



Centrality and Capital Costs in Urban Areas: Policy Watch for Spain^{*}

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Abstract

For decades the discussion on the local public services in urban areas pivoted on the advantages and disadvantages of central cities. Their effects are difficult to measure and mitigate, the benefits are debatable although the literature proposes a set of answers. Some of these options have been adopted in practice through different economic policy measures that spark a debate. This paper is the first to collect a survey with the different positions regarding the costs and benefits of centrality and it also provides a policy watch of economic policy measures that have been put into practice in Spain.

Keywords: Urban areas, Central cities, Capital cost, Agglomeration economies, Policy watch.

JEL Classification: H21, H23, H77, R12, R41, R51.

1. Introduction

The theory of fiscal federalism is embedded in the view of public finance and emphasises the importance of transfers in addressing vertical and horizontal imbalances. According to the theory of fiscal federalism, Samuelson (1954, 1955) described the nature of public goods, while Musgrave (1939, 1959) added the conception of the multilevel state and the role of the public sector under conditions of market failure. This conceptualisation was completed by Tiebout's vote theory (1956) and Buchanan's public goods club theory (1965), with the roles of the private and public sectors. In the absence of externalities and economies of scale,

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decentralisation allows better adaptation of public policies to local preferences and needs (Oates, 1972, 2005), but in reality, expenditure spillover effects are a widespread feature of many services provided by local governments.

Local public goods are not pure in that they are subject to the effects of geographical overflows, frequent in the urban economy. The benefits of some activities may exceed the limit of the level of provision of competence; thus, the level of provision is insufficient or suboptimal. Thus, it is often discussed that there is an additional burden on the municipality that owns the centrality equipment, which, in the absence of adequate equalisation mechanisms, is “exploited” by foreign users of its goods and services (Blankart and Borck, 2005).

More traditional studies assume that in an urban environment there are negative externalities and spillover effects like those of congestion costs, solid waste management, mobility costs, incomplete information, concentration of social problems, etc. Costs will be higher if more productive activities are replaced by administrative activities of lower productivity and loss of tax revenue through the application of tax exemptions.¹ In the absence of a compensation mechanism, the set of interdependencies external to the price system implies the non-independence of different functions of preference, in such a way that “gaps” are created between benefits and private costs and their correlatives of a public nature, which can lead to suboptimal decision-making (Bruegmann, 2005; Hamidi and Ewing, 2014; Hamidi *et al.*, 2015).

Many theses defend the practice of central cities that sustain the suburban habitant who occupies its streets, demands its services, and then moves outside the city limits to a residential property that is not taxed to pay for these public services (Caramés and Cadaval, 2008). However, not everything is negative for the central cities. The fact of attracting residents from other nearby localities generates positive effects that should be considered to establish a cost-benefit analysis adjusted to reality. Agglomeration economies encourage innovation and the creation of new business initiatives, thereby fostering the promotion of research and development (R&D) activities, an issue vital for economic development. In addition, the existence of these agglomeration economies can reduce the cost of goods and services generated by the city for both residents and non-residents, as long as they are services capable of taking advantage of economies of scale (Gill and Goh, 2010; Giuliano *et al.*, 2019; Ladd and Bradbury, 1988).

The cost and benefits of spatial use are difficult to measure and to mitigate; most papers propose a set of solutions (Cox and Utt, 2004; Glaeser and Gottlieb, 2009; Hortas and Solé, 2010; Kahn, 2010; Kahn and Walsh, 2015; Litman, 2003). Some of these options are a different financing system for central cities, transfers from other levels of government, or the payment of a certain amount from the non-central areas to the central area. The question is whether peripheral areas are interested in such agreements. While most economic studies raise the need for some form of agreement, these tend to consider only the additional costs incurred by non-residents in exploiting local public goods and services but not the benefits they generate. This leads to an asymmetric distribution of the burden of providing services and suboptimal allocation.

Advocates of compensatory transfers of centrality cost argue their necessity because central cities finance public goods and services that benefit not only residents but all those who

use these cities (Hortas and Salinas, 2014; Slack, 2010). Consequently, the debate focuses on the need for compensation and the amount of it (Rosenthal and Strange, 2020; Rosenthal and Strange, 2001). Despite the relevance of the above, there are hardly any recent works on this subject, and the few references are old. In this sense, this study is the first to carry out a complete analysis of the works that try to approximate the calculation of the cost of centrality of cities.

The aim of this study focuses on three elements: (a) reviewing the main studies, from both a theoretical and a practical perspective, on the cost of municipal centrality; (b) grouping the different tools used to offset centrality costs according to their taxonomy; and (c) carrying out a policy watch exercise on the main public actions implemented in Spain to alleviate the cost of centrality.

Following this introduction, the second section carries out a survey of the representative literature. In the third section, a policy watch is conducted of the actions carried out, with descriptions of the measures implemented in Spain. Finally, conclusions will be presented.

2. Centrality Cost: Literature Review

The traditional issues of centrality cost argued that central cities sustain the suburban inhabitant who occupies its streets, demands its services, and then moves outside the administrative boundaries without paying for these utilities. Non-resident visitors use the services that the city offers to its residents without paying any amount for their use, and this is usually identified with overflow costs in municipal services in addition to costs relating to the concentration of social problems and other factors arising from the high population density. However, on some occasions, this thesis is nuanced and complemented with the benefits derived from centrality.

Some authors have argued theoretically that central cities are exploited by those who benefit from city-produced public goods without contributing to their payment. The existence of externalities creates a divergence between private and social costs of production and the private and social benefits of consumption (Boskin, 1973; Brainard and Dolbear, 1967; Gordon, 1983; Oates, 1972; Pauly, 1970). This kind of public spillover could lead to the underprovision of public goods in the city (Neenan, 1970). The academic literature in the 1970s and 1980s emphasised the equity and altruism of the suburbs to the central cities; the most recent research has explored this in the interest of the suburbs (Haughwout and Inman, 2002; Voith, 1993, 2002) and found positive correlations between city and suburban pairs, while Rosenthal and Strange (2001) determined that the benefits of agglomeration decay over distance.

Other authors, however, argue that the level of spending of central cities depends, in many cases, on the size of the population living in the agglomeration, which often increases operating expenses, but this does not always involve exploitation. In some countries, the income disparity between the central city and the periphery is such that some authors identify this reality as redistributive. This is evidenced by studies such as that of Hawkins and Ihrke (1999), which have found that central cities not only bear costs but also benefit from the compensatory effects of surrounding areas.

For the most part, empirical works assume the existence of centrality costs and try to measure or quantify their effects, as well as to propose solutions to compensate for this problem. These papers summarise the reasons why the centrality of a city might influence the provision and spending: cities provide a range of specialised services in accordance with their dimension, and due to their importance as a central place, greater use is made of these cities' public services by those living outside. A city's level of spending is associated with its spatial function as a central place (Agnew, 2014; Sharpe and Newton, 1984). The effects of a city's centrality seem evident in the higher cost required to provide physical and welfare services. The fundamental question is: In what way should this status be recognised?

Below we carry out a policy watch of the main works to investigate the following issues: (a) whether there is evidence of the existence of centrality costs; (b) if so, to what extent taxes or transfers between different levels of government are able to mitigate their effects; and (c) an examination of the different metropolitan experiences that are applied in the main cities of the world.

The first empirical studies calculated, with descriptive techniques, the benefits and costs of the non-resident population in central cities. The results were different depending on the methodology used. While Margolis (1957) and Neenan (1970) found centrality costs, Davies (1965), Vincent (1971), and Smith (1972) estimated that benefits generated by suburban residents outweigh the cost and generate an effect in favour of the central city. Initially, such studies were conducted for cities and metropolitan areas of the United States, with conflicting outcomes, and later studies were extended to other central cities.

In this context, the financing of large cities and metropolitan areas is more difficult than the financing of other cities and municipalities because of the socio-economic characteristics that they present. We find a group of methodologically more elaborate studies that have determined the existence of centrality costs and proposed policies to mitigate them. Greene *et al.* (1974, 1976) presented one of the first studies on the additional costs and revenues that visitors bring to the city of Washington, DC. These researchers focused on fiscal and tax incidence of the local and federal governments in the Washington, DC, metropolitan area and concluded that there was horizontal fiscal inequality. They argued that the suburban relationship between the city centre and the city is exploitative because commuters use the city services but pay most of their local taxes to the local governments in which they reside. The cost of providing public services in central cities is not offset by the additional revenue that visitors cause, directly or indirectly, in the municipality.

Some papers, as we have advanced, introduce an alternative view of centrality cost and instead appreciate benefits related to centrality. Thus, they have considered that it is possible to have agglomeration economies, which increase economic activity as more infrastructure makes a city more attractive, causing people and businesses to move into these municipalities. Should this occur, municipal tax collection is likely to increase, mainly because of the increase in property taxes, economic activities, special taxes, and contributions linked to the increased residence of both individuals and businesses (Altshuler and Goodspeed, 2002). Sacher's (1993) study shed light on the large economics literature that maintains that sub-

urban areas fiscally exploit central cities when estimating the distribution of local taxes and expenditures in Washington, DC, and its Virginia and Maryland suburban jurisdictions. The results of the analysis do not show that the suburbs exploit the central city, although wealthy suburban residents may in a sense be exploiting their urban counterparts.

However, most authors (Chernick, 2002; Chernick and Tkachera, 2002; Greene *et al.*, 1976; Ladd and Yinger, 1989, Ladd *et al.*, 1991) have pointed out that the costs borne by the central city are not compensated for by the additional revenues generated by non-residents. Thus, Ladd and Yinger (1989) examined the determinants of major cities in the US, concluding that the fiscal health of these cities had worsened since the 1970s. They identified and measured the impact of these broad national trends and drew on data from 86 major cities with an analysis of urban fiscal conditions, calling for federal and state urban policies that would provide assistance to the neediest central cities. In the same vein, Ladd *et al.* (1991) conducted an analysis of the incidence of state compensation to local governments in Minnesota, with the result showing that it is necessary to increase economic endowments to big cities for the services that they provide even to non-residents.

Murdoch *et al.* (1993)² showed strong interactions between 85 municipalities in the Los Angeles metropolitan area for local expenditures and indicated that the provision of public services by the central local government is insufficient for the user population and causes an overflow effect. Greene and Reschovsky (1994) showed that peripheral municipalities near the large cities of Wisconsin are overcompensated for the services they provide, while those considered as central cities have a deficit between what they provide and what they receive. Chernick (2002) made an estimate of the costs caused by commuters to Washington, DC, concluding that the inability to recover this excessive cost is largely due to capital costs. Chernick and Tkachera (2002) studied the case of New York and suggested that the city should impose a tax on commuters. At the state level, Baicker (2005) estimated the extent to which state spending is influenced by spending in neighbouring states, examining several neighbouring metrics to better identify the channels of interstate spillovers and determining the need for trade-offs.

Bradbury and Zhao (2009) determined the existence of a fiscal gap in certain local governments in Massachusetts, considering not only the resident population but also those that use public services and infrastructure but do not reside in these cities. Chernick and Reschovsky (2013), analysing the revenues and expenditures of 112 major central cities in the US, pointed out that the effects of the Great Recession were more intense than in smaller cities. In a later work, Chernick and Reschovsky (2020) indicated that the tax differences are maintained.

There is ample evidence that “fiscal games”³ often lead to inefficient taxes, and this has been demonstrated by a number of papers (e.g., Altshuler and Goodspeed, 2002; Besley and Case, 1995; Besley and Coate, 2003; Brett and Pinske, 2000; Brueckner, 2003, 2007⁴; Haughwout, 1999; Heyndels and Vuchelen, 1998). Research studies by Case *et al.* (1993), Figlio *et al.* (1999), Figlio and O’Sullivan (2002), Baicker (2001), and Redoano (2007) are the most representative studies that have found negative externalities, especially in social spending (Foucault *et al.*, 2007).

We point out three recent investigations that carried out this type of comparative exercise outside the US: Turley *et al.* (2015) for Ireland, Slack *et al.* (2015) for the province of Ontario in Canada, and Yan and Reschovsky (2021) for the province of Zhejiang in China. In these three cases, the results were similar, so intergovernmental transfers favour those cities with a smaller population, and the post-transfer fiscal position is weaker in larger cities than in smaller towns and rural areas.

Recently, some studies have indicated that from what has happened with the COVID-19 pandemic, urban dynamics may be changing. In a world where residents seek more space, telework can reduce the saturation of public services offered by large cities, reducing their high pressure. However, the effect is unclear because the investigations analysing this possibility seem to point to two effects. On the one hand, some businesses might move to the periphery, where they would have more space and lower prices. On the other hand, certain jobs, especially the best paid ones, would be concentrated in the most productive cities. It is still too early to assess the effect of these changes in work practices with real data. The final impact will largely depend on the type of work performed, as it is clear that the possibilities for teleworking are not the same for all sectors and economic activities (Brueckner *et al.*, 2021; Delventhal *et al.*, 2022; Kwon, 2021; Ouazad, 2020).

2.1. Spanish Experience

Empirical studies on the cost of centrality in Spain are scarce. Most refer to a specific type of centrality cost, related to status as capital, which implies that a certain municipality that is administrative capital suffers a substitution of productive activities for less productive activities that, in addition, enjoy tax benefits. This often translates into increased spending on security planning and civil protection and the maintenance of parks and gardens or historical heritage buildings and monuments. Identifying and quantifying capital costs has been the subject of several works, some of which have proposed possible compensation solutions.

In the studies by Bosch and Solé-Ollé (2005) and Solé-Ollé (2006), the centrality cost was estimated that 3,000 municipalities throughout Spain (all with a population of more than 1,000) are subject to the impact of non-residents on municipal public services,⁵ noting that congestion externalities are relevant to justify this spending differential. Bosch *et al.* (2010) showed that there were significant costs that greatly conditioned the per capita local expenditure of major Spanish cities. The authors noted that these factors were directly related to the overflow effect of central cities, approximating this variable by the number of tourists and the relevance of the tourism sector and by capital costs, measuring their impact through the importance of employment and the remuneration of public employees at the local level. In addition, it was noted that there was no positive relationship between expenditure and population size; on the contrary, there were significant differences between municipalities with the same population, indicating that there were other factors that determined their spending needs. As for the costs of overflowing municipal services, they were caused by a high flow of non-residents to central cities for travel, education, shopping, administrative activities, or leisure.

In particular, the capital costs of Santiago de Compostela were examined in a benchmark study (Caramés and Cadaval, 2008) that found that the capital regime for Santiago de Compostela should involve a subsidy for extraordinary expenses of approximately €6 million per year (lower than the estimate made by Bosch *et al.* [2010]), including the opportunity cost, congestion costs, safety costs at public events per capita, costs related to the development and use of the autonomous community's own language, and costs of heritage restoration and maintenance and tourism promotion. The benefit that administrative capital implies did not compensate for the cost of centrality that it generated, which is greater than the income that could be obtained from the economic activity (Cadaval, 2011).

The work of Solé-Ollé and Polo-Otero (2008) also focused on the analysis of capital costs. The authors estimated the compensation that should be received by the municipality of Santa Cruz de Tenerife to compensate for the cost of the shared capital of the Canary Islands. They considered the costs of spillover effects, costs relating to the concentration of social problems, other factors, and insufficient financial resources. For the overflow costs, it was assumed that the population located 30 km from Santa Cruz produced additional costs, applying a methodology like that of Solé-Ollé (2006, 2001). It was found that the amount to be compensated would depend on the method of calculation of these costs, allowing for a sensitivity analysis, enabling three results: €3.1 million, €9.8 million, and €11.2 million. In a rough sense, which does not strictly correspond to the calculation of centrality costs but is related to the provision of local services in the municipalities with the largest size, it is clear from the studies of Hortas and Solé-Ollé (2010), Hortas (2014), and Hortas and Salinas (2014) that a greater degree of urbanisation has a decisive impact on a higher cost for providing municipal services.

Table 1 shows the main empirical contributions of centrality costs.

Table 1
PRINCIPAL CONTRIBUTIONS OF CENTRALITY COST

	Field of study	Conclusions
Neenan (1970)	Detroit and selected suburban municipalities	This work estimated the exploitation of Detroit by suburban municipalities and developed an empirical model of citizens' willingness to pay for locally provided goods and services and estimates of net fiscal flows between Detroit and its suburbs.
Greene <i>et al.</i> (1976)	Metropolitan area of Washington	The analysis concluded that there was notable horizontal fiscal inequality across the Washington metropolitan area.
Ladd and Yinger (1989)	86 large American central city governments	The authors offered an analysis of urban fiscal conditions and called for new state and federal urban policies that would direct assistance to the neediest cities, especially assistance to central cities.
Ladd <i>et al.</i> (1991)	Local governments in Minnesota	The study measured the fiscal conditions of local governments in Minnesota as part of an evaluation of local government assistance grants in that state.

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	Field of study	Conclusions
Murdoch <i>et al.</i> (1993)	Local government in Los Angeles	The authors applied cross-section data to estimates of spatially autoregressive empirical models to explain local expenditures and showed that benefits of a public good provided by one community can spill over to members of other communities and that the community should be recompensed.
Greene and Reschovsky (1994)	Municipal governments with populations over 2500 in the state of Wisconsin	The researchers drew up an equation that measured the difference in financing needs between the different municipalities, with different results between central and peripheral municipalities. The former had positive needs and the latter negative.
Solé-Ollé (2001)	Municipalities of the province of Barcelona > 5000 inhabitants (excluding the city of Barcelona)	The study found that commuters had a clear impact on spending for four local public spending policies: citizen security and civil protection, culture and sport, housing and urban planning, and community welfare. Each daily visitor generated a cost for these areas of 23%, 113%, 96%, and 75%, respectively. In addition, tourism generated some cost overruns in municipal budgets, especially in spending on citizen security and community welfare.
Chernick and Tkachera (2002)	New York	Using a data panel, the authors estimated that each commuter coming to New York would imply an increase in annual expenditure. The study did not include additional tax benefits, only centrality cost.
Baicker (2005)	United States (state level)	The analysis estimated the extent to which state spending was influenced by the spending of neighbouring states and showed that each dollar of state spending caused spending in neighbouring states to increase by almost 90 cents.
Bosch and Solé-Ollé (2005); Solé-Ollé (2006)	3000 municipalities throughout Spain (all with a population of more than 1000)	Individual residents within a radius of 30 km generated 9.4% of the municipal expenditure generated by a resident; this percentage increased to 24% for municipalities located in large urban conurbations, reaching 4% for the central cities. In addition, residents on the periphery benefitted almost as much as residents of local public services; this effect was much less in non-urban municipalities and zero for large cities, precisely because the opposite occurred. This forced the central cities to act as “leaders”, providing services that the smaller municipalities could not provide.
Solé-Ollé and Polo (2008)	Municipality of Santa Cruz de Tenerife	The authors considered the costs of spillover effects, costs of concentration of social problems, other factors, and insufficient financial resources. For the overflow costs, it was assumed that the population located 30 km from Santa Cruz would produce additional costs, applying a methodology like that of Solé-Ollé (2006).

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	Field of study	Conclusions
Bradbury and Zhao (2009)	Municipal governments in the state of Massachusetts	This study developed new measures of revenue capacity and costs for Massachusetts cities and towns. The authors quantified the fiscal gap on local government with attention to different centrality costs.
Bosch <i>et al.</i> (2010)	Spanish large municipalities, more than 75000 inhabitants	The authors estimated an equation for spending needs and fiscal capacity, which allowed them to determine how the centrality characteristics of the largest municipalities in Spain increased the spending needs and, at the same time, how they positively affected their fiscal capacity. Capital, however, generated only costs, increasing spending needs.
Hortas and Solé-Ollé (2010)	2500 Spanish municipalities	The estimations derived from the expenditure indicated that low-density development patterns led to greater provision costs for local public services.
Chernick and Reschovsky (2013)	112 large central cities in the United States (1997-2008)	The authors used data on the financing of the nation's largest central cities to forecast the impact of the recession and the housing crisis on central city expenditures. They predicted that real per capita spending in the average central city would be reduced and that spending cuts would be substantially greater.
Hortas (2014)	4000 Spanish municipalities	This paper, using a panel vector autoregressive model, estimated the net fiscal impact of urban sprawl and determined that sprawl considerably increased demand for new infrastructure and that the capital deficit generated by infrastructure was covered by intergovernmental transfers. These findings revealed a moral hazard problem for local governments, in which inordinate intergovernmental transfers and development revenues encouraged excessive urban sprawl.
Hortas and Salinas (2014)	6169 Spanish municipalities (2007-2008)	According to the results obtained, the larger municipal size implied more costs to provide services such as social services, cleaning, etc.
Turley <i>et al.</i> (2015)	Irish local government	The work studied and evaluated the Irish system of overhead subsidies to local governments through the estimation of local deficits at this level of Irish administration. The authors determined the need to establish some compensation for the big cities. The cities that hold the capital must receive intergovernmental tax transfers to compensate for this excess of expenditure that is borne by the big cities' and municipalities' capital, and this must be taken into account when designing the municipal public budgets.

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	Field of study	Conclusions
Slack <i>et al.</i> (2015)	30 largest municipalities in Ontario, Canada	The authors calculated fiscal gap measures (the difference between expenditure need and fiscal capacity) and discussed the implications for the fiscal health of the largest Ontario municipalities. The municipalities of the Greater Toronto Area showed better fiscal health than most of the other municipalities.
Chernick and Reschovsky (2020)	148 major cities in the United States	The results indicate that there are significant differences in both spending needs and fiscal capacity between cities. The existence of important differences in spending needs and in fiscal capacity between cities was verified from several models. Over the period studied, the fiscal gap in large cities increased over time.
Yan and Reschovsky (2021)	Municipal governments in Zhejiang Province, China	This paper quantified the fiscal gap between the spending needs of local governments and the collection capacity of these governments in Zhejiang Province, China. Tax differentials were reduced once intergovernmental transfers were received.

Source: Authors' elaboration based on the references indicated.

3. Policy Watch

The governance of metropolitan affairs and capital costs has emerged as a crucial issue in many countries. The academic debate shows a bias towards categories and descriptions based on North American and, to a lesser degree, West European or South American experiences (Pierre, 1999; Rojas *et al.*, 2008). Discussions about the existence of centrality costs, economic efficiency, and the fiscal challenges inherent in central jurisdictions have gone through several solutions that have been applied in practice individually or jointly in the form of annexations, supra-municipal governments, or aid to centralities.

Sometimes annexations represent one way for central cities to capture suburban tax capacities (Rusk, 2006; Wasylenko, 2017), although on many occasions rejection and social opposition have made this an unfeasible solution. In addition, the work indicates that cities that have annexed their suburban areas have much stronger fiscal health than cities that have not or could not annex. International experience shows how city mergers are heterogeneous in both extent and the ease with which cities can annex their suburbs. Annexation occurs most frequently in the southern and western areas of the United States, except California. In Europe, some cities have found it difficult to annex their suburbs, and the result has been that they could not expand their tax bases via annexation. The countries of the north of Europe have starred in the mergers of municipalities, while in the south they have not been accepted, except some impositions, as happened in Greece after 2008.

Even though mergers of cities and counties can reduce the cost of government, shared service agreements between local governments or instances of metropolitan collaboration have been more widespread and more socially accepted than the mergers of municipalities. The governance of central cities has often led to the governance of metropolitan affairs and capital cities as one of the crucial issues in many countries. The gap between administrative boundaries and metropolitan territory has led to several approaches and proposals about the best form to govern urban agglomerations (Brenner, 2002; Lefèvre, 2009; Savitch and Vogel, 2009; Tomàs, 2017).

In practice, there are alternative forms of metropolitan governance. Some have been achieved through institutional reforms and others through inter-municipal competition and flexible agreements, all in order to pursue efficiency and competitiveness at every scale, both local and metropolitan. While in North America metropolitan governments are institutionalised, in Europe there is not a single model of supra-municipal governance. There is a diversity, and according to the degree of institutionalisation,⁶ we can distinguish at least four models of metropolitan governance: (a) vertical coordination (with institutions that were not created to make metropolitan areas function but that exercise such control, like Stockholm County, Hovedstaden, etc.); (b) horizontal coordination, that is, less institutionalised models based on voluntary cooperation between municipalities and other public and private actors (e.g., Italy, France, Denmark, Germany, Spain); (c) metropolitan agencies (e.g., Birmingham, Barcelona); and (d) metropolitan governments (e.g., Paris, Lisbon, London, and Stuttgart, although they do not represent a pure model because they depend on the funding of higher authorities or share the responsibilities with other governments) (Slack, 2016; Tomàs, 2017). In some countries models are homogeneous, while in other countries there is a variety of governance models.

Regardless of the degree or form that supra-municipal governments take, most national governments provide some financial support to central cities to offset the cost of centrality, especially for national capital. In general, there are four different treatments that can be seen practised for large cities, metropolitan areas, and capital cities when institutional reforms are not produced (Table 2):

- a. Cities with a different status, like a city-state (Slack, 2011). The cities have both city and prefecture status, and as a result, they have greater taxing power than other municipal governments (e.g., Tokyo, Berlin, Bremen, and Hamburg).
- b. Different taxing powers and fees. The largest local governments, in general, have additional revenues from additional taxing power, such as property taxes, income taxes, income sales taxes, corporate income taxes, and others (e.g., Toronto, New York City, and London).
- c. Intergovernmental transfers. Metropolitan areas in some countries receive government grants for specific services such as public transport, infrastructure, security, or cultural activities (e.g., Berlin and Brussels). Although this is not always the case, sometimes some small local governments (Berlin, Paris, Stockholm) receive more intergovernmental transfers than do metropolitan areas (Bahl, 2010).

- d. Creation of inter-municipal consortia for the provision of certain services (De Mello and Lago-Peñas, 2013), as “cold municipal mergers” in Spain and Brazil.

There is no pattern of compensatory subsidies to large cities, but some receive a significant part of their income through subsidies. In addition, grants may or may not be conditional. Moreover, cities that are capitals are often treated differently than other cities (Boadway and Shah, 2007) in terms of tax transfers, infrastructure, or the offsetting of tax-exempt activities and installations.

Practical experiences of compensation mechanisms focus on capital costs. In general, the capitals of unitary countries are not specifically treated as capitals but may be favoured through financing arrangements that reflect the fact that they are capitals; this is true for London, Stockholm, and Vienna. Other cities are compensated. Washington, DC, is treated differently to compensate for the loss of revenue from tax exemptions. Canberra has special tax treatment with respect to “special circumstances arising from the existence of the national capital (Australian National Government, 1988). Berlin also receives compensation for its capital cost, and the federal government makes additional payments to compensate for security costs, infrastructure, and cultural activities. Brussels also receives special treatment in compensation for capital financing. Brasilia receives a “constitutional fund for the federal district”, which is fiscal assistance that is used for public safety, education, and health. Ottawa is offset by local taxes lost through federal property exempt by the Canadian Government. However, in other cases, such as Mexico City, no special tax treatment is envisaged.

In Spain, some cities have demanded mechanisms to compensate for capital costs. On the one hand, there is a certain compensation mechanism for large cities based on special regulations like Law 1/2006, of 13 March, which regulates the special regime of the municipality of Barcelona, and Law 22/2006, of 4 July on the capital city and special regime of Madrid. However, there is no reference in either of these regulations to changes in the funding system, since the changes that have been introduced relate to administrative and organisational matters (Suárez-Pandiello *et al.*, 2008).

On the other hand, a special financial regime is recognised in the participation in the current revenues of the nation (Participación en los Ingresos del Estado) through an unconditional grant. However, this exercise was carried out without objective criteria (Bosch *et al.*, 2010). Finally, there are also autonomous regulations that try to collect this capital. This is the case for the city of Pamplona, with Law 16/1997, of 2 December, on the Charter of the Capital of the City of Pamplona, and Santiago de Compostela, with Law 4/2002 of 25 June, on the Statute of the Capital of the City of Santiago de Compostela. To this list must be added Law 23/2006, of 20 December, on the capital of Palma de Mallorca; Law 8/2007, of 13 April, on the status of the shared capital of the cities of Las Palmas de Gran Canarias and Santa Cruz de Tenerife; Law 2/2015, of 23 March, on the Statute of the capital of the City of Logroño; Law 7/2015, of 31 March, regulating the Statute of the Capital of the City of Merida; and Law 10/2017, of 30 November, on the special regime of the municipality of Zaragoza as the capital of Aragón. In addition, it is necessary to include the tax canon of the

capital of Vitoria, as it is the seat of the common institutions of the Autonomous Community of the Basque Country.

As an example of this strong financial dependence on the regional administration, it can be noted that in 2020 the Balearic Government was expected to make up for €10 million from the European Regional Development Funds, part of the €30 million it must contribute annually to Palma de Mallorca in the application of the capital law. Furthermore, the law stresses the fact that if this compensation was initially to be received through participation in the collection of the autonomous communities' own and state-ceded taxes, in the end the figure was established at a minimum contribution of €30 million. Of this amount, about €25 million is designated to be used for investment in projects agreed upon between the City of Palma de Mallorca and the Government of the Balearic Islands. However, this allocation has not always been reached, being €8.3 million in 2018 and 2019. The allocation for 2022 is estimated at €30.5 million. It is therefore an investment that is not freely available. Furthermore, it is paradoxical that the latest revision includes a discount in the municipal transport fare for residents of other islands using the municipal transport service, since the objective of the rule is precisely to help cover the cost of the use of public services by non-residents.

Although the scope and content are very different, it can be noted that in all of these cases the recognition of the capital council as a collegiate body for communication between the autonomous community and the city council stands out. Much remains to be done in the financial arena; however, while the existence of a special funding system has been recognised, its calculation and amount are not concrete. Moreover, it is wholly financially dependent, since the compensation to be received will depend on what is determined by the autonomous community budget law or, in its absence, the specific agreement to be approved.

In particular, the financial allocation received by Santiago de Compostela on the basis of the Statute of the Capital City depends on the amount that the Xunta de Galicia wishes to establish. This item was included for the first time in the budgets of the regional government of Galicia in 2004, setting it at €1.5 million, with a maximum allocation in 2010 (coinciding with the Holy Year) of €3.2 million. A fixed amount of €2.3 million was provided from that year. By way of comparison in 2022, Zaragoza received €8 million; Vitoria, as administrative seat, obtained €10 million; Logroño received €2.8 million; Las Palmas entered €3.3 million; Tenerife received €2.9 million; and Pamplona got €24 million in 2019, although its status of capital was repealed in 2022.

In short, in Spain a differentiated financing system has not been established for the central cities, beyond the special regime enjoyed by the cities of Madrid and Barcelona, which does not grant them a different financing system but basically refers to competence and organisational aspects. The regulations distinguish municipalities based on their population, but there is no institutional definition of a large city unless the institutional capital is formally recognised. Spanish state regulations do not recognise the costs of centrality for municipalities in general. Only a few autonomous communities have estimated and quantified the cost of centrality, generally coinciding with the capital cost of their municipalities. This recognition is not stable or permanent over time but varies according to regional governments.

Table 2
SOLUTIONS REPRESENTING THE COST OF LARGE CITIES

Instrument	Experience	Application
City-state status	Tokyo, Singapore, Macao, Berlin, Bremen, and Hamburg.	This formula provides greater taxing power than other municipal governments. City and state status confers the same revenues as local governments and other jurisdictions like state governments.
Special taxing power	Toronto, New York, London, and Canberra.	In some countries, large cities can create specific taxes to finance their centrality cost.
Intergovernment transfers	United States cities (e. g., Washington).	This brings an increase in the percentage of funding of some federal transfer programmes and, at the same time, requires the federal governments to assume certain services that had been financed by the central administration.
	Berlin, Brussels, the United Kingdom (several cities), and Bern.	These have a system of unconditional transfers to municipalities that consider some variables related to centrality costs.
	Spain: Barcelona and Madrid.	These entities have vertical transfer mechanisms to compensate for capital costs from the state budget.
	Spain: Santiago de Compostela, Palma de Mallorca, Las Palmas de Gran Canaria, Santa Cruz de Tenerife, Logroño, Mérida, Zaragoza, and Vitoria.	These entities have vertical transfer mechanisms to compensate for capital costs from autonomous communities' budgets.
Institutional reforms: creation of metropolitan areas	Metropolitan area of Birmingham (United Kingdom), Metropolitan area of Stuttgart and Hannover (Germany), Metropolitan area of Zurich and Geneva (Switzerland), Metropolitan area of Lisbon and Oporto (Portugal), Metropolitan area of Minneapolis-St Paul-Bloomington (United States), and Metropolitan area of Montreal and Vancouver (Canada).	There are some successful experiences in the United States, Canada, and some European countries, but with mixed results.
	Metropolitan area of Barcelona (Spain) Unsuccessful experiences in Madrid, Bilbao, and Valencia.	There has been little success in Spain. Only the metropolitan area of Barcelona remains, focused on the management of metropolitan transport. The main causes of this failure are a reluctance to give up competition and financial problems.

(Continued)

Instrument	Experience	Application
Institutional reforms: municipal mergers	Belgium, Denmark, Finland, Norway, Sweden, the Netherlands, Germany, and the United Kingdom.	Here the goal of municipal mergers is usually to reduce costs by making local governments larger. The agenda has been one of municipal amalgams as an instrument to reap a scale effect. In the northern part of Western Europe, the first wave of such territorial consolidation reforms took place in the 1960s and 1970s and was rooted in the economies of scale in relation to both industry and public administration.
	Greece, Georgia, Denmark, the United Kingdom, Estonia, Finland, the Netherlands, Portugal, Greece, Luxembourg, Ireland, Turkey, and Germany.	More recently, the beginning of the 21st century was a new period of territorial amalgamation reforms in various countries of Europe.
Institutional reforms: models of voluntary cooperation	Inter-municipal cooperation formulas, including public and private entities (Italy, France, Denmark, Germany, and Spain).	Here there has been relative success in delivering certain types of services together.
Inter-municipal consortia	To achieve economies of scale, the consortia of certain services in Spain and Brazil are valued.	Consort certain services such as waste collection, wastewater treatment, social programmes, and transport (in Spain), and health care, education, urban development, and transport (in Brazil).

Source: Authors' elaboration.

4. Concluding Remarks

The literature on fiscal federalism has devoted much effort to identifying the costs and benefits of central cities, with a particular focus on capital cities. One part of the literature argues that central cities are exploited by suburban areas whose inhabitants occupy their streets, demand their services, and do not pay taxes for these public services. However, not everything is negative for these cities. Thus, part of the literature argues that non-residents generate positive effects that reduce the cost of goods and services provided by central and capital cities for both residents and commuters.

Most of the review articles assume the existence of the cost of centrality and propose different solutions for its compensation. The solutions proposed are varied, including different financing systems for these cities, cities with various statuses, different taxing powers and fees, intergovernmental transfers, or the use of shared service models to make local government efficient, such as co-operation, metropolitan governments, and, in some cases, municipal mergers.

A review of central city governance models around the world shows that various alternatives have been tried and tested. This policy watch exercise shows that there is no single solution even for the same country, as has been the case in Spain, where initiatives, which have not always had a good result, have been quite varied.

Economic but also historical, sociological, and political reasons ultimately determine the best option. This political vigilance does not allow us to conclude that there is a model that can be extrapolated to all cities at all times, even more so after the new economic scenario following the COVID-19 pandemic. However, there are some examples of calculating and quantifying centrality costs that can be extrapolated, as well as initiatives that have worked well in specific contexts.

Focusing on the Spanish case, the quantification of centrality and capital adequacy costs is not very extensive, and these methods have been collected for the first time in a policy watch. All empirical work shows a significant cost related to characteristics that largely condition local spending per capita in the main Spanish capitals. There are significant differences in spending between municipalities with the same population, indicating that factors other than population determine their spending needs. In fact, when analysing the capitals, it is found that the flows of externalities are not reciprocal and that these generate divergences between the private and social costs of providing public services. Inevitably, this leads to cities offering sub-optimal solutions.

Finally, it should be noted that this study, at the same time, reflects a classic theme of great interest to the local world. In this investigation, we have found that issues of economy, finance, administrative and constitutional law, and politics converge, so it is not easy to offer a single recipe. Nevertheless, although we believe that a consideration of this set of elements can be carried out only through a rigorous and correct study, it is also necessary to take into account that not everything one wants to do can be successfully put into practice.

Notes

1. For example, public buildings are exempt from municipal property taxes. Central cities and especially capital cities are home to many such buildings, which are not subject to the tax burden that is levied on private buildings and facilities.
2. In this study, there was a clear spillover effect for park and garden spending by the municipalities of the Los Angeles area from an expenditure equation that included the influence of spending on neighbouring cities.
3. When tax bases are mobile, a policy action chosen by a jurisdiction affects the budget constraints of another jurisdiction, through a policy-driven flow of resources between jurisdictions, leading to strategic interactions in local fiscal choices. These fiscal games typically give rise to inefficient taxation (Wilson, 1999).
4. In both studies, Brueckner pointed out that the urban control of a municipality presents strong dependence on the behaviour of this variable in the neighbouring municipalities, which shows a certain “mirror effect” in the municipal urban policy.
5. The methodology was based on estimating the impact of non-residents on the cost of local services through their effects on municipal spending.

6. In North America metropolitan governments are strictly institutionalised (second local level, with its governing bodies and functional and institutional independence, as in strictly metropolitan areas), and in Europe there is no single model of metropolitan governance.

References

- Agnew, J. (2014), *Place and politics*, Routledge Library Editions, Political Geography.
- Altshuler, R. and Goodspeed, T. (2002), "Follow the Leader? Evidence on European and U.S. tax competition", *Departmental Working Papers* 2002/26, Rutgers University, New Jersey. <https://doi.org/10.1177/10911421145277>.
- Bahl, R. (2010), "Financing metropolitan cities", *Local Government Finance: The Challenges of the 21st Century*, United Nations Human Settlements Programme (UN-Habitat) the City of Barcelona and Province of Barcelona.
- Baicker, K. (2001), "Government decision-making and the incidence of federal mandates", *Journal of Public Economics*, 82:147-194. [https://doi.org/10.1016/S0047-2727\(00\)00149-3](https://doi.org/10.1016/S0047-2727(00)00149-3).
- Baicker, K. (2005), "The spillover effects of state spending", *Journal of Public Economics*, 89: 529-544. <https://doi.org/10.1016/j.jpubeco.2003.11.003>.
- Besley, T. and Case, A. (1995), "Incumbent behaviour: vote-seeking, tax-setting and yardstick competition", *American Economic Review*, 85: 25-44. https://www.princeton.edu/~accase/downloads/Incumbent_Behavior.pdf.
- Besley, T. and Coate, S. (2003), "Centralized versus decentralized provision of local public goods: a political economy approach", *Journal of Public Economics*, 87: 2611-2637. [https://doi.org/10.1016/S0047-2727\(02\)00141-X](https://doi.org/10.1016/S0047-2727(02)00141-X).
- Blankart, C. and Borck, R. (2005), "Local Public Finance, Handbook and Public Finance" in Backhaus and Wagner, E. (eds.), *Handbook of Public Finance*, Springer, Boston, 441-476. [http://www.untag-smd.ac.id/files/Perpustakaan_Digital_2/PUBLIC%20FINANCE%20Handbook%20of%20Public%20Finance%20\(2004,%20Springer\).pdf](http://www.untag-smd.ac.id/files/Perpustakaan_Digital_2/PUBLIC%20FINANCE%20Handbook%20of%20Public%20Finance%20(2004,%20Springer).pdf).
- Bosch, N. and Solé-Ollé, A. (2005), "On the relationship between authority size and the costs of providing local services: lessons for the design of intergovernmental transfers in Spain", *Public Finance Review*, 33(3): 343-384. <https://journals.sagepub.com/doi/10.1177/1091142104272708>.
- Bosch, N., Espasa, M. and Montolio, D. (2010), "Estimación de los costes de centralidad y capitalidad de las grandes ciudades españolas", *Informe IEB sobre federalismo fiscal en España*, 10, Institut d'Economía de Barcelona, Universidad de Barcelona. <https://ieb.ub.edu/wp-content/uploads/2011/06/Bosch.pdf>.
- Boskin, M.J. (1973), "Local Government Tax and Product Competition and the Optimal Provision of Public Goods", *Journal of Political Economy*, 81(1): 203-210. <https://www.jstor.org/stable/1837337>.
- Bradbury, K. and Zhao, B. (2009), "Measuring Non-School Fiscal Disparities Among Municipalities", *National Tax Journal*, 62 (1): 25-56. <https://www.jstor.org/stable/41790628>.
- Brainard, W. and Dolbear, F.T. (1967), "The possibility of oversupply of local 'public' goods, a critical note", *Journal of Political Economy*, 75: 86-90. <https://www.journals.uchicago.edu/doi/10.1086/259241>.

- Brenner, N. (2002), “Decoding the newest «metropolitan regionalism» in the USA: A critical overview”, *Cities*, 19: 3-21. [https://doi.org/10.1016/S0264-2751\(01\)00042-7](https://doi.org/10.1016/S0264-2751(01)00042-7).
- Brett, C. and Pinske, J. (2000), “The determinants of municipal tax rates in British Columbia”, *Canadian Journal of Economics*, 33: 695-714.
- Brueckner, J. (2003), “Strategic interaction among governments: an overview of empirical studies”, *International Regional Science Review*, 26(2): 175-188. <https://doi.org/10.1177/01600176022509>.
- Brueckner, J. (2007), “Urban growth boundaries: An effective second-best remedy for unpriced traffic congestion”, *Journal of Housing Economics*, 16(3-4): 263-273.
- Brueckner, J., Kahn, M. and Lin, G. (2021), “A New Spatial Hedonic Equilibrium in the Emerging Work-from-Home Economy?”, *Technical Report, National Bureau of Economic Research 2021*. <https://www.nber.org/papers/w28526>.
- Bruegmann, R. (2005), *Sprawl: A compact history*, University of Chicago.
- Buchanan, J. (1965), “An Economic Theory of Clubs”, *Economica*, 32: 1-14. <https://www.jstor.org/stable/2552442>.
- Cadaval, M. (2011), “La capitalidad ¿Un coste de centralidad? Estudio de un caso”, *Investigaciones regionales*, 20: 51-72. <https://investigacionesregionales.org/es/article/la-capitalidad-un-coste-de-centralidad-estudio-de-un-caso/>.
- Caramés, L. and Cadaval, M. (2008), *Costes de capitalidad. Estudio de un caso: Santiago de Compostela*, Universidad de Santiago de Compostela.
- Case, A., Rosen, H. and Hines, J. (1993), “Budget spillovers and fiscal policy interdependence: Evidence from the states”, *Journal of Public Economics*, 52(3): 285-307. [https://doi.org/10.1016/0047-2727\(93\)90036-S](https://doi.org/10.1016/0047-2727(93)90036-S).
- Chernick, H. (2002), *The Effect of Commuters on the Fiscal Cost of the District of Columbia*, Hunter College, New York University, mimeo.
- Chernick, H. and Reschovsky, A. (2013), “The Fiscal Health of U.S. Cities”, Lincoln Institute of Land Policy, *Working Paper*. <https://www.lincolninst.edu/publications/working-papers/fiscal-health-us-cities>.
- Chernick, H. and Reschovsky, A. (2020), “Measuring the fiscal health of U.S. Cities”, *Working Paper WP20HC1*, Lincoln Institute of Land Policy, July. https://www.lincolninst.edu/sites/default/files/pubfiles/chernick_wp20hc1.pdf.
- Chernick, H. and Tkachera, O. (2002), “The Commuter Tax and the Fiscal Cost of Commuters in New York City”, *State Tax Notes*, 25(6): 451-456. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=321081.
- Cox, W. and Utt, J. (2004), “The Cost of Sprawl Reconsidered: What the Data Really Show”, *Background 1770*, The Heritage Foundation. <https://www.heritage.org/report/the-costs-sprawl-reconsidered-what-the-data-really-show>.
- Davies, D. (1965), “Financing urban functions and services” in Robinson O. Everett and Richard H. Leach, *Urban Problems and Prospects*, Dobbs Ferry, New York: 127-161.
- Delventhal, M., Kwon, E. and Parkhomenko, A. (2022), “How Do Cities Change When We Work from Home?”, *Journal of Urban Economics*, 127: 103331. <https://www.andrii-parkhomenko.com/files/1-s2.0-S0094119021000139-main%20-2-.pdf>.

- De Mello, L. and Lago Peñas, S. (2013), "Local Government Cooperation for Joint Provision: The Experiences of Brazil and Spain with Intermunicipal Consortia", in S. Lago-Peñas and J. Martínez-Vázquez (eds.), *The Challenge of Local Government Size*, (Cheltenham: Edgar Elgar), 221-241.
- Figlio, D.N., Kolpin, V.W., and Reid, W.E. (1999), "Do states play welfare games?", *Journal of Urban Economics*, 46(3): 437-454. <https://doi.org/10.1006/juec.1999.2131>.
- Figlio, D. and O'Sullivan, A. (2002), "The Local Response to Tax Limitation Measures: Do Local Governments Manipulate Voters to Increase Revenues?", *The Journal of Law and Economics*, 44(1): 233-257.
- Foucault, M., Madies, T. and Paty, S. (2007), "Public spending interactions and local politics. Empirical evidence from French municipalities", *Public Choice*, 137: 57-80. <https://link.springer.com/article/10.1007/s11127-008-9312-z>.
- Gill, I., and Goh, C. (2010), "Scale Economies and Cities", *The World Bank Research Observer*, 25(2): 235-262. <https://www.jstor.org/stable/40891375>.
- Giuliano, G., Kang, S. and Yuan, Q. (2019), "Agglomeration economies and evolving urban form", *The Annals of Regional Science*, 63: 377-389. <https://link.springer.com/content/pdf/10.1007/s00168-019-00957-4.pdf>.
- Glaeser, E. and Gottlieb, J. (2009), "The Wealth of Cities: Agglomeration Economies and Spatial Equilibrium in the United States", *Journal of Economic Literature*, 47(4): 983-1028. <https://www.jstor.org/stable/40651531>.
- Gordon, R.H. (1983), "An optimal taxation approach to fiscal federalism", *Quarterly Journal of Economics*, 98: 567-586.
- Greene, K., Neenan, W. and Scott, C. (1974), *Fiscal interactions in a metropolitan area*, Lexington Books, Lexington.
- Greene, K., Neenan, W. and Scott, C. (1976), "Fiscal Incidence in the Washington Metropolitan Area", *Land Economics*, 52(1): 13-31.
- Greene, R. and Reschosky, A (1994), "Fiscal assistance to municipal governments", *Dollars and Sense: Policy Choices and the Wisconsin Budget*, Vol. III, Donal Nichols, eds. Madison: Robert M. LaFollette Institute of Public Affairs, University of Wisconsin-Madison.
- Hamidi, S. and Ewing, R. (2014), "A longitudinal study of changes in urban sprawl between 2000 and 2010 in the United States", *Landscape and Urban Planning*, 128: 72-82. <https://doi.org/10.1016/j.landurbplan.2014.04.021>.
- Hamidi, S., Ewing, R., Preuss, I. and Dodds, A. (2015), "Measuring sprawl and its impacts: An update", *Journal of Planning Education and Research*, 35(1): 35-50. [10.1177/0739456X14565247](https://doi.org/10.1177/0739456X14565247).
- Haughwout, A.F. (1999), "Regional Fiscal Cooperation in Metropolitan Areas: An Exploration", *Journal of Policy Analysis and Management*, 18: 579-600. <https://www.jstor.org/stable/3325756>.
- Haughwout, A.F. and Inman, R.P. (2002), "Should Suburbs Help Their Central City?", *Brookings-Wharton papers on Urban Affairs*, 45-94. <https://www.jstor.org/stable/25067385>.
- Hawkins, B. and Ihrke, D. (1999), "Re-examining the Suburban Exploitation Thesis in American Metropolitan Areas", *The Journal of Federalism*, 29: 109-121. <https://www.jstor.org/stable/3331112>.
- Heyndels, B. and Vuchelen, J. (1998), "Tax mimicking among Belgian municipalities", *National Tax Journal*, 51(1): 89-101. <https://www.jstor.org/stable/41789314>.

- Hortas Rico, M. (2014), "Urban sprawl and municipal budgets in Spain: a dynamic panel data analysis", *Papers in Regional Science*, 93(4): 843-864. <https://doi.org/10.1111/pirs.12022>.
- Hortas Rico, M. and Salinas, P. (2014), "Determinación de la escala mínima eficiente en la provision de bienes públicos locales. Evidencia para los municipios españoles", *Revista de Economía Aplicada*, 22(66): 35-65. <https://www.redalyc.org/pdf/969/96932962002.pdf>.
- Hortas Rico, M. and Solé-Ollé, A. (2010), "Does urban sprawl increase the costs of providing local public services? Evidence from Spanish Municipalities", *Urban Studies*, 47(7): 1513-1540. <https://doi.org/10.1177/004209800935362>.
- Kahn, M. E. (2010), "New evidence on Trends in the cost of Urban Agglomeration", *NBER Chapters, Agglomeration Economics*, Edward Glaeser, 339-354. <https://www.nber.org/books-and-chapters/agglomeration-economics/new-evidence-trends-cost-urban-agglomeration>.
- Kahn, M. E. and Walsh, R. (2015), "Cities and the Environment", *Handbook of Regional and Urban Economics*, 5: 405-465. <https://doi.org/10.1016/B978-0-444-59517-1.00007-6>.
- Kwon, E. (2021), "What will Become of Our Cities if Workfrom-home Truly Becomes the New Normal? COVID-19, Working from Home and the Future of Cities", *IEB Report 1/2021*, 11-13.
- Ladd, H. and Bradburry, K. (1988), "City Taxes and Property Tax Bases", *National Tax Journal*, 4: 50-523.
- Ladd, H. and Yinger, J. (1989), *American Ailing Cities, Fiscal Health and the Design of Urban Policy*, The Johns Hopkins University Press, Baltimore, and London.
- Ladd, H. F., Reschoysky, A. and Yinger, J. (1991), "City fiscal condition and state equalizing aid: the case of Minnesota", *Proceedings of the Annual Conference on Taxation Held under the Auspices of the National Tax Association-Tax Institute of America*, 84: 42-49, National Tax Association.
- Lefèvre, C. (2009), *Gouverner les métropoles*, Paris, LGDJ-Dexia.
- Litman, T. (2003), "Measuring transportation: Traffic, mobility and accessibility", *Institute of Transportation Engineers Journal*, 73(10): 28-32.
- Margolis, J. (1957), "Municipal Fiscal Structure in Metropolitan Area", *Journal of Political Economy*, 65(3): 225-236.
- Murdoch, J., Rahmatian, M. and Thayer, M. (1993), "A Spatially Autoregressive Median Voter Model of Recreation Expenditures", *Public Finance Quarterly*, 21: 334-350. <https://doi.org/10.1177/1091142193021003>.
- Musgrave, R. (1939), "The Voluntary Exchange Theory of Public Economy", *The Quarterly Journal of Economics*, 53(2): 213-237. <https://doi.org/10.2307/1882886>.
- Musgrave, R. (1959), *The Theory of Public Finance*, McGraw-Hill, New York.
- Neenan, W. (1970), "The suburban-central city exploitation thesis: one city's tale", *National Tax Journal*, 23: 17-139.
- Oates, W. (1972), *Fiscal Federalism*, Harcourt Brace Jovanovich, New York.
- Oates, W. (2005), "Toward a Second-Generation Theory of Fiscal Federalism", *International Tax and Public Finance*, Netherland, 12: 349-373. <https://link.springer.com/article/10.1007/s10797-005-1619-9>.
- Ouazad, A. (2020), "Resilient Urban Housing Markets: Shocks vs. Fundamentals," *CIRANO Working Papers 2020s-53*, CIRANO October. <https://cirano.qc.ca/en/summaries/2020s-53>.

- Pauly, M. (1970), "Optimality, 'public' goods and local governments, a general theoretical analysis", *Journal of Political Economy*, 78: 572-585. <https://www.jstor.org/stable/1829652>.
- Pierre, J. (1999), "Models of urban governance. The institutional dimension of urban politics", *Urban Affairs Review*, 34(3): 372-396. <https://doi.org/10.1177/107808799221839>.
- Redoano, M. (2007), "Fiscal interactions among European countries", *CSGR Working Paper 222/07*. <https://www.cesifo.org/en/publications/2007/working-paper/fiscal-interactions-among-european-countries-does-eu-matter>.
- Rojas, E., Cuadrado-Roura, J.R. and Fernández-Güell, J.M. (ed.) (2008), *Governing the Metropolis. Principles and Cases*, Inter-American Development Bank, Cambridge.
- Rosenthal, S. and Strange, W. (2001), "The determinants of agglomeration", *Journal of Urban Economics*, 50(2): 191-229. <https://doi.org/10.1006/juec.2001.2230>.
- Rosenthal, S. and Strange, W. (2020), "How Close Is Close? The Spatial Reach of Agglomeration Economies", *Journal of Economic Perspectives*, 34(3): 27-49. <https://www.aeaweb.org/articles?id=10.1257/jep.34.3.27>.
- Rusk, D. (2006), "Annexation and the Fiscal Fate of Cities", *The Brookings Institution*.
- Sacher, S.B. (1993), "Fiscal Fragmentation and the Distribution of Metropolitan Area Resources: A Case Study", *Urban Studies*, 30(7): 1225-1239. <https://www.jstor.org/stable/43196012>.
- Savitch, H.V. and Vogel, R.K. (2009), "Regionalism and urban politics", J.S. Davies and D.L. Imbrosio (eds.), *Theories of urban politics*, Second edition, Sage, London, 106-124.
- Sharpe, L.J and Newton, K. (1984), "Does Politics Matter? The Determinants of Public Policy", *American Political Science Review*, 80(3): 1088-1089.
- Slack, E. (2010), "Provincial-Local Fiscal Transfers in Canada: Provincial Control Trumps Local Accountability" in Kim, J., Lotz, J. and Mau, N.J. (eds.), *General Grants versus Earmarked Grants: Theory and Practice*, Korea Public Finance Institute and the Danish Ministry of Interior and Health: Copenhagen: 318-344.
- Slack, E. (2011), "Financing Large Cities and Metropolitan Areas", *IMFG Papers on Municipal Finance and Governance*, 3, University of Toronto. https://imfg.munkschool.utoronto.ca/uploads/3/financing_large_cities_and_metropolitan_areas_wp3.pdf.
- Slack, E. (2016), *International Comparison of Global City Financing. A Report to the London Finance Commission*, Institute on Municipal Finance and Governance, University of Toronto. https://www.london.gov.uk/sites/default/files/03_international_comparison_of_global_city_financing_october_2016.pdf.
- Slack, E., Tassonyi, A. and Grad, D. (2015), "Fiscal health of Ontario large cities: Is there something to worry about? In Is your city healthy? Measuring urban fiscal health", (ed.) Bird, R. and Slack, *Is your city healthy? Measuring Urban Fiscal Health*, Toronto: Institute on Municipal Finance and Governance, Munk School of Global Affairs, University of Toronto, 149-99
- Smith, R. (1972), "Are nonresidents contributing their share to core city revenues", *Land Economics*, 48: 240-247. <https://doi.org/10.2307/3145146>.
- Solé-Ollé, A. (2001), "Determinantes del gasto público local: ¿Necesidades de gasto o capacidad fiscal?", *Revista de Economía Aplicada*, IX(25): 115-116. <https://www.redalyc.org/articulo.oa?id=96917680005>.

- Solé-Ollé, A. (2006), “Expenditure spillovers and fiscal interactions: empirical evidence from local governments in Spain”, *Journal of Urban Economics*, 59: 32-56. <https://doi.org/10.1016/j.jue.2005.08.007>.
- Solé-Ollé, A. and Polo Otero, J. (2008), *Propuesta de cálculo de compensación de costes derivado de la capitalidad compartida de Santa Cruz de Tenerife*, Institut d’Economía de Barcelona, Universidad de Barcelona.
- Suárez-Pandiello, J., Bosch, N., Pedraja, F., Rubio, J. J. and Utrilla, A. (2008), *La financiación local en España: Radiografía del presente y propuestas de futuro*, FEMP, Madrid. <http://femp.femp.es/files/566-578-archivo/HACIENDAS%20LOCALES%20RADIOGRAFIA.pdf>.
- Tiebout, C. M. (1956), “A pure theory of local expenditures”, *Journal of Political Economy*, 64: 416-424.
- Tomàs, M. (2017), “Explaining Metropolitan Governance. The Case of Spain”, *Raumforsch Raumordn*, 5: 243-252. <https://doi.org/10.1007/s13147-016-0445-0>.
- Turley, G., Flannery, D. and McNena, S. (2015), “A Needs and Resources Assessment of Fiscal Equalisation in the Irish Local Government System”, *The Economic and Social Review*, 46(3): 459-484, Autumn. <https://www.esr.ie/article/view/402>.
- Vicent, P. (1971), “The fiscal impact of commuters”, in Werner Hirsch *et al.*, *Fiscal Pressures on the Central City: The Impact of Commuters, Nonwhites and Overlapping Governments*. Praeger, New York.
- Voith, R. (1993), “Changing Capitalization of CBD-Oriented Transportation Systems: Evidence from Philadelphia, 1970-1988”, *Journal of Urban Economics*, 33(3): 361-376. <https://doi.org/10.1006/juec.1993.1021>.
- Voith, R. (2002), “Do suburbs need cities?”, *Journal of Regional Science*, 38(3): 445-464. <https://doi.org/10.1111/0022-4146.00102>.
- Wasylenko, M. (2017), “Financing central cities; the economics underlying fiscal strategy options”, Center for policy research, Syracuse university, *Paper 204*. <https://surface.syr.edu/cpr/236/>.
- Wilson, J. D. (1999), “Theories of tax competition”, *National Tax Journal*, 52: 269-304. <https://www.journals.uchicago.edu/doi/10.1086/NTJ41789394>.
- Yan, Y. and Reschovsky, A. (2021), “Fiscal disparities among local governments in Zhejiang Province, China”, *Journal of Urban Affairs*, 1-22. <https://doi.org/10.1080/07352166.2020.1851138>.

Resumen

Durante décadas la discusión acerca de la provisión óptima de los servicios públicos locales en las zonas urbanas giró en torno a las ventajas e inconvenientes de las ciudades centrales. Sus efectos son difíciles de medir, los beneficios son discutibles y los costes no son siempre identificables, si bien la literatura se ha preocupado de buscar respuestas. En este trabajo se hace una síntesis de las principales aportaciones teóricas sobre los costes de centralidad y capitalidad al tiempo que, de manera novedosa, se realiza un ejercicio de policy watch de las medidas de política económica puestas en práctica en España.

Palabras clave: áreas urbanas, ciudades centrales, costes de capitalidad, economías de aglomeración, vigilancia política

Clasificación JEL: H21, H23, H77, R12, R41, R51.