

SPATIAL SPILLOVERS IN LOCAL LABOUR MARKETS: TOURISM EMPLOYMENT AND WAGE BILLS ACROSS CHILEAN MUNICIPALITIES

Emilio Becker¹; Stephan Brunow²; Eduardo Sanguinet^{1,3}

¹ Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, Brazil;

² Hochschule der Bundesagentur für Arbeit (HdBA), Schwein, Germany;

³Universidad Austral de Chile (UACH), Valdivia, Chile

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The spatial location of employment is not randomly determined. In local labour markets, geographical proximity may amplify opportunities or reproduce inequalities through mechanisms of spatial interdependence. Whether sectoral growth translates into territorial diffusion or instead consolidates persistent spatial concentration remains a central question in regional economics, particularly in service-based economies where employment creation may follow uneven spatial patterns. (Anselin, 1988; LeSage & Pace, 2009; Elhorst, 2014)

Chile offers an appropriate empirical setting. Between 2000 and 2020, the Metropolitan Region of Santiago consistently concentrated more than 40% of national GDP, and regional and municipal per capita income gaps remained persistent. (Banco Central de Chile, various years; SUBDERE, 2021) At the same time, the Chilean economy has undergone a gradual structural transformation toward service-based employment, which today accounts for roughly 70% of national employment. (Banco Central de Chile, various years) Empirically, tourism is far from marginal in Chile. Between 2012 and 2022, employment linked to tourism-related activities increased by approximately 57%, while total national employment expanded by about 10% during the same period. (INE, 2022; SERNATUR, various years) Yet aggregate national figures conceal the territorial distribution of this growth. It remains unclear whether employment gains have been spatially diffuse, benefiting peripheral municipalities, or geographically concentrated in already advantaged territories. (INE, 2022; SERNATUR, various years)

Moreover, employment levels alone do not capture income generation. Municipalities with similar numbers of tourism-related jobs may differ substantially in the wage bill generated by those activities. Differences in occupational composition, seasonality, firm structure, productivity, and specialization in higher-value tourism segments can produce divergent income outcomes. For this reason, the paper jointly analyses tourism employment and tourism-related wage bills. The wage

bill is interpreted as an aggregate measure of labour income generated within the local labour market, capturing both job quantity and income intensity. This distinction allows the analysis to identify whether spatial concentration in employment coincides with concentration in labour income, or whether a mismatch emerges between job creation and income capture. (LeSage & Pace, 2009; Elhorst, 2014)

This paper examines whether tourism employment and associated wage bills exhibit spatial interdependence at the municipality level in Chile and investigates the extent to which these configurations are linked to relatively persistent territorial attributes. Three interrelated research questions guide the analysis. First, do tourism employment and tourism-related wage bills exhibit global and local spatial autocorrelation? Second, are employment and wage bill spatial configurations aligned, or do they reveal distinct spatial patterns? Third, to what extent are these patterns associated with relatively persistent territorial attributes once spatial interdependence is explicitly modelled? (Anselin, 1988; Elhorst, 2014)

The formal empirical analysis focuses on two benchmark years, 2013 and 2023, covering all 345 municipalities in Chile. The choice of benchmark comparison reflects a structural perspective rather than a short-term cyclical analysis. The objective is to characterize spatial configurations and contemporaneous dependence structures at two distinct moments separated by a decade, allowing for the assessment of persistence and transformation without imposing annual dynamics. This design is consistent with the broader multiscalar structure of the dissertation, where structural change is examined through discrete temporal comparisons across different territorial scales.

The conceptual framework integrates cumulative causation, agglomeration theory, and spatial labour market approaches. Cumulative causation emphasizes that initial advantages may reinforce themselves through market size, infrastructure concentration, and network effects, leading to persistent inequality. Agglomeration theories highlight the role of scale, density, and connectivity in shaping spatial concentration. Spatial labour market approaches stress that employment and income outcomes are not confined within administrative boundaries, as commuting flows, shared infrastructure, and inter-municipal complementarities generate interdependence. (Combes, Duranton, & Gobillon, 2011; Duranton & Puga, 2004; Iammarino, Rodríguez-Pose, & Storper, 2019)

Tourism combines immobile assets with mobile demand and labour. Municipalities may benefit from attractions located in neighbouring territories, suggesting positive spillovers. Conversely, they may compete for visitors, investment, and labour, generating negative spatial interactions. The sign and magnitude of spatial dependence therefore become empirical questions rather than theoretical assumptions. (Anselin, 1988; LeSage & Pace, 2009)

The empirical strategy proceeds in three stages. First, tourism specialization is described using location quotients to document territorial heterogeneity. Second, spatial autocorrelation is assessed using global Moran's I and Local Indicators of Spatial Association (LISA), identifying clusters of high-high, low-low, and spatial outliers. Third, spatial econometric models are estimated, including Spatial Autoregressive (SAR), Spatial Error (SEM), and Spatial Durbin (SDM) specifications. (Anselin, 1988; LeSage & Pace, 2009; Elhorst, 2014)

The SAR model captures endogenous interaction effects through spatial lags of the dependent variable, allowing the estimation of how tourism employment or wage bills in one municipality are influenced by neighbouring outcomes. The SEM model accounts for spatially correlated omitted variables. The SDM model incorporates spatial lags of both dependent and independent variables, enabling the decomposition of effects into direct impacts within municipalities and indirect spillover effects operating through neighbouring territories. This decomposition is particularly relevant in tourism, where accessibility, amenities, and infrastructure in adjacent municipalities may influence local labour market outcomes. (LeSage & Pace, 2009; Elhorst, 2014)

Explanatory variables are grouped into five dimensions of territorial attributes interpreted as relatively persistent structural conditions: tourism infrastructure and service capacity (including accommodation capacity and gastronomic services); accessibility and connectivity (distance to airports, road connectivity); labour market scale and density (population size, economic density); human capital (educational attainment); and natural and cultural amenities (coastal access, protected areas, heritage assets). These dimensions capture both amenity-based drivers and structural economic conditions, allowing the empirical assessment of whether tourism employment is primarily anchored in natural endowments or associated with broader economic spillovers. (Combes et al., 2011; Duranton & Puga, 2004)

Preliminary descriptive evidence reveals pronounced territorial heterogeneity. Municipal-level location quotients calculated for 2007, 2012, 2017, and 2022 indicate persistent specialization patterns. In 2022, several municipalities display location quotients above 2 and, in some cases, above 4, suggesting strong relative specialization in tourism employment. Simultaneously, a significant number of municipalities remain persistently underrepresented. This coexistence of highly specialized and structurally lagging territories indicates that tourism expansion may be compatible with persistent spatial hierarchy. However, specialization measures alone do not establish whether clustering is statistically significant, whether it is stable over time, or whether neighbouring municipalities exert measurable influence on one another. (Anselin, 1988)

Interpretation of spatial coefficients is undertaken cautiously. A positive spatial lag coefficient suggests reinforcing spillovers or integrated tourism systems. A negative coefficient indicates competitive displacement across neighbouring municipalities. Significant spatial error dependence suggests omitted spatially correlated factors. The SDM framework further clarifies whether territorial attributes generate localized effects or broader regional impacts. (LeSage & Pace, 2009; Elhorst, 2014)

The contribution of the paper is threefold. First, it provides municipal-level evidence on spatial dependence in tourism labour markets in a middle-income economy characterized by persistent territorial disparities. Second, it integrates exploratory spatial analysis with spatial econometric modelling and distinguishes between the geography of employment concentration and the geography of labour income generation. Third, it contributes to broader debates on territorial cohesion and place-based development by assessing whether a rapidly expanding service activity can alter entrenched territorial hierarchies or instead reinforce cumulative spatial advantages. (Barca, McCann, & Rodríguez-Pose, 2012; Rodríguez-Pose, 2018)

More broadly, the findings inform discussions about the role of tourism in structurally unequal economies. Tourism is frequently promoted as a development pathway for peripheral areas endowed with natural and cultural assets. However, whether such expansion translates into territorially diffuse income generation remains an empirical question. By jointly analysing employment and wage bills and explicitly modelling spatial interdependence, this paper provides evidence on whether tourism functions as a territorial equalizer or as a mechanism consistent with cumulative causation dynamics. (Iammarino et al., 2019; Rodríguez-Pose, 2018)

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