



Latent sprawl patterns and the spatial distribution of businesses in a southern European city



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ABSTRACT

The relocation of businesses beyond the consolidated city is an important aspect of recent urbanization trends. With economic restructuring driven by suburbanization and counter-urbanization, Southern European metropolitan areas experienced distinct growth patterns compared with north-western Europe. The present study assesses the impact of recent changes in the spatial distribution of businesses on land-use structure, sprawl trends and land consumption in a Mediterranean urban region (Athens, Greece) with the aim to identify economic drivers of sprawl and to inform urban containment strategies. Businesses showed two distinct localization patterns: manufacture, publishing and transport companies, construction and hotels were concentrated in urban municipalities; real estate, finance, high-tech, telecommunication, mining and energy enterprises settled preferentially in suburban municipalities. Dispersed urban expansion mainly reflects the spatial relocation of economic activities with high returns on capital to cheaper land. High-tech enterprises and finance/real estate businesses dominated the economic structure of municipalities with sprawled settlements. Policies securing economic development and a land-saving spatial structure are increasingly required to work towards integrated measures promoting semi-compact metropolitan poles and containing deregulated urban expansion.

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1. Introduction

Urbanization and local development have been related to a mix of socioeconomic factors, thus making the analysis of cities' form and functions a complex and challenging issue (Kazepov, 2005; Phelps, Parsons, Ballas, & Dowling, 2006; Torrens, 2008; among others). Urban growth is the result of a market equilibrium where competing claims to the land are appropriately balanced (Brueckner & Fansler, 1983 and—even with some caveats about possible market failure—McGrath, 2005; Gill & Goh, 2010). Urban expansion has been shaped by multifaceted drivers of change such as the regional economic base, the (evolving) socio-spatial structure, political and cultural issues, and territorial conditions including topography, natural landscape and agricultural specialization (Couch, Leontidou, & Petschel-Held, 2007). In most advanced countries, for the most part of their history, industrialization promoted urbanization in turn enhancing economic growth (Whitehand & Morton, 2006).

Economic restructuring and the transformation of the production base of a given region have determined the relocation of businesses beyond the physical boundaries of cities, triggering suburbanization (Brueckner, 2000). While suburbanization is usually accompanied with changes in the sectoral composition of economic activities at the

regional scale, more localized sprawl processes, reflected in mixed uses of land and scattered fringe settlements, depend on the location preference of specific groups of enterprises—clustered or dispersed—in search for cheaper land (Richardson & Chang-Hee, 2004; Bruegmann, 2005; Phelps et al., 2006).

A number of compact and dense cities have progressively shifted towards a more scattered structure of firms' locations at the local scale (Riguelle, Thomas, & Verhetzel, 2007; Ahlfeldt & Wendland, 2013; Salvati, Sateriano, & Bajocco, 2013). Moreover, in case of large-scale development projects, foreign direct investments are an important driver of land-use change, with limited influence of local land users (Seto & Kaufmann, 2003). Industrial sprawl has been responsible for important negative externalities, e.g. inefficiency in energy use and unsustainable land take (Couch et al., 2007), and it has also been found associated with a declining labor productivity (Fallah, Partridge, & Olfert, 2011). This transition determined subtle changes in the morphology of several cities shifting towards settlement scattering, mixed land-use and land consumption with uncertain benefits in terms of urban competitiveness (Cervero, 2001). Uncertainty is even greater when local communities engage in wasteful economic competition using expensive tax incentives and subsidies to attract favored industries (Partridge & Olfert, 2011). In the case of economic decentralization, with sub-centers competing with a core city, activities are simply rearranged in space without creating any new wealth (Bruegmann, 2005).

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Mediterranean cities reflect distinct growth patterns compared to affluent, western Europe counterparts. Following a long debate on the stereotypical models for southern European cities, scholars were progressively abandoning the ‘myth’ of a unifying Mediterranean framework, moving to more general reflections on urban growth, economic structures and socioeconomic patterns producing a diversified and chaotic urban landscape (Leontidou, 1993). ‘Urbanization without industrialization’ has been frequently observed (Leontidou, 1990; Catalàn, Sauri, & Serra, 2008; Yüzer & Yüzer, 2014) with suburbanization and sprawl showing complex interrelations with economic restructuring (e.g. Wynn, 1984; Leontidou, 1993; Gaschet, 2002; Salvati, 2014a). In these cities, diffuse urbanization ran parallel to industrial decline and services decentralization, fuelled by the rise of traditional, labor-intensive small units and the consolidation of a large informal sector with negative implications for regional competitiveness (Leontidou, 1996).

Earlier evidences have suggested that the informal sector mainly absorbs laborers in the inner cities and popular suburbs (Leontidou, 1990). A widespread informal economy may thus work against sprawling, but not necessarily against suburbanization, which is more related with casual work (Leontidou, 1993). Changes towards a more casual suburban labor market were observed, for example, in Athens as a result of intense immigration flows from the Balkans and the Middle East—promoting dispersed urbanization at the local scale (Leontidou, 1996). The shift in the location pattern of businesses and changes in the use of land determined the increase of suburban population, alighting a vicious cycle with land consumption (Burgel, 2004). At the same time, urban competitiveness did not benefit significantly from this new spatial configuration, with commerce, constructions and the public sector still dominating the local economic base (Chorianopoulos, Tsilimigkas, Koukoulas, & Balatsos, 2014).

Uncompetitive and dispersed urban models have been alighted by ineffective land management and poorly participated regional planning, which are taken as barriers to sustainable development (Chorianopoulos, Pagonis, Koukoulas, & Drymoniti, 2010). In Athens, deregulated urban patterns have consolidated economic polarization and social stratification (Vaiou, 1997; Giannakourou, 2005). By abandoning compact and dense settlements prevailing up to the 1980s, scattered urban expansion with stable (or slightly decreasing) population, rising unemployment and a stagnant economy was the dominant trend since the early 1990s (Salvati et al., 2013). The inefficient use of land and the modest economic performance driven by the persistence of low value added services, have reduced sustainability of such urban models.

Based on these premises, our study investigates the impact of recent economic transformations on land-use structure, sprawl patterns and soil sealing, with the aim at identifying the main drivers of suburbanization and informing policies for the containment of land consumption. In deregulated urban contexts, methodologies providing a structured account of hierarchical causality among economic and social factors—such as Alonso’s model or the ‘urban life cycle’ approach—will more likely fail to capture the complexity of processes leading to suburbanization and sprawl (Leontidou, 1993). By contrast, the multifaceted aspects that shape post-modern urban societies and economies, are assessed effectively by investigating the spatial relation between businesses’ localization and land-use changes.

The specific objectives of this study are (i) to assess the economic structure of Athens’ region in relation to land consumption patterns and efficiency in the use of land, (ii) to investigate the location pattern of the activities settled in the area and (iii) to identify and discuss sustainable and competitive spatial organizations for large Mediterranean cities based on land-saving urban forms. Athens’ case is interesting for different reasons: first, as an example of the on-going transition of several Mediterranean cities from a compact model to scattered configurations; second, as a case for urban transformations determined by a mega-event such as the 2004 Olympic games (Zagorianakos, 2004).

The originality of the approach proposed in this paper lies in the exploratory analysis of the relationship between regional economic structure, land-use patterns and settlement morphology in the light of urban sustainability.

2. Methodology

2.1. Study area

This study investigates a major part of Attica region including the metropolitan area of Athens, the capital of Greece (Fig. 1). The area was partitioned in four prefectures (Athens, Piraeus, Eastern Attica and Western Attica) administered by 114 municipalities (before the national reform of local administration, the so called ‘Kallikratis’ law enforced in 2011 which reduced the number of local councils to nearly 60). Attica is characterized by undulated morphology that reduces land availability to edification and accessibility of some rural municipalities.

Salvati (2014b) has identified distinct time periods in the Athens’ long-term expansion since the establishment of the modern Greek state: the first interval encompassed the 19th century and was characterized by a relatively stable population and urbanization concentrated in the Athens’ municipality. The second period extended from the 1900s to the 1930s and was characterized by Athens’ compact expansion culminated in the massive settlement of refugees from Asia Minor (1921) in the surrounding municipalities (Kallithea, Nea Smyrni, Agios Dimitrios, Dafni, Galatsi). At the same time, Piraeus became the most dense and compact urban agglomeration in Greece. The third period (encompassing World War II and the subsequent two decades) totalized the highest rate of population growth in Attica. Settlement compactness and moderate land consumption were observed in greater Athens while population started declining in Piraeus. The most recent period was characterized by a progressive de-concentration of Athens’ and Piraeus’ urban areas and rapid growth of rural districts experiencing intense population growth.

Athens’ economy is service-oriented and centered around sectors such as finance, banking, insurance and real estate (Delladetsima, 2006). In the last two decades a slow transition towards a service-oriented economy was observed with the tertiary sector accounting for 72% of the regional value added in 1988 and 87% in 2007 and the secondary sector declining from 27% (1988) to 13% (2007). Manufacturing and constructions produced respectively 11% and 5% of the regional value added in 1995 decreasing to respectively 8% and 4% in 2006 (Table 1). The 2004 Olympic Games have had a major impact on city’s development, attracting investments and creating new infrastructures (Salvati et al., 2013). Despite recent suburbanization, population in the urban area is still growing, as shown by official statistical data (Grekousis, Manetos, & Photis, 2013). The intensity of soil sealing is particularly high in the inner city and relatively low in suburbs, indicating a persistently compact and dense spatial structure (Fig. 1).

2.2. Data and variables

2.2.1. Land-use data

A map developed as part of the Urban Atlas (UA) initiative was used to assess land-use distribution at the metropolitan scale in Athens. The UA project is the major initiative dealing with high-resolution land-use monitoring in Europe and provides an informative tool for assessment and policy analysis (European Environment Agency, 2011). The initiative was undertaken by the European Environment Agency (EEA) within the Global Monitoring for Environment and Security (GMES) framework; shape-files and geo-referenced data are disseminated by EEA (<http://www.eea.europa.eu/data-and-maps/data/urban-atlas>). UA offers 1:10,000 maps (0.25 ha Minimum Mapping Unit) of 283 European urban areas (>100,000 inhabitants) coinciding with the respective ‘Large Urban Zones’ identified in the framework of the Urban Audit program for the reference year 2006. Thematic maps included

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