reinforcing, generating localized poverty traps (Bowles et al., 2006; Ikegami et al., 2019). Ignoring spatial dependence can produce biased or inefficient estimates and misleading conclusions about poverty determinants (Anselin, 2001; Driscoll & Kraay, 1998; LeSage, 2008; Plümper & Neumayer, 2010). This paper examines how spatial dependence and territorial heterogeneity shape poverty persistence in an emerging economy and how these dynamics can be modeled using spatial econometric methods beyond conventional approaches. Focusing on Colombia's 24 primary administrative units, the analysis shows limited convergence and persistent regional disparities. At current dynamics, poverty would require approximately 58.7 years to be reduced by half. Estimates from the Spatial Durbin Model (SDM) indicate that poverty is positively associated with genuine-services GDP per capita, unemployment, gender employment gaps, upper-secondary enrollment, and conflict intensity, and negatively associated with spurious-services GDP per capita, a more equal income distribution index, tertiary enrollment, and displacement inflows.

## IMPACT OF CYCLE LANES AND PUBLIC BIKE PARKING ON BICYCLE COMMUTING: COMPLEMENTING FRENCH CENSUS WITH SPATIAL DATA FOR POLICYMAKING

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### Abstract

Despite its well-documented benefits, cycling accounts for only 5% of home-to-work journeys of less than 5 km in France. Toward sustainable transportation, the French government is embarking on a national target of 12% modal share by 2030. However, the limited knowledge of the quantitative impact of additional bicycle infrastructure on bicycle commuting and heterogeneity in municipalities makes it difficult to achieve an equitable nationwide distribution of bicycle infrastructure. To fill these gaps, this study investigates the impact of additional cycle lanes and public parking spaces on bicycle commuting in mainland France. Census data with 6.7 million observations are enriched with spatial information to build four clustered standard error logit models with municipality correlated random effects. The results show that a one-unit increase in the rate of cycle lanes increases bicycle commuting by approximately 21% and 15% in the municipality of residence and work, respectively. A one-unit increase in public parking space increases bicycle commuting by 5% and 1% in the municipality of residence and work, respectively. From a policy perspective, there are several conclusions: (1) there is potential for cycling in high-density areas given additional cycle lanes and parking spaces in the municipality of work; (2) medium and low-density areas would require more infrastructure in the municipality of residence; (3) reaching the national target would require jointly increasing the supply of cycle lanes and parking spaces by twofold. If treated as mutually exclusive, the target is achievable by increasing the length of the cycle lane 2.3 times or the parking spaces 17 times. These findings provide a strong policy basis for additional national bicycle infrastructure according to population density and cycling patterns.

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## LEFT-BEHINDNESS AT LOCAL LEVEL IN EUROPE: MULTIDIMENSIONAL AND RELATIVE CONCEPT

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### Abstract

The World Bank outlines five characteristics of the left-behind regions (or lagging regions): i) some are more dynamic than others, ii) there are “low income” and “low growth” regions, and both have the lowest social outcomes iii) demographic decline is a defining feature of lagging regions, with both fertility and net migration rates that fall below the national averages, iv) they are peripheral, but not necessarily sparse and v) jobs in lagging regions are concentrated in low value-added non-tradables. In Europe, the present Cohesion Policy has changed the focus from traditional regions to places and people; thus it would be important to characterize and identify the left-behind “places” (and also the left-behind “people”). If following the World Bank criteria, very little can be said about the existence and persistence of these places basically due to the unavailability of GDP/income figures at a finer spatial scale than NUTS regions in the official European databases. As for the rest of socioeconomic variables mentioned by the World Bank (such as demographic, labour or geographic indicators), there is simply no comprehensive European database at local level (LAUs).

In the EXIT Project we estimated figures of average household income at local level and also collect country by country the socioeconomic variables existing at local level for years 2011 and 2021 in order to characterize, identify and illustrate the multidimensional and relative nature of the elusive left-behindness concept when applied at local level.

## Coordinating Circular Transition Across the Baltic States: The Baltic Circular Hotspot as an Emerging Regional Governance Platform

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### Abstract

The transition to a circular economy is increasingly recognized as a strategic pathway for strengthening sustainability, resilience, and long-term competitiveness. At the same time, its implementation remains territorially uneven and institutionally fragmented, particularly in smaller and highly interconnected economies where policy ambitions often exceed the practical capacity for coordination. In the Baltic states, circular transition is shaped by multiple national initiatives, differing institutional settings, and uneven stakeholder capacities, yet many of the underlying challenges are shared across borders. This paper examines the Baltic Circular Hotspot as an emerging regional governance platform intended to support more coherent circular economy transition across Lithuania, Latvia, and Estonia. The paper starts from the premise that, in small-state contexts, circular transition cannot be effectively advanced through isolated national initiatives alone. Instead, it requires an intermediate regional layer capable of connecting stakeholders, aligning strategic priorities, and creating continuity between local experimentation, national policy frameworks, and wider European transition agendas. Against this background, the Baltic Circular Hotspot is analysed as a developing governance mechanism through which public institutions, businesses, knowledge organizations, and civil society actors can engage in shared agenda-setting, learning, and cooperation on circular transformation at Baltic scale. The study is designed as a policy-oriented exploratory case study. It combines document analysis, governance mapping, and comparative interpretation of the evolving circular economy landscape in the Baltic region. Rather than assessing finalized impacts, the paper focuses on the institutional functions that such a platform can perform in a cross-border regional transition context. Particular attention is given to its potential role in stakeholder alignment, partnership formation, strategic agenda-setting, knowledge exchange, skills development, and the creation of a common regional narrative for circular transition. The analysis is guided by three questions: how a regional platform can reduce fragmentation among national circular economy efforts; which governance functions are most relevant for effective cross-border coordination; and how regional cooperation can support more coherent and scalable transition pathways. The provisional conclusion is that the Baltic Circular Hotspot can be interpreted as more than a network for communication and visibility. It represents an early form of regional transition infrastructure whose value lies in its ability to connect dispersed initiatives into a more coherent Baltic transition space. Such a platform can strengthen policy learning, improve coordination across governance levels, and help smaller countries build the critical mass needed for circular innovation and implementation. The paper argues that, in the Baltic context, the key policy challenge is not only to expand the number of circular initiatives, but also to improve the territorial coordination of transition processes. By conceptualizing the Baltic Circular Hotspot as an emerging regional governance platform, the paper contributes to regional science debates on how cross-border institutional architectures can support sustainable development under conditions of structural change, uncertainty, and accelerating transition demands.

## **Bridging National Strategy and Local Action: A Municipal Innovation Center Model for Sustainable Territorial Development in Lithuania**

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### **Abstract**

Municipalities are increasingly expected to respond to interconnected challenges related to climate change, circular economy, digital transition, resilience, and social well-being. However, these growing responsibilities often exceed the institutional and operational capacities available at local level. In many cases, municipalities work within fragmented policy frameworks, project-based funding structures, and weak coordination systems that make it difficult to translate national and European priorities into integrated local action. This paper addresses these challenges through the conceptual development of a Municipal Innovation Center for Lithuania as a governance mechanism designed to strengthen municipal transition capacity and improve the coordination of sustainable territorial development.

The paper is based on the assumption that successful municipal transformation depends not only on local ambition, but also on the existence of institutions capable of linking municipalities with ministries, public agencies, universities, businesses, and civil society organizations. The proposed center is therefore framed not as a single project or advisory unit, but as an intermediary governance instrument operating at the interface between national strategy and local implementation. Its purpose would be to support municipalities in addressing complex cross-sectoral problems through structured cooperation, practical methodologies, peer learning, strategic matchmaking, and coordinated innovation support. In this way, the paper contributes to broader discussions on the role of intermediary institutions in enabling place-based sustainability transitions.

Methodologically, the study is positioned as a policy-oriented conceptual model paper. It combines comparative policy reflection, institutional benchmarking, and governance mapping in order to identify the principal functions that such a center would need to perform in the Lithuanian context. The analysis focuses on four dimensions: coordination across governance levels; translation of national and European policy priorities into actionable municipal processes; support for learning, experimentation, and problem-solving across municipalities; and the creation of more continuous, mission-oriented approaches to local development. Rather than proposing a rigid institutional blueprint, the paper develops a functional governance model that can be adapted over time to municipalities with different scales, resources, and development profiles.

The provisional conclusion is that a Municipal Innovation Center could play an important meso-level role within Lithuania's transition architecture. Its added value would lie in reducing fragmentation, strengthening local problem-solving capacity, and creating a stable support structure through which municipalities could access expertise, methods, partnerships, and longer-term strategic guidance beyond isolated projects. The paper argues that sustainable territorial development increasingly depends on such intermediary mechanisms, particularly in countries where municipalities are central to implementation but often constrained in their ability to act alone. From a regional science perspective, the proposed model is relevant not only as a national institutional innovation but also as a transferable approach to improving the territorial coordination of transition processes in places where local governments face growing expectations without commensurate systemic support.

## Wage Dynamics of Immigrants and Natives: Evidence from Ecuador, 2018-2024

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### Abstract

This article examines the wage gap between immigrant and native workers in Ecuador, focusing on wage distribution and its evolution between 2018 and 2024. Immigration to Ecuador has gained prominence since 2012 due to the massive influx of Venezuelan citizens, in addition to traditional migration flows from Colombia and Peru. According to Pedone (2019), the profile of Venezuelan immigrants can be categorized into two types: pioneering professionals with independent migration projects and skilled employment in their destination country, and newly arrived migrants characterized by greater diversity in qualifications and more precarious employment. The theoretical framework is based on the theory of labor segmentation by Dickens & Lang, (1988), the impact of immigration by Ottaviano and Peri (2012) and Manacorda, Manning and Wadsworth (2012), Delgado – Prieto (2024) and Lebow (2022).

Using microdata from the National Survey of Employment, Unemployment, and Underemployment (ENEMDU), we analyzed employed individuals aged 15 to 65 in the private sector. To capture distributional heterogeneity, we implemented a counterfactual wage decomposition based on quantile regressions, following Machado & Mata (2005), whose contribution is based on the idea that an increase in years of schooling can increase inequality.

The results show that immigrants experience a decline in the performance of education across all quantiles between 2018 and 2024, demonstrating a generalized reduction in the wage premium associated with schooling. This suggests a wage penalty associated with immigration status. In 2018, this penalty is greater at the lower end of the wage distribution, while in 2024 it becomes more uniform, stabilizing at approximately 10% across all quantiles. It is worth noting that the penalty increases at the upper end of the scale, indicating a deterioration in relative outcomes for the most highly skilled immigrants.

The data evidence that international immigrants earned a higher salary than native-born workers in 2018, but this changed by 2024. The results demonstrate the persistence of a segmented labor market between immigrant and native workers, explained by persistent and evolving wage disparities. This article contributes to the literature by providing new evidence on wage gaps between immigrants and native workers in the context of a developing country. In this context, recent labor migration in Latin America and the Caribbean initially had an intra-regional focus, which influenced the structure of its labor markets, where immigrants often enter the informal labor market, reinforcing the dual labor market model.

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