

Governing the ‘ungovernable’? Financialisation and the governance of transport infrastructure in the London ‘global city-region’

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Abstract

The governance of infrastructure funding and financing at the city-region scale is a critical aspect of the continued search for mechanisms to channel investment into the urban landscape. In the context of the global financial crisis, austerity and uneven growth, national, sub-national and local state actors are being compelled to adopt the increasingly speculative activities of urban entrepreneurialism to attract new capital, develop 'innovative' financial instruments and models, and establish new or reform existing institutional arrangements for urban infrastructure governance. Amidst concerns about the claimed 'ungovernability' of 'global' cities and city-regions, governing urban infrastructure funding and financing has become an acute issue. Infrastructure renewal and development are interpreted as integral to urban growth, especially to underpin the size and scale of large cities and their significant contributions within national economies. Yet, overcoming fragmented local jurisdictions to improve the governance and economic, social and environmental development of major metropolitan areas remains a challenge. The complex, and sometimes conflicting and contested inter-relationships at stake raise important questions about the role of the state in wrestling with entrepreneurial *and* managerialist governance imperatives. City and government actors are simultaneously engaging with financial actors, the financialisation of the built environment, the enduring and integral position of the state in infrastructure given its particular characteristics, the transformation of infrastructure from a public good into an asset class through the agency of private and state interests, and what relationships, if any, exist between 'effective' urban governance systems and improved economic performance.

Contributing to theoretical debates about the apparent 'ungovernability' of global cities and city-regions, this paper presents analysis and findings from new research

examining the financialisation and governance of transport infrastructure in the London global city-region. The continued rise in London's population is placing significant demands upon existing infrastructure assets and systems and provoking debates about the extent and nature of growth in the UK's capital, the development of and relationship between urban and sub-urban built environments, and the ability of national, sub-national and local actors to plan infrastructure renewal and investment both within London's formal administrative boundary and wider city-region. Combining aspects of urban entrepreneurialism *and* managerialism amidst the challenges of governing a global city-region, the search for new infrastructure investment by state actors is leading to the revival of specific funding and financing mechanisms and practices. The mixing of existing and new funding and financing techniques as well as governance arrangements in distinct and, at times, hybrid ways, is amplifying the novel challenges facing actors and institutions responsible for London's governance.

Keywords: Infrastructure; London; Cities; Governance; Financialisation; Transport

1. Introduction

To sustain any Mayor's vision, London government needs more financial powers to invest in London's infrastructure and support its growth. So this plan is not a lobbying, manifesto or detailed planning document. It is our first ever strategic attempt to state exactly what infrastructure London needs, roughly how much it will cost, and how we can do it in the best possible way. London's needs are stark. In order for Londoners to get the homes, water, energy, schools, transport, digital connectivity and better quality of life they require and expect, our city must have continued investment (Boris Johnson, former Mayor of London, Foreword to the London Infrastructure Investment Plan 2050).

Governing the funding and financing of infrastructure has become a central concern for states at national, metropolitan/city-regional and city scales in the global North and South. Huge and mounting pressures for infrastructure renewal and development are being generated by ageing and physical deterioration of assets and systems, increasing demands for more integrated, sophisticated and sustainable services, and a renewed emphasis upon the critical role of infrastructure in strengthening national economic competitiveness, productivity and modernisation (Mizell and Allain-Dupré 2013; OECD 2013, 2014; Arezki *et al.* 2016). Against a background of fiscal consolidation, budgetary pressures and political reluctance to sanction large increases in national state borrowing for new capital investment, governments in advanced economies face the predicament of how to pay for infrastructure renewal and development and devise governance arrangements that can plan, deliver, harness and facilitate engagement with new and existing actors and novel, untried, uncertain and speculative financial arrangements and practices in accountable, productive and transparent ways. This study has examined whether and how such issues can be interpreted through the prism of what Storper (2014: 116) defines as “ungovernable metropolitan regions”. The research explored whether large metropolitan areas or global city-regions produce challenges that are easier or more difficult to resolve in places where populations are rising and markets more buoyant, but where demands and pressures for continued and increased infrastructure investment are much more acute in attempts to manage the consequences of growth. As contemporary public policy discourse is focused upon encouraging the channelling of public and private infrastructure investment to support the continued growth of already relatively economically successful (particularly global) city-regions, new empirical investigations are needed to increase our knowledge and understanding and explain the processes and actors involved in governing, funding and financing their urban infrastructure.

The London Infrastructure Investment Plan (LIIP) 2050 outlines a pipeline of £1.3 trillion of infrastructure enhancements and renewals in London between 2016 and 2050 (Mayor of London 2014). It sits alongside a commitment made by the UK government to invest £100 billion in UK infrastructure between 2015 and 2020 (HM Treasury 2013). In LIIP's foreword, the former Mayor of London, Boris Johnson, alludes to four inter-connected issues shaping the distinct form of financialisation and governance of infrastructure in London. First, London's governance institutions are demanding greater decentralisation and fiscal autonomy to enable London to invest more 'locally-generated' revenues in infrastructure assets and systems (see also London Finance Commission 2013). Second, the plan represents the first attempt to map London's infrastructure requirements over a longer-term period. Third, the LIIP identifies specific sectors where new investment is needed, and where funding and financing should be prioritised due to cost, value for money and wider economic, social and environmental outputs and outcomes. Fourth, in portraying the plan as a 'critical moment' for London, the former Mayor has made an emotive case for more infrastructure in London to enable the global city-region to further grow and to sustain its economic and fiscal contribution to the UK economy.

In this paper, the argument is that the governance of infrastructure investment in London, a global city-region occupying a dominant position within a highly-centralised state, is being continually transformed by a distinct set of international, national and local public and private institutional relationships shaped by the UK's particular political-economy and neo-liberal variegation of capitalism (Peck and Theodore 2007). Financialisation – defined as the growing influence of capital markets, intermediaries and processes in economic, social and political life (Pike and Pollard 2010) – has been propelled by private actors widening and deepening their engagement with urban infrastructure, although this remains a socially and spatially differentiated, negotiated and uneven process (Strickland 2015). The role

of the state, operating at different spatial levels, is being re-worked and in some circumstances reinforced in the context of infrastructure financialisation because of the large-scale, capital intensive and long-term character of infrastructure in the provision of essential services. Aspects of urban entrepreneurialism *and* managerialism are being combined and mixed by national and local state actors amidst the challenges of funding, financing and governing infrastructure in a global city-region. Although there is a pivotal and enduring role for the public sector at national, sub-national and local scales (O'Neill 2013; Strickland 2015; Ashton *et al.* 2014), the resulting uneven geographies of infrastructure financialisation and governance require close conceptual and empirical scrutiny. This is particularly the case in the context of global cities and city-regions where the national state retains a direct economic, political and social tinterest, and international, national and local public and private actors intersect in an attempt to assemble different modes of capital to invest into the urban built environment.

As the funding and financing of urban infrastructure is transforming the governance of cities and city-regions (Torrance 2008), importance is attached to 'effective' urban governance as a factor behind successful economic performance (OECD 2015). Such concerns are especially visible in large metropolitan or city-region areas, where governance and questions of '(un)governability' arise because functional economic geographies are continually remade in a dynamic manner and tend to transcend rather than align with formal administrative boundaries (Storper 2014). At the same time, as the pervasiveness and pace of change in governing, funding and financing urban infrastructure has deepened and accelerated, theory has struggled to bring together and draw out the wider meanings and explanatory purchase of processes, including financialisation, decentralisation, state restructuring and austerity. Drawing upon new research from a case study of the London 'global city-region' and its transport infrastructure, this paper seeks to contribute to further conceptual understanding and explanation of the governance

and financialisation of funding and financing mechanisms and practices within a fast-growing major metropolitan area seeking increasing levels of investment for infrastructure renewal and development. In so doing, the paper responds to Weber's (2010) call for more empirically-grounded studies of the particular ways in which the funding and financing of urban infrastructure is reconfiguring urban spaces and institutional arrangements, including the governance and spatial planning of cities and city-regions.

The paper starts in section 2 by reviewing the existing literature on global cities, city-regions, and the challenge of governing such places, which is giving rise to the notion of 'ungovernability'. Here, we recognise that some places have been more successful economically despite being situated within complex and problematic forms of urban governance. The paper then moves on in section 3 to examine some of the theoretical and conceptual arguments relating to the governing, funding and financing of urban infrastructure, with a particular focus on global cities and city-regions. In an introduction to the main case study research, the broader context of the London global city-region's political economy in section 4 analyses its recent economic boom and rising population, and its related infrastructure pressures. This sets for the scene, in section 5, for the examination of the governing, funding and financing of transport infrastructure in London, drawing upon analysis of major projects and Transport for London's foray into property development as a mechanism for leveraging investment into transport schemes. In the concluding section 6, we outline the implications of continued concentration of national infrastructural resources in London for government efforts to address geographical disparities in economic and social conditions across the UK.

2. Global cities, city-regions and ‘governability’

A large body of literature has identified the rise of the ‘world city’ (Hall 1966,, Friedman and Wolff 1982), ‘global city’ (Sassen 1991) or ‘global city-region’ (Scott *et al.* 2002: 11) as urban populations grow and economic growth becomes increasingly urbanised and globally inter-connected (Harrison and Hoyler 2015; Scott 2002; 2008; Scott and Storper 2015). However, although cities and city-regions are typically defined by their size and scale (Harding and Blokland 2014), urban areas are not uniformly growing in demographic and spatial terms, and ‘urban shrinkage’ is a visible feature of local and regional development in North America and Europe (Pallagst *et al.* 2009; Pike *et al.* 2016).

During the last two decades, there has been growing interest in extending and deepening understanding of how the development and functional operation of internationally significant cities and city-regions, such as London, New York and Tokyo, is supported, planned and governed. ‘Global city’ status has seen a small group of elite cities and city-regions bestowed a privileged position within the global-urban hierarchy, distanced from other ‘ordinary cities’ (Beauregard 2003; Peck 2015). Mindful of the challenge of spatially defining growing metropolitan areas, Hall and Pain (2006: 3) introduced the concept of the “polycentric metropolis” as an entity de-coupled from national economies but situated within an accelerating globalisation process. Such ‘emergent mega-city-regions’, although physically separate from each other, were functionally inter-connected in terms of their economic structure and division of labour (McCann 2016). In western Europe, Hall and Pain (2006) identified eight global ‘city-regions’: South East England (London); the Randstad; Central Belgium; Rhine-Ruhr; the Rhine-Main Region; Northern Switzerland; the Paris Region; and Greater Dublin. Hall and Pain also called for further research to examine the relationships, differences and similarities between ‘global’ or ‘mega-city-regions’, alongside further analysis of the domestic spatial contexts in which these urban and regional entities were located in

an attempt to strengthen knowledge and understanding of the relationships between global cities and city-regions and uneven development within national economies.

In the 1970s, scholars began to link particular forms of urban development with major socio-economic transformations within the global economy (Castells, 1977; Harvey, 1973), demonstrating how over-accumulation and surplus capital ‘injected’ into urban spaces rendered cities and city-regions contested sites of social, economic and political relationships. Friedman (1986) developed an analytical framework for defining the global city based on a number of distinct political, social and economic features: high levels of integration within the world economy; key nodes in the international flow of finance, people and ideas; hosts of global production and employment functions; focal destinations for domestic and international migrants; locations where the contradictions of capitalism are most evident and class and spatial polarisation most apparent; key sites for the concentration and accumulation of global capital; and, places where the fiscal capacities of national and local states often struggle to prevent major social costs from materialising.

Sassen (2001) identified New York, London and Tokyo as pivotal locations for a global pattern of major business service networks that provided a skeletal framework for contemporary globalisation (Taylor 2012; Scott and Storper 2015). Globalised capital cities and wider city-regions occupied privileged positions within the international urban hierarchy because they offered close proximity to political, administrative, business and financial decision-makers, and were able to attract and retain human capital from a large and internationalised pool of highly-skilled labour (Crouch and Le Gales 2012). Alongside the rapid growth of the higher echelons of the global city and city-region economy, the accompanying rise of low-paid, insecure and precarious forms of employment extended the geographical

reach of the global city and city-region and helped to exacerbate and intensify social and spatial inequalities. Rising property values and high living costs in dense urban cores contributed towards the increasing dispersal of lower-paid workers from city centre residential locations, extending commuting distances and rendering poorer and low-skilled workers more reliant upon effective and cost-efficient public transport systems (Wills *et al.* 2010).

Whilst urbanisation processes have accelerated and consolidated under globalisation (Brenner and Keil 2006), complex spatial mismatches have intensified within global cities and city-regions. Land use policies and strategies are contested between urban cores and peripheries, often requiring careful negotiation and effective regulation by strategic planning authorities and governance institutions that embrace public and private actors operating across and within broad geographical areas (Scott 2001; Scott and Storper 2015). The process is more profound and challenging at the geographical scale of the city-region, which often transcends formal administrative and governance boundaries constructed at the city-scale. Significantly, the state retains a pivotal role in land-use planning as the market alone cannot plan, resource and steer the growth or alleviate the trajectories of city-regions and lead the investment and renewal of the infrastructures that are critical to building and maintaining prosperous urban economies (Storper 2014; Tewdwr-Jones 2012).

In identifying and framing the concept of ‘ungovernability’, Storper (2014) has explained how the governance of large metropolitan areas is shaped by a series of strong economic interdependencies, and that fragmented governance is both an illustration and outcome of how city-regions function as complex economic, social and spatial entities. Whilst institutions are key ingredients in shaping urban success or failure (Storper 1995; OECD 2012; OECD 2015), large cities and city-regions:

exhibit an extremely high level of economic, social, environmental, infrastructural and ‘public order’ interdependence, but for which there is rarely an overarching political authority (such as a sovereign, unified regional government). In this sense, metropolitan governance is the governance problem *par excellence* (Storper 2014: 116).

As large cities and city-regions grow, attempts are made to better-coordinate the activities of local government units within and between functional economic or travel-to-work areas, a challenge that increases over time and space. In response, it is typical for new institutions or agencies to be created, which overlay in-situ arrangements but can also exacerbate existing disjointed modes of governance, thus rendering places even more ungovernable (Storper 2014). The ungovernability ‘problem’ is more acute for global cities and city-regions in the context of infrastructure. In this realm, actors wrestle with both entrepreneurial *and* managerial forms of urbanism, stimulating growth through speculative actions, but equally having to engage in providing the collective provision of infrastructure through more interventionist and managerialist means in an effort to assemble and sustain capital investment and renewal.

National and local state actors continually have to adjust governance arrangements in an attempt to establish institutional arrangements capable of building and maintaining effective city-region-wide governance and leadership (Nelles 2013). As a consequence, the spatial form and organisation of global cities and city-regions is often in flux. This reflects the evolution of economy, polity and society, the demands for better quality of life and improved infrastructure and services from residents and workforces, and the continued search for means of mitigating the negative economic, social and environmental consequences of urbanisation (Ahrend *et al.* 2014). These ongoing processes strengthen the argument for defining large metropolitan geographies as chaotic and even ‘uncontrollable’ places

(Lefèbvre 1970), given the depth, range and scale of market dynamics, state regulatory regimes and public, private and civic society actors interacting with and within global cities and city-regions at any one time (Storper 1997; Scott 1998). There is often multiple overlapping and disparate local governments, each responsible for different functions (Wood 1961), and each having to respond to the various interests and preferences of local constituencies (Storper 2014). Under such circumstances, the policy challenge confronting state actors is twofold. First is to reach consensus between different units of government – from national, regional, city-region to local – as each has a stake in addressing common problems (Kantor *et. al.* 2012). Second, large metropolitan areas – and the units of government within them – have to adapt and evolve when particular roles and responsibilities come under pressure as the city and city-region expands or contracts spatially, socially and economically. Reform can be problematic particularly in relation to transport as spatial parameters are revised to manage the consequences of growth:

A larger urban area will, for example, generate a natural need for a more extensive transport system. But the pre-existing boundaries for transit operators and financing more services tend to trap the principals behind agents whose boundaries are no longer the right ones to serve new needs as they arise (Storper 2014: 120).

So-called global ‘alpha cities’ have been at the vanguard of new and emergent theories and policies in urban studies, and have become the pre-eminent normative model for emulation across the urban spectrum (Peck 2014). Global city and city-region institutions and actors have articulated a repertoire of growth, governance, place-promotion, civic boosterism, devolution, and competition (Beauregard 2003; Crouch 2011). Intensified urban competition has challenged cities and city-regions to grow larger and faster, which in turn produces new stresses and increases

demand for further investment in infrastructure and other services. In an increasingly competitive environment, national governments, which, at one time, could 'bankroll' domestic firms, are now instead steering public investment towards global cities and city-regions (particularly capital cities) that are regarded as 'national champions' (Crouch and Le Gales 2012). In this context, 'economic patriotism' has taken a different and more urban turn (Clift and Woll 2012). Crouch and Le Gales (2012) suggest that more resources for national champion global cities and city-regions has profound implications for addressing uneven development as national governments risk provoking intense opposition in other regions nationally, and fracturing pre-existing redistributive territorial policies designed to address spatial imbalances (Martin 2015; Martin *et al.* 2015). Mindful of the impact of these relationships, Hall and Pain (2006) suggest that research on global cities and city-regions should embrace relational perspectives to help unpack and strengthen existing knowledge and understanding about the nature of the connections between large metropolitan areas and global city-regions and other cities and regions within national political economies. A call to which this paper responds directly.

As economic competition increases and 'market-making' and supply-side policies become expansionist areas for state activities (Levy 2006), the role of the state, especially in austere times, has evolved. Traditional urban managerialist emphasis upon redistributive spatial policies seeking to direct growth to lagging places in an effort to reduce spatial disparities has been superseded by more urban entrepreneurialist approaches focused on attracting private investment and ensuring the performance of the most successful cities and city-regions contributes towards strengthening national competitiveness irrespective of its impact upon spatial disparities (Harvey 1989; Crouch and Le Gales 2012). The UK has more pronounced and persistent spatial imbalances than most other advanced economies (Martin *et al.* 2015). Successive national governments have made public

pronouncements about achieving sectoral and spatial ‘rebalancing’ while simultaneously looking to protect and enhance the ‘gains’ said to accrue nationally from the increasing spatial agglomeration of economic activity in London (Martin 2015). Across the developed world, national governments are coming under increasing pressure to devolve more responsibilities and resources to cities and city-regions (Katz and Bradley 2014; 2013; Rodríguez-Pose and Gill 2003). Consequently, new and emergent ‘spatial imaginaries’ of economic governance at different geographical scales are being constructed (Pike and Tomoney 2009).

The transition in thinking and diagnosis of the urban condition has been informed by New Economic Geography (NEG) and New Urban Economics (NUE) approaches. Each of which have gained firm footholds in international (e.g. World Bank 2009) and national government and policy-making and academic circles, including the UK (BIS/DCLG 2010). Although derived from different conceptual roots, when considering the origins and consequences of regional and urban growth and economic disparities, NEG and NUE share similar diagnosis and responses. Particular attention is given to the scale, density and concentration of economic activities in urban areas capable of creating the thick labour markets, specialised goods and services suppliers and knowledge spill-overs that underpin the external economies of agglomeration and growth (Cheshire *et al.* 2014). Both NEG and NUE approaches argue that traditional policy interventions can lead to public resources being dissipated and spread too thinly, undermining overall national economic performance (Martin 2015). Proponents of NUE, which has been influential in shaping UK urban policy since 2010, suggest that public investment should focus on strengthening the most productive and successful cities to increase total national growth (see Martin 2015 for a review of these models and Haughton *et al.* 2014 for a critique). In theoretical terms, spatial agglomeration is a logical market outcome of increasing returns and mobility

factors that increase growth up until congestion costs and other negative externalities start to produce diseconomies of agglomeration (Martin 2012).

The influence of the state in determining the spatial distribution of economic activity across space is only belatedly being recognised in both NEG and NUE. Acknowledged are regulation and growth-enabling state-led investments in the form of collective public goods, especially infrastructure (Krugman 2015; OECD 2016). Public investment is territorially uneven, and can either reduce or reinforce geographical imbalances (Harding *et al.* 2015). Large urban areas often require major capital investments in order to defer diseconomies of agglomeration, which can undermine economic productivity and growth (Martin 2008). However, the costs of maintaining and upgrading transport and other infrastructure assets and systems in dense metropolitan areas is becoming increasingly expensive, in part due to rising land values (HM Treasury 2010). The state may choose to make large-scale transport investments in a particular city or city-region in an effort to reduce congestion. But the risk is that further investment encourages greater spatial concentration of activity, which then creates more pressure on infrastructure, increases environmental degradation, which then requires additional investment to alleviate. This results in a virtuous or vicious circle in which the question is posed as to whether “transport investment promotes economic growth or more growth encourages more demand for transport, and thus further investment?” (Bannister and Berechman 2001: 214).¹

This section has reviewed the literature on the rise of the ‘global city and city-region’ and illustrated the challenges in how such places are governed, often across large geographies encompassing multiple and fragmented local units of government. Such situations have raised the critical questions of concern here

¹ The INRIX Traffic Scorecard for 2015 says ‘strong economic growth and record population levels’ made London the first city to exceed 100 annually wasted hours per driver in jams, and become the most congested city out of 100 cities surveyed worldwide. In 2014, London became the most congested city in Europe. Details at: <http://inrix.com/press/scorecard-uk/>

about the ‘governability’ of the global city and city-region. These issues have been amplified through the dominance and tensions arising from agglomeration economics, whereby public policy and public and private investment is increasingly targeted at large, economically-successful cities and city-regions in order to sustain and manage growth and development but which equally results in further investment being required to address the negative consequences of growth. The next section reviews how public and private actors work individually and collectively to identify and assemble investment in urban infrastructure when confronted with rising costs, fragmented governance, uneven spatial planning arrangements and in the context of private finance seeking new assets, including infrastructure, in which to invest capital. The consequence of these developments for the governance of cities and city-regions, particularly those of a global scale, are explored.

3. Governing, funding and financing urban infrastructures

Infrastructure underpins and connects sites for fundamental human and social activities in the home, and places to learn, work and play in cities and city-regions across the world. Infrastructure is geographically concentrated in urban areas as more people globally are living in urban environments (UN-Habitat 2016). Infrastructure has been an integral and recurrent part of city and city-region economy, society and polity historically. Earlier episodes of industrialisation and urbanisation in western Europe and North America in the 19th century were predicated upon and supported by large scale and sustained infrastructure investment (Pollard 1981). The economic, social, political and cultural histories of cities and city-regions are marked by infrastructural moments and transformations. Who pays for and who runs urban infrastructure have endured as central questions of funding, financing and governing throughout such historical episodes, evolving

broadly from piecemeal private initiatives and capital to national and municipal state provision and taxes, user charges and borrowing (Jacobson and Tarr, 1994).

Since the 1990s, infrastructure has returned to prominence in contemporary urbanism. An international narrative supportive of infrastructure, especially in cities and city-regions, is evident. A number of connecting currents have formed a resurgence of attention and interest in a “global infrastructure turn” (Dodson 2017: 87). A globalising and digitalising economy and society with rising income levels, notwithstanding growing social and spatial inequalities within countries, have fuelled demand for infrastructure systems and services as “an essential part of everyday life that we want to be efficient and well maintained” (Rowark 2014: 1). Infrastructure is interpreted by public and private actors as being central to addressing the global challenges of climate change, demographic shifts, social and spatial inequalities, and technological transformations in resilient and sustainable ways (UN-Habitat 2016). In this so-called but problematic “urban age” (Brenner and Schmid 2013: 731), cities and city-regions have become the main focus for the spatial concentrations of infrastructure provision.

Amidst the articulations by public, private and civic actors of the increasing importance of urban infrastructure in economic, social, environmental and technological terms, the contemporary urban infrastructure realm appears beset by a sense of anxiety, even in some contexts, such as the US, an “infrastructure crisis” (Kettl 2010: 1). Symptoms appear manifold and widespread in cities and city-regions across the world: congestion and gridlock; ageing and poor quality systems and services; crowded and dilapidated public transportation systems; breakdowns and failures; pollution and poor air quality; and, socially and spatially uneven access and use (Graham 2010, Woetzel *et al.* 2016). Further layers of issues include the unplanned withdrawal from infrastructure contracts by private providers leaving national and municipal governments to take on responsibilities. Public contestation

and social protest have also emerged against the perceived private and public failures of collective urban infrastructure provision (Olivera and Lewis 2004). The underlying causes of such manifestations of ‘crisis’ appear to lie in the collision of numerous inter-connected phenomena: under-investment; national and local state restructuring and austerity; public anger at infrastructure shortcomings amidst rising expectations; and the growing ambitions and participation of financial actors in urban infrastructure.

With this renewed international academic interest and scrutiny, public policy deliberation and political debate, the fundamental questions of how to pay for and how to manage urban infrastructure remain thorny, pressing and difficult to resolve (O’Neill 2017). Paying for, organising the capital investment, operating, managing and governing city and city-region infrastructures are acute, large-scale and long-term matters. Infrastructure, especially in cities, has become emblematic of the post-Global Financial Crisis 21st century zeitgeist; a compelling narrative and necessary touchstone of urban, regional and national development aspirations, hopes and prospects for public and private actors across the world. The International Monetary Fund (IMF) (2014: 75) has asked whether it is “time for an infrastructure push” to address “needs” and “bottlenecks” to raise output in advanced and emerging countries in response to economic and demand weakness because “investment efficiency is high”, borrowing costs relatively low, and debt-to-GDP ratios considered manageable. The OECD (2015: 5) considers the need for “infrastructure investment...to be substantially increased in most developing and emerging economies to meet social needs and support more rapid economic growth”. For the private sector, infrastructure has emerged as “an attractive investment opportunity in itself” (OECD 2015: 5) and “asset class” (Inderst 2010: 70), given infrastructure’s particular economic characteristics as critical, long-term and sometimes monopolistic assets with predictable revenue streams over a

sustained period. As a result, infrastructure has become increasingly enrolled in financialisation processes (Allen and Pryke 2013).

The state still plays a major role in infrastructure at different spatial scales because of infrastructure's large capital requirements and strong association with statutory planning, property and land ownership issues that require governance, regulation, negotiation and resolution (O'Neill 2013). The state retains an integral and enduring role in collective urban infrastructure provision because of its interests in capital accumulation, managing externalities and other market failures, and the long-term time horizon and monopoly and competition issues arising from infrastructure that call "for some combination of finance capital and state engagements" (Harvey 2012: 12). In addition, some major urban infrastructure schemes incur substantial risks and costs during construction phases that only governments are either able or willing to bear and underwrite. This is increasingly evident in global cities and city-regions where the costs of building new infrastructure are high and increasing (HM Treasury 2010; Rosenthal 2017).

Urban development, including infrastructure renewal, acts as a mechanism for addressing the problem of surplus capital (Harvey 2012.U). Urbanisation and its infrastructures facilitate the expansion of capital accumulation amidst class struggle: "in order for capital to circulate freely in space and time, physical infrastructures and built environments must be created that are fixed in space" (Harvey 2015 :75). Investment in physical infrastructure is necessary to enable capital accumulation in certain times and spaces but later that same infrastructure becomes the barrier to further accumulation (Harvey 1982). Competition between capitalists generates 'over-accumulation' in the primary circuit of capital – the production or manufacturing sector – causing falling prices, a crisis of profitability, and rising unemployment. 'Capital switching' seeks to overcome this constraint, moving investment into the secondary circuit of capital – the "built environment

for production” including economic infrastructure, factories and offices and the “built environment for consumption” such as the social infrastructure of education, housing and retail – and committing further long-term investment to immobile assets in an only ever temporary ‘spatial fix’ to support further accumulation (Harvey 1978: 106). The long-term life-cycles of physical investments force capital continually to reinvent new ‘capital switching’ techniques to connect private (and private-public) money with the urban built environment (Savanna and Albers, 2015; Aalbers 2012; Christophers 2011; Harvey 1985, 1989a, Weber 2015).

This integral relationship between capital and urbanisation has sparked the search for ‘innovative’ mechanisms to increase the value of assets, using new and often riskier and speculative financial practices drawing together existing and new institutions and actors with differing public and financial interests in urban development (Fainstein 2001). The transformation of infrastructure from a public good into an asset class is said to have accelerated under the current “special” episode of “global financialisation” (Harvey 2015: 177) characterised by “exponential growth” (2015: 100) of its sectoral and spatial reach, “phenomenal acceleration” (2015: 178) in the speed of capital circulation and turnover, emergence of novel institutional actors, instruments and practices, and the overall enhanced “pressure asserted by finance” (2015: 178).

The financialisation of urban infrastructure is reconfiguring urban spaces and institutional and governance arrangements (Weber 2010). This paper focuses on transport because it is the infrastructure domain where the ungovernability of global cities and city-regions is increasingly framed, negotiated, tested and unresolved. As the nature and pace of change in governing, funding and financing urban infrastructure has deepened and accelerated, theory has struggled to identify and illustrate the wider meanings and explanatory purchase of processes, including financialisation, decentralisation, state restructuring and austerity.

New spaces of governance facilitate the relationship between financialised capitalism and the urban landscape that materialise as interactions between actors in globalised financial institutions and the local state and its networks seeking to attract and channel international capital to invest in specific urban development projects. Crucially, Harvey (2010: 48) identifies the existence of a “state-financial nexus” in which state and private finance actors work together – particularly in the urban space – to facilitate capital flows that have a direct impact upon the nature of the urban environment and its governance. The state is often an active agent in seeking to attract private investment to increase property and/or tax yields (Harvey 2010), and is not passive or at the whim of private sector actors (Valler 1996). Despite fiscal retrenchment and the erosion of urban-governmental capacities (Peck 2014), local states can act as either complicit and/or resistant agents in wider structures and processes of urbanisation and financialisation. Financial risk is geographical in nature (Lee *et al.* 2009), and the executive and political capacities and competencies of local governments are institutionally and geographically variegated (Ashton *et al.* 2014). Weber (2010) calls for research to examine financialisation from the perspective of the local state and to adopt a more “agent-centred approach” (Weber 2015: 7) in order to help understand how market structures are produced and reproduced and institutional intermediaries are created and operate.

The role of the local state in underpinning the financialisation of urban infrastructure reflects a shifting landscape and mixing between urban managerialism *and* urban entrepreneurialism. Local government actors have been encouraged to adopt entrepreneurial approaches to urban economic development and focus on growth coalitions and heightened inter-urban competition (Harvey 1989). The local state is increasingly required *de facto* to align more closely with business and adopt private enterprise commercial strategies and behaviours

(Hackworth 2007). Harvey (1989: 4) identifies the entrepreneurial approaches of different urban actors, encompassing public, private and civic spheres, individually and collectively engaged in devising new and ‘innovative’ approaches to achieve growth because “urban governments had to be much more innovative, willing to explore all kinds of avenues through which to alleviate their distressed condition and thereby secure a better future for their populations”. In the current episode of financialisation and austerity in advanced economies, new forms of urban entrepreneurial policy transactions and linkages, with speculative traits and uncertain outputs, are creating profound spatial consequences for cities and city-regions searching for new funding and financing for development and growth. Local government institutions are being drawn into new relationships with financial actors and financialised instruments. However, such patterns are not uniform. In highly-centralised states such as the UK, conservative and risk-averse national administrative cultures and managerialist institutions continue to constrain and limit forms of urban infrastructure financialisation and entrepreneurial governance at city, city-region and local scales (O’Brien and Pike 2018).

Understanding the contemporary patterns and processes of state and market involvement in urban development and governance following the global financial crisis requires further empirical analysis and interpretation of how the crisis and its aftermath have been re-shaping the landscape of urban development (including infrastructure renewal), and in paving the way for new and experimental forms of urban governance (see for example Peck *et al.* 2013, Oosterlynck and Gonzalez 2013). The argument in this paper is that amidst the acute problems of governing, funding and financing urban infrastructure, amidst the ‘ungovernability’ of global cities and city-regions, new configurations of entrepreneurial *and* managerialist urbanism are being constructed, enacted and experimented with. Moving on from any binary understanding and explanation of transitions between discrete eras in urban governance, the conceptualisation here interprets a mixing, overlapping and

connecting of entrepreneurialism *and* managerialism. National and local states and financial actors in global cities and city-regions are wrestling with the difficult, even intractable, urban infrastructure conundrum; innovating new and speculative practices such as ‘value capture’ as well as mobilising existing techniques, including state grants and guarantees. Some cities and city-regions are circumventing private ownership to manage infrastructure (e.g. water and energy) directly through re-municipalisation (Cumbers 2012). Elsewhere, governments are encouraging private interests to purchase or lease publicly-owned assets (e.g. infrastructure asset ‘recycling’ in Australia) in order to generate capital receipts to re-invest in infrastructure. Even where the state does not have direct ownership, it remains an inseparable partner in infrastructure assets that are in private hands (such as utilities) through regulatory frameworks and property relationships, resulting in a more complex, uncertain and nuanced inter-connection between public and private sectors in infrastructure functions, purposes, funding, financing and governance (O’Neill 2009).

This paper seeks to make a contribution towards research examining the precise forms that urban entrepreneurialism and managerialism take within specific temporal and geographical contexts (Wood 1998). Significantly, Harvey qualified his notion of an apparent transformation from urban managerialism to entrepreneurialism as contradictory, partial and uneven. Reflections in the contemporary period concur and have interpreted it as “an historical process very much in motion, a story of contradictory transformation not a teleological homily” (Peck 2014a: 396). Rather than providing a “universal template” or “single concrete composite” (Peck 2014a: 396), managerialist and entrepreneurial urban governance are better understood as rationales, strategies, practices and techniques with particular characteristics and contradictions that unfold in spatially and temporally uneven ways across and between geographical levels. Brenner’s (2004) distinction between variants of entrepreneurial governance in the 1970s and those in the

1980s and 1990s suggests that urban entrepreneurial systems are continually and contingently re-made and re-configured, especially during periods of crisis (Leitner and Sheppard 1998; Peck and Tickell 1994).

In global cities and city-regions, where governance is often more fragmented and infrastructure investment costs higher, this means that a large number of public and private actors are required to work together to identify and adopt a variety of financial and regulatory mechanisms – some managerialist, some entrepreneurial, others hybrid – to plan, fund, finance and implement urban development projects, including critical infrastructure. The ways in which these processes are governed vary, and require clear theorisation and close empirical scrutiny of how and why actors formulate infrastructure funding and financing mechanisms and practices in particular urban settings. This paper also responds to Le Gales’ (2016: 156) call for empirical research to inform theoretical and conceptual knowledge and understanding about the particular processes, actors and institutions shaping particular forms of urbanisation and urban change, as “urban worlds and the urbanization processes of cities do not change all the time, in all ways”. It also chimes with scholars who are sceptical of the argument that urban governance and development has witnessed a “massive withdrawal of the state” (Storper 2016: 241). The proposition is that the concept of ‘ungovernability’, especially in global cities and global city-regions, is both a response to and impact of the melding of urban entrepreneurialism *and* managerialism and pragmatic reflection of the broader economic, social, political and environmental challenges public and private actors face in supporting urban development and renewal.

In global city-regions, the search for new funding and financing models for urban infrastructure is drawing together international, national and local actors – from across different public and private sectors – meaning that the governance of infrastructure funding and financing is taking on greater significance. O’Neill

(2016) suggests that institutional ensembles and operations shape the particular relationships between infrastructure investors and clients (including governments), and political valuations determine the specific infrastructure projects that receive support and investment that are based upon targeted, bespoke regulatory and organisational arrangements and tailored financial packaging.

The ability of capital to create and monetise new asset classes is one of the most pervasive processes in a financialising economy (Leyshon and Thrift 2007). Questions have arisen about the current “narratives of financialization...as scripts of linear, uninterrupted, ineluctable development” (Christophers 2015: 194). In answering calls for greater geographical appreciation of how financialisation plays out across space and time (French *et al.* 2011), this paper aims to strengthen understanding of the uneven geographies of public and private actor engagements in infrastructure investment, and the ways in which financial interests, instruments and practices are unfolding between and/or within different countries, regions and cities. Drawing upon a conceptual framework that identifies the general characteristics of financialised infrastructure investment practices (Table 1), the analysis seeks to explain how such new and/or emergent approaches are being introduced and are being adapted and/or replacing or mixing with longstanding strategies and techniques. Traditional and emergent approaches in governing urban infrastructure funding and financing are evident that reflect transitions from the “modern infrastructural ideal” (Graham and Marvin 2001: 43) associated with urban managerialist governance towards those more reflective of urban entrepreneurialism (Table 2). Rather than proposing a binary transition model, this analytical framework seeks to identify and capture the characteristics of new, reworked existing, emergent and hybrid approaches and practices to inform the empirical analysis.

1. The growing involvement of financial actors or intermediaries.
2. An increasing exposure of cities to – or dependence on – financial markets.
3. The increasing use of financial technologies, such as securitisation.
4. A reliance on a framework of financial calculation to predict, model and speculate against the future.
5. A transformation in the purpose, function, values and objectives of government, which are being brought in line with those of financial actors and institutions.
6. An increase in public sector indebtedness and risk taking.
7. The transformation of infrastructure from a physical and productive component of the urban environment into a financial asset defined by risk and return.
8. The increasing control over infrastructure by yield-seeking surplus capital.
9. The transformation of infrastructure into a tool for growth and tax base expansion.
10. The highly geographically uneven ability to engage successfully – if at all – in funding or financing infrastructure.

Table 1: Characteristics of financialised infrastructure investment practices

Source: Adapted from Strickland (2015)

Dimension	Traditional approaches	Emergent approaches
Rationale(s)	Economic efficiency (and social equity) Market failure	Unlocking economic potential (e.g. GVA, employment) Expanding future revenue streams and/or tax base Releasing uplift in land values Market failure
Focus	Individual infrastructure items (e.g. roads, bridges, rail lines)	Infrastructure systems and interdependencies (e.g. connectivity, telecommunications, district heating)
Timescale	Short(er) 5-10 years	Long(er) to 25-30 years
Geography	Local authority administrative area	'Functional Economic Area'/'Travel to Work Area', city-region, multiple local authority areas
Scale	Small, targeted	Large, encompassing
Lead	Public sector	Public and/or private sectors
Organisation	Projects	Programmes
Funding	Grant-based (e.g. from taxes, fees and levies)	Investment-led (e.g. from existing assets and revenue streams, grant, borrowing)
Financing	Established and tried and tested instruments and practices (e.g. bonds, borrowing)	Innovative, new and adapted instruments and practices (e.g. value capture, asset leverage and leasing, revolving funds)
Process	Formula-driven allocation, (re)distributive, closed	Negotiated, competition-based, open
Governance	Centralised Top-down National government and single local authority-based	(De)centralised Bottom-up and top-down National government and multiple local authority-based (e.g. Combined Authorities, Joint Committees)
Management and delivery	Single local authority-based, arms-length agencies and bodies	Multiple local authority-based, joint ventures and new vehicles

Table 2: Transitions in approaches to governing infrastructure funding and financing at the city/city-region scale

Source: Authors' research

In examining the financialisation of urban infrastructure, the aim is to contribute to the recent body of literature on the governance of the funding and financing of urban infrastructure and its implications for cities and city-regions (see, for example, Ashton *et al.* 2014, Farmer 2014, Guironnet and Halbert 2014, Halbert and Attuyer 2016, O'Neill 2013, Peck and Whiteside 2016, Strickland 2015, Weber 2010). The empirical focus is a case study of the funding, financing and governance of transport infrastructure in the London global city-region. Infrastructure is the prism through which financialisation and governance collide. Transport, particularly in the London global city-region, is one of the most urgent, capital intensive, long-term and complex areas in geographical, governance, planning and funding and financing terms. Although infrastructure is a domain where there is a major application of financial instruments, we draw a distinction between 'funding' and 'financing' (Table 3) and recognise the limits to how the concept of financialisation is applied in 'financial studies' (Christophers 2015). Funding relates the income sources needed to meet the costs of infrastructure construction and operation over time (Maxwell-Jackson 2013). Financing is the arrangement that enables the up-front costs of a project to be met initially and repaid over its life cycle, and involves the costs of the services of putting together the finance arrangement and the actual cost of capital itself (O'Neill 2013).

Funding		
Public sector (tax) revenue sources	Joint public and private revenue sources	Private sector (market) revenue sources
Taxes and assessments Availability and other public sector payments Grants Land and property sales Other contributions (e.g. tax credits)	Joint development and commercial activity (e.g. asset backed vehicles) Regulated asset based	Project-generated revenues (e.g. charges, tolls, user/consumer fees) Real estate developer contributions Other commercial revenues (e.g. land sales, provision of other services to users, sponsorship) Crowdfunding
Financing		
Public	Joint public and private	Private
Pay-as-you-go: taxes, fees and grants Local/public authority reserves Government gilts National government loans (e.g. UK Public Works Loan Board) Supranational body loans and other instruments (e.g. European Investment Bank JESSICA, Project Bonds)	Equity Public sector pension funds Sovereign Wealth Funds Sovereign guarantees Public private partnerships	Pay-as-you-go: project generated and other commercial revenues Banks (e.g. debt finance, loans) Pension and insurance funds (e.g. debt finance, loans) Capital markets (e.g. municipal and special purpose vehicle bonds) Project finance Secondary markets (e.g. infrastructure funds)

Table 3: Infrastructure funding and financing

Source: Adapted from Strickland (2015)

The London case study sheds light on the actors and processes shaping the planning, governing, funding and financing of transport infrastructure in the urban built environment and demonstrates how different spatial and temporal-specific conditions and institutions shape the financialisation and governance of infrastructure in a global city-region. London was chosen due to its principal role in the international urban hierarchy, and central and historic position within the UK political economy. London is examined from the city-region scale, and consideration is given to the question of governance within and across a

meaningful labour market geography that links London to the wider south east of England (Syrett 2006). Although not a mega city-region in population terms, London is a pre-eminent global city-region, from economic, social, political and cultural perspectives, and it is wrestling with the conundrum of how to manage growth and plan and govern strategically infrastructure within and across both formal and fragmented administrative geographies (Hall and Pain 2006). As urban infrastructure fixes for global cities and city-regions risk undermining national government efforts to reduce spatial disparities through sectoral and spatial ‘rebalancing’, local states are having to rediscover and adapt the statecraft of municipal entrepreneurialism *and* managerialism for urban infrastructure provision and renewal in austerity. Transport infrastructure has been investigated as a priority issue because it is the infrastructure sector where substantial public and/or private investments are being made and planned, new and adapted funding and financing models are being experimented with, existing strategic planning institutions and geographies are coming under stress, and new global city and city-region governance arrangements are being tried and developed.

The research methodology, design and methods for the case study were based on: i) 20 semi-structured in-depth interviews with lead actors (e.g. elected members and officers in London and the south east of England, officials from central government, Greater London Authority (GLA), Transport for London (TfL), London Boroughs, London First and planning consultancies) undertaken between September 2015 and January 2016; and ii) a detailed review of secondary sources (e.g. documentation from the GLA, TfL, London Councils, central government, infrastructure investors and think-tanks). The political economy of the London global city-region is where the empirical narrative and analysis begins.

4. The political economy of the London global city-region

Combining aspects of urban entrepreneurialism and managerialism in response to the challenges of global city and city-region ungovernability under austerity, the spatial and temporal urban infrastructure fixes constructed by international, national and local actors are attempting to address some of the constraints on growth in the London global city-region given its significance to the UK economy and international status within the global urban hierarchy. But the resulting scale and cost burden bearing down on the national state and markedly uneven generation and distribution of public and private resources risks undermining the UK government's national state project of 'rebalancing' and 'spreading prosperity' as other cities and city-regions face intense financial constraints upon their urban infrastructure needs under austerity.

Although recent accounts suggest a 'decoupling' of the London global city-region economy from the rest of the UK (McCann 2016), London remains integral to UK political-economic prosperity as the main engine of national growth and tax revenue generation. Funding, financing and governing urban infrastructure in London is an acute national and local concern given the city-region's size and political-economic weight, growing demands for new infrastructure development and renewal, claims for further fiscal devolution, including tax revenue retention and borrowing powers, and fragmented local and sub-national governance that has stoked up problems of 'ungovernability' and long-term strategic planning and infrastructure provision. These issues are reinforcing a set of distinct challenges concerning the enduring nature of uneven development and spatial disparities in the UK, and London's particular dominant role within the national political economy. This requires close exploration of the manner and evolution in which London has been governed both historically and spatially, and its urban infrastructure planned, funded and financed.

4.1 Governing London and its infrastructure

As the centre of an extensive and expanding city-region, characterised by widening and deepening interdependencies, with persistent fragmentation of political and administrative jurisdictions and a mismatch between the scale of government and the geographies of economic, social and land use planning processes, London has long exemplified the problems of unruly urban governance and ‘ungovernability’. From the Middle-Ages, London has asserted its economic, political and cultural dominance over England and the UK, and acquired a distinctive form of local government (Kynaston 2012). Successive monarchs enshrined the rights of the City of London to be governed by its own Lord Mayor elected by its livery companies (guilds) (Kynaston 2012). The growth of a national government centred on Whitehall and Westminster formed the nucleus of a future metropolis in which the Crown, Parliament and the national state had a close interest and were geographically centralised. In England, wealth and power were concentrated in the emerging national and imperial capital that dominated the River Thames basin, ensuring that, “the combined attractions have made the tract of marsh and flat ground in the lower basin of the river the centre of the Arts, of the Industries, of the Recreations and of the moral ‘tone’, not for England alone but for wider regions of the earth” (Ford 1902: 46).

Managing growth and collective infrastructure provision became a rising political problem in the early modern period as London’s expansion accelerated, spilling out from the old city walls. In 1580, Queen Elizabeth issued a ‘Proclamation against new Buildings in the Suburbs and Neighbourhood of London’ in 1580, although this (and later similar decrees) did nothing to prevent the extension of London (Archer 2001; Barnes 1970). London’s expansion was guided primarily by private interests in the 17th and 18th centuries, especially through the aristocratic ‘Great Estates’, although these were typically closely linked to the Crown. The City of London frequently resisted such developments, for instance, consistently opposing

the building of a new river crossing to rival London Bridge until Parliamentary legislation led to the opening of Westminster Bridge in 1750. Recognising London's critical role in the national economy, a series of Acts of Parliament created a variety of commissions concerned with paving and lighting the growing city (White 2010). Well-planned affluence was juxtaposed to chaotic squalor (White 2013).

The 1835 Municipal Reform Act, which initiated the era of modern English local government, did not apply to London, largely a result of opposition from the City of London (White 2016). For most of the 19th century, governance in London was in the hands of vestries based on localised parish jurisdictions which promoted improvements to water, sanitation and other services. According to Webb (1891: 17), local government rested “in the hands of a congeries of obscure local boards, the 5000 members of which, though nominally elected, [were] practically unknown, unchecked, unsupervised and unaudited”. Before the Metropolis Management Act 1855, London was governed by “over 300 different parochial bodies, composed of about 10,000 members ... controlled by several hundred private and local Acts of Parliament, which were practically unknown and inaccessible, except to the officials themselves” (Webb 1891: 19; see also Davis 1988; Gibbon and Bell 1939). After 1855, the Metropolitan Board of Works (MWB), responsible for sewage, roads and bridges, fire services and parks and open spaces, operated under the nominal control of the vestrymen and the counties of Middlesex, Surrey and Kent. However, in practice, the MWB was led by its chief engineer, Joseph Bazalgette, who oversaw the building of the sewage system, new roads (such as Victoria, Albert and Chelsea Embankments) and bridges (e.g. Albert, Putney and Hammersmith bridges) – many of which are the focus of renewal and refurbishment needs today. At the same time, infrastructure, such as railways and electricity was developed, in part, by private interests, (Wolmar 2012.)

Vitiating local government, proliferating special-purpose joint-boards, unplanned private developments and corruption scandals at the MWB framed the debate about the reform of London local government and governance at the end of the 19th century. At this time of imperial dominance, London was expanding to become the largest city in the western world. According to White (2005: 80), “Over the years, experience showed that it was better to absorb special-purpose boards authorities into generic local government providing the widest range of services”, which offered “the capacity to secure a wider vision”. The establishment of the elected London County Council (LCC) in 1889 was the result. The LCC inherited the powers of the MWB and gradually acquired further competences. In 1904, it took over the London School Board and later responsibility for tramways, railways and buses through the London Passenger Transport Board, public assistance, health and sanitation, housing and limited land-use planning, regulation and licensing, and emergency services except policing (Morrison 1935).

Alongside the LCC, 28 Metropolitan Boroughs were created, signalling the end of the existing vestries and local boards, although the City of London remained unreformed. This governance system was funded largely from local taxation and lacked equalisation and redistribution mechanisms. This was also an era of municipal enterprise. In 1911, in the LCC jurisdiction, alongside 13 privately-owned systems, there were 15 local authority-owned electric supply utilities. Fragmentation and a lack of standardisation resulted in the use of different frequencies and voltages and fierce local competition, but also co-operation to resist efforts to modernise the sector (Hughes 1983). White (2015: 74, 75) identifies “a brief heyday of local democracy between 1930 and the summer of 1948” during which “whole spheres of public life were owned and managed locally that are now seen as entirely the province of national government or the private sector”. After 1945, key functions of the LCC, notably health and electricity, were nationalised becoming the responsibility of central government quangos, thus

beginning the long and incremental reduction in the autonomy of local government in London and across the rest of the UK (Travers and Esposito 2003).

London's continued growth and expansion revealed the limits of the LCC as a governance structure before the Second World War "as large urban authorities were increasingly expected to be regional and strategic, managing the economic life of the city and its hinterland. Few if any came close to achieving this aim, of course, but the LCC fell further short of this goal than most city authorities" (Davis 2001: 55; see also Robson 1939). Consideration of the governance of London began to be connected with the framework of town and country planning that was enacted in 1947 and exemplified by Patrick Abercrombie's Greater London Plan (1944), which sought to effect land-use planning on a regional scale and operated alongside the Metropolitan Green Belt aimed at restricting urban growth. The Royal Commission on Local Government in Greater London (Herbert Commission) was created in 1957 to investigate and make recommendations on metropolitan reform. A long struggle preceded the London Government Act 1963 which established the Greater London Council (GLC) and 32 London Boroughs, again leaving the City of London untouched (Travers 2015) (Figure 1). Herbert had originally proposed the creation of 52 boroughs but the new arrangements brought most of Middlesex, plus parts of Essex, Kent and Surrey, a small part of Hertfordshire and the County Boroughs of Croydon and East and West Ham into Greater London.



Figure 1: The 32 London Boroughs and the City of London

Source: Map drawn by Colin Wymer adapted from London Online (n.d)

Planning controversies were the hallmark of the GLC-era, specifically concerning comprehensive urban development, but the GLC's powers were constrained. The GLC had ambitions to create a system of urban motorways during the 1970s but the plans ran into strong opposition from some Boroughs and environmental groups. The GLC only gained control of public transport in London from the London Transport Board in 1970, and it also had a statutory responsibility for producing the Greater London Development Plan. Hall's (1963) *London 2000* called for a wider vision for the planning of the whole of London and south-east England before the GLC was established, anticipating the future growth of a 'mega-city-region'. Wider regional planning was achieved only fitfully and partially until the GLC was abolished in 1986 and its powers transferred to the London Boroughs and central government-appointed bodies.

After 1986, the London Boroughs and the City of London inherited many of the GLC's responsibilities, and new joint committees were established, including the

London Planning Advisory Committee (LPAC), which advised on London-wide planning matters between 1986 and 2000 (Travers 2015). Travers suggests that the LPAC provided the intellectual basis for planning and development in London during this period and in the run-up to the creation of the Greater London Authority (GLA) in 2000. However, the array of committees and informal ad-hoc arrangements, which included inter-Borough partnerships (Travers 2003), led some to push for greater strategic coherence and transparency as London became a city that possessed many forms of government but limited direct political power (Travers and Jones 1997). London's gap in strategic governance coincided with low levels of infrastructure spending in the UK. Although major infrastructure projects in London were completed via the central government-appointed London Docklands Development Corporation (LDDC), charged with the regeneration of former industrial areas in East London between 1981 and 1998 in an arrangement that largely excluded local government. The creation of the LDDC signalled the start of a new assessment of London as a location for growth rather than a place where development should be constrained, fuelled by the 'Big Bang' deregulation of financial services in 1986 and the growth of the City. Notably, these investments underpinned the emergence of a new financial district at Canary Wharf.

Since 1999, London Borough leaders and the Mayor of London have formed a distinctive 'global city' governance arrangement for London operating under the auspices of the GLA (Travers 2015). A principal reason for the creation of the GLA was that the *in situ* governance arrangements for London were deemed inadequate to support and sustain London's growing global reputation and status (Syrett 2006). Syrett (2006) questions whether the structures introduced in London have proved fit-for-purpose and capable of addressing the complex set of issues presented by London's growing geography, economy and population, including demands for new infrastructure, harnessing strategic governance and responding to increasing pressure to source new capital investment. However, Travers (2015:

349) in contrasting what he defines as London’s administrative “bottom-heavy two-tier” governance architecture with that of New York (which has 5 boroughs with little influence), Paris (20 arrondissements but the Mayor of Paris and city council hold the real power) and Berlin (12 boroughs subordinate to the city senate) (Table 4), suggests that the London model is “probably a good one to run a large city”. The status of the London Boroughs was enhanced after the abolition of the GLC in 1986, and the powers invested in the GLA were done so in a way not to threaten the Boroughs (Tomaney 2001).

City ²	Population (2015)	Area (sq. km)	Governance
London	8,673,713	1,572	Elected Mayor, Assembly, 32 Boroughs and City of London
New York	8,550,405	781	Elected Mayor and 5 Boroughs
Paris	2,229,621	105.4	Elected Mayor and 20 Arrondissements
Berlin	3,610,156	891.7	City Senate and 12 Boroughs

Table 4: Urban governance architecture of selected global cities

Source: Authors’ research

The GLA has responsibility for strategic planning, transport, police and fire services, with extra powers granted recently over housing, economic development, culture and health (Travers 2015). The Assembly scrutinises the Mayor – who holds the majority of the GLA’s executive powers (Tomaney 2001) – and yet both are served by a single executive administration, which, at times, has sparked tensions between the two arms of the Authority (Travers 2003). The model reflects attempts by the then Labour government to define the boundaries of

² Based on formal administrative boundaries.

responsibilities and powers between the Boroughs and the GLA (Pilgrim 2006), but this has also provided the ‘rationale’ for continued and significant interventions and involvement by the UK government in the direct governance of London (Tomaney 2001). London’s national importance has made it an issue for national government.

The creation of the GLA formed a major component of New Labour’s constitutional reforms, and was expected to lay the ground for similar changes in the governance of other major cities and city-regions in England (Tomaney 2001). Most commentators defined London’s devolved governance as a local government initiative (Tomaney 2001), which explains, in part, the relative weakness of London’s devolved system, especially when compared to Scotland and Wales. The creation of a directly-elected mayor was said to present an opportunity to better co-ordinate and manage complex issues and institutional relationships (Stoker 2000), provide the space for a ‘business-like’ leader to emerge who would seek pragmatic deal-making (Barber 2013), and facilitate greater private sector collaboration and investment in urban development and infrastructure along the lines of city mayors in the United States (Tomaney 2001).

The GLA and the London Councils group of Boroughs continue to press for further fiscal, political and administrative decentralisation from national government (London Finance Commission 2013; GLA/London Councils 2015). Elsewhere in England, local government institutions have also been seeking greater ‘devolved’ powers and responsibilities to plan and invest in new urban infrastructure (O’Brien and Pike 2015). The process of revision is an endemic feature of the governance of London and symptomatic of its ‘ungovernability’, with the administrative geography and wider global city-region having the “longest experience of wrestling with the problems of how a large, diverse and spatially

extended urban agglomeration can sustain itself, in economic, environmental, social and political terms” (Gordon 2016: 33). As Pilgrim (2006: 224) notes:

[T]here is never a fixed and durable ‘constitutional settlement’ for the governance of London. And there is a remarkable pace of change...since 1898 up to and including the implementation of the Greater London Authority Act 1999, London’s governance had gone through six major changes, while New York’s had changed little.

The flux in London’s governance amplifies the argument surrounding the ungovernability of global cities and city-regions. The historical evolution of London’s governance arrangements, coupled with its sheer size and scale (Gordon 2016), means that London has struggled to find settled structures capable of addressing the contradictions and tensions generated by the challenge of planning, governing, funding and financing infrastructure in a growing global city-region that transcends formal administrative boundaries.

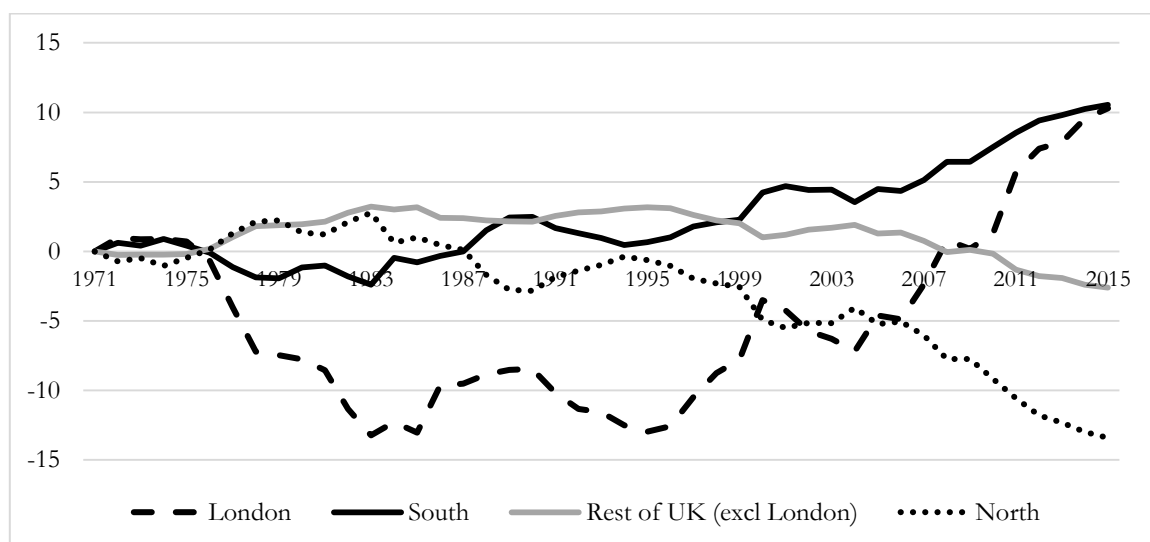
4.2 The anatomy of London’s recent economic ‘boom’ and infrastructure overload

The contribution in one area of such a large proportion of the national population as is contained in Greater London, and the attraction to the Metropolis of the best industrial, financial, commercial and general ability, represents a serious drain on the rest of the country (Royal Commission on the Distribution of the Industrial Population [Barlow Commission], 1940, para 171).

For a large part of the post-1945 period, London was in economic and demographic decline. Towards the end of the 1970s, deindustrialisation had

become a distinctive feature of UK cities and city-regions, with London losing over 40 percent of manufacturing jobs between 1960 and 1978 (Martin *et al.* 2014). At the beginning of the 1970s, manufacturing employed over one million workers in London, but by 2008 this had fallen to 216,000, with implications for infrastructure assets linked to the transportation of goods, such as ports, freight and river crossings, and emergent innovations in communications infrastructure in response to particular changes in manufacturing organisation and technology (Luger *et al.* 2013). Although job growth, especially in business services, began to increase in the 1980s, it was not until after 1991 that employment accelerated, and formed the basis of a turnaround in London's growth underpinned by the dramatic expansion of 'high-value' financial and knowledge-intensive business services fuelled by deregulation and new technology. In the 18th century, London ranked alongside Amsterdam and Paris as one of the world's leading international financial centres, and although Amsterdam was overtaken by Berlin and New York in the 19th century, London retained its prominent position. The 20th century was marked by an international financial system organised and controlled largely by London, New York and Tokyo (GaWC 1999), while the 21st century has seen London secure the mantle of premier global banking and financial centre (Cassis 2010). From 1991 to 2008, London underwent an economic renaissance with almost 930,000 net jobs in services created (Martin 2013). The concentration of high growth sectors ensured that London was the fastest growing city-region and region in the UK (Figure 2). Between 2009 and 2014, London's economy grew by 28.9 per cent, with significant growth in real estate (81.7 per cent), accommodation and food services (45.5 per cent), business support services (42.9 per cent), and construction (42.8 per cent) (ONS 2015). Gordon (2016a) attributes London's growth, particularly in central London, in the wake of the global financial crisis, to four events. First, the depreciation in sterling boosted international tourism in which London has managed to attract a significant percentage of total UK trade. Second, there has been a huge expansion in business head office employment in

London. Third, major investments have taken place in two large-scale infrastructure projects (Crossrail and 2012 Olympics), said to be a reflection of “elite choices about resource allocation and restructuring in the face of a general fiscal/commercial squeeze” (Gordon 2016a: 335). Fourth, there has been significant investment in health and higher education employment in London, while London has also benefited economically from UK taxpayer guarantees to the banking and financial services sector, as well as from Bank of England quantitative easing, which has inflated asset prices and company balance sheets (Gordon 2016a). However, London’s employment growth has not necessarily been translated into expected additional tax revenues (McGough and Piazza 2016). This fiscal shortfall has implications for how new infrastructure is funded and financed in London. A key challenge facing policy-makers is how to encourage ‘new and innovative’ financial practices and mechanisms, some combined into multiple funding and financing packages, to emerge. Brexit is also presenting potential new challenges (GLA 2018). London’s economy is integrated closely with the rest of the Europe Union (EU), in particular in business and financial services, and it has a diverse labour market containing a large proportion of EU27 workers (GLA 2016).



**Figure 2: Cumulative percentage point differential growth gaps of GVA (2011 prices):
The North, South and London, 1971-2013**

Source: Adapted from Martin *et al.* (2015: 5)

International inward migration contributed significantly to London’s population and economic growth from the late 1990s onwards (Gordon *et al.* 2004) (Figure 3). The UK’s migrant population is heavily-concentrated in London, with 37 per cent of people living in London born outside the UK, compared with 13 per cent in the UK as a whole (Hawkins 2016). Migration and population growth has driven London’s recent economic boom, placing new demands on London’s infrastructure across all sectors, which are said to require new long-term investment and renewal (Mayor of London 2015).

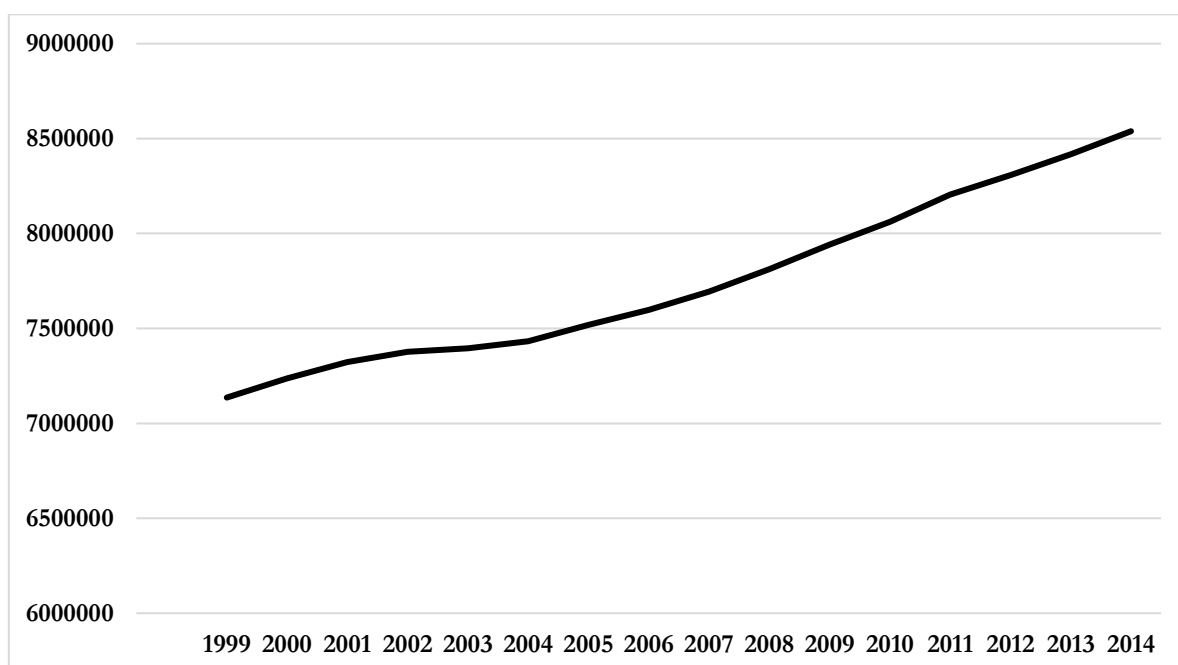


Figure 3: Resident Population in London (1999-2014)

Source: ONS Population Estimates

London has been singled out as the ‘global powerhouse’ of the UK economy, a source of foreign earnings, tax contributions, and a place that demands goods and services from the rest of the country (Greater London Authority 2016). With a long-established core of financial and business services, the growth of these activities from the late-1980s, coupled with London’s scale and distinct place within the UK political economy (Gardiner *et al.* 2013), has seen the London global

city-region embark upon a growth path largely denied to other UK cities and city-regions (Martin *et al.* 2015).

The UK's financial system is overwhelmingly concentrated in and controlled from London, and national monetary policy has long served the interests of London's 'financial nexus' (Harvey 2012; Gordon 2016a). London's central importance as a global financial centre is said to encourage large capital outflows, exacerbating spatial disparities and reinforcing divergence between London and the rest of the UK (Harvey 2012). During times of major economic shocks, such as the 2007/08 global financial crisis, which intuitively should have rendered London particularly vulnerable as well as largely culpable (Wójcik 2013), London has demonstrated a resilience and ability to recover faster from the subsequent downturn than any other UK city or city-region. This has been helped by London's ability to draw upon state largesse in the form of "bail-outs, implicit subsidy and quantitative easing...[which] have been translated specifically into employment/spending power within London and overseas rather than elsewhere within the UK" (Gordon 2016a: 336). This, in part, provides an explanation for London's ability largely to escape the consequences of the financial crash and great recession. But equally it has fuelled new speculative and risk-based paths of asset and property development in central London (Gordon 2016a), exacerbating spatial and income inequalities within and across the city-region and consequences for affordable housing and intra-urban and urban-suburban transport infrastructure.

London's economic boom has been underpinned and shaped to a large extent by a global-national-local nexus of capital and labour that has ensured London remains dominant within the UK political economy. The financial crash impacted upon London to a lesser extent than many other cities and city-regions, which were far-removed from the banking and financial service sector decision-making apparatus, but whose communities felt the fall-out of residential sub-prime mortgage lending,

and resultant economic contraction and austerity. In pledging billions of pounds towards underwriting banks, and within the sphere of major infrastructure spending, London has been re-affirmed as the UK's 'national champion'. London has been drawing in international, national and local state and private capital to underpin the city-region's economy and built environment and satisfy demands for new investment to renew and maintain critical assets and manage growth. These processes, pursued through the adaptation and adoption of different managerialist and entrepreneurial approaches and techniques, attuned to a particular London context, have also increased the complexity of how infrastructure is funded, financed and planned, and illustrate the significant challenge in governing urban infrastructure in the London global city-region.

5. 'Capital connections'? Governing, funding and financing transport infrastructure in the London global city-region

Transport infrastructure in London is a crucible of ungovernability and offers an instructive account of the thorny issues that public, private and civic actors operating across different scales face in relation to governing, funding and financing urban infrastructures in global cities and city-regions. Transport matters because of its crucial importance to the functioning of labour markets, housing markets, flows of goods and services, urban development, as well as productivity, competitiveness and social and economic inclusion (Eddington 2006). It is also the infrastructure sector that is the most visible within the public domain and where debate is most vociferous about whether decentralised governance and greater local control is more effective or not (Shaw 2016).

5.1 The national UK context of infrastructure planning and investment in the London global city-region

Infrastructure in the UK is said to perform relatively well compared to other countries, in terms of communications, electricity and gas networks, although the UK compares less favourably in transport, waste management, and road, rail and aviation capacity (HM Treasury/IUK 2011). The World Economic Forum's 'quality' benchmarking of national infrastructure ranked the UK 9th out of 138 countries in 2015 (Schwab 2016). The UK under-invests in its infrastructure by international comparison, and London assumed a significant share of total national investment (Berry *et al.* 2015): recent estimates calculated that public infrastructure investment allocated specifically to London represents £5305 per capita, compared to an UK average of £3192. Whilst it is difficult to find wholly-accurate statistics on total infrastructure investment in the UK and other OECD member states (HoC 2013; Vammalle *et al.* 2014), using Public Sector Net Investment as a proxy, total UK investment fell to 1.4 per cent of GDP in 2012-13 (£22 billion), down from a peak of 7.1 per cent in 1968, and is forecast to remain at 1.4 per cent of GDP until 2018-19. Since the 1980s, UK government investment has been lower than most advanced economies (OECD 2012), and significantly below the OECD 'recommended' target of 3.5 per cent of annual GDP. On current estimates, the difference between what the UK actually spends on investment and what the OECD believes the UK should spend, will result in an annual funding gap of £40bn by 2019-20 (Coyle 2016).

Infrastructure and its investment geographies have become more political and contested, with close scrutiny and attention being focused on the breakdown of territorial public expenditure on infrastructure, particularly transport. Central and local government and public corporation data point towards disparities between what London and the rest of the UK/England receive from national government (Figure 4). A similar spatial pattern of infrastructure investment is evident in the

per capita amount of European Investment Bank (EIB) finance provided to projects in UK cities and nations over the past two decades (Figure 5). In terms of proposed future (public and private) infrastructure investment, of the £144bn allocated to the English regions in the 2017 National Infrastructure and Construction Pipeline, £26bn is earmarked for London, of which £16bn is for transport. In other regions, the energy sector is by far the biggest beneficiary of investment (IPA 2017).

For other UK cities and regions outside the London global city-region, the articulation of entrepreneurial and managerial behaviours amidst constrained financialisation, relatively limited decentralised powers, and modest resources available for city infrastructure investment allowed by and transferred from the UK national state as well as the limited private sector involvement has resulted in marked geographical disparities in city infrastructure provision and constricted urban and regional development prospects. More broadly and longer-term, such spatial disparities and their generative forces risk undermining the potential for city infrastructure and development to contribute to the UK national government's stated recognition of "the need to rebalance the economy across sectors and areas in order to spread wealth and prosperity around the country" (May 2016).

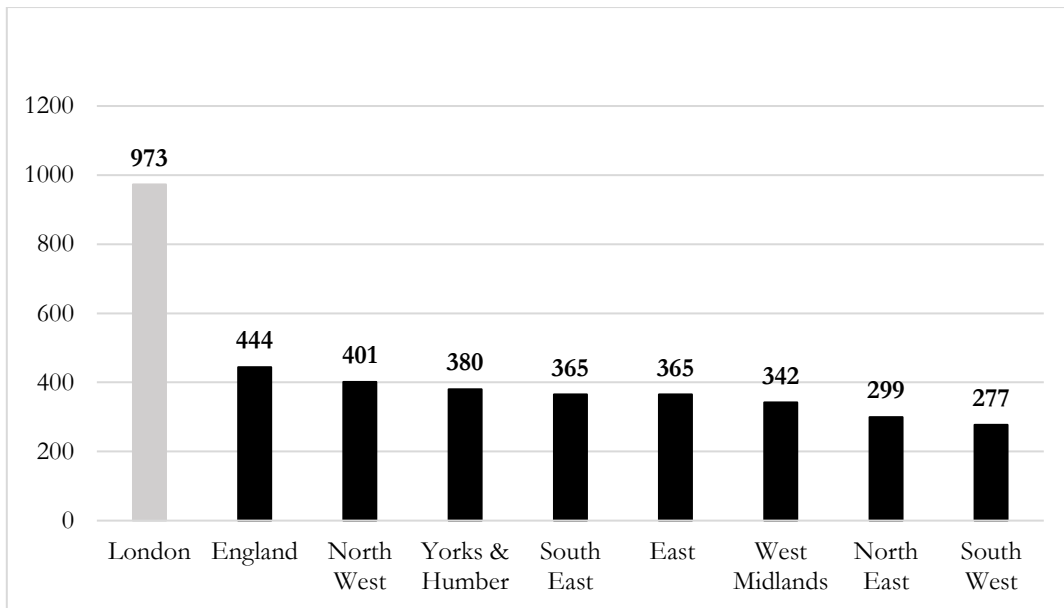


Figure 4: Identifiable public expenditure on transport in England, per £ head (2015-16)³

Source: HM Treasury (2017): 176

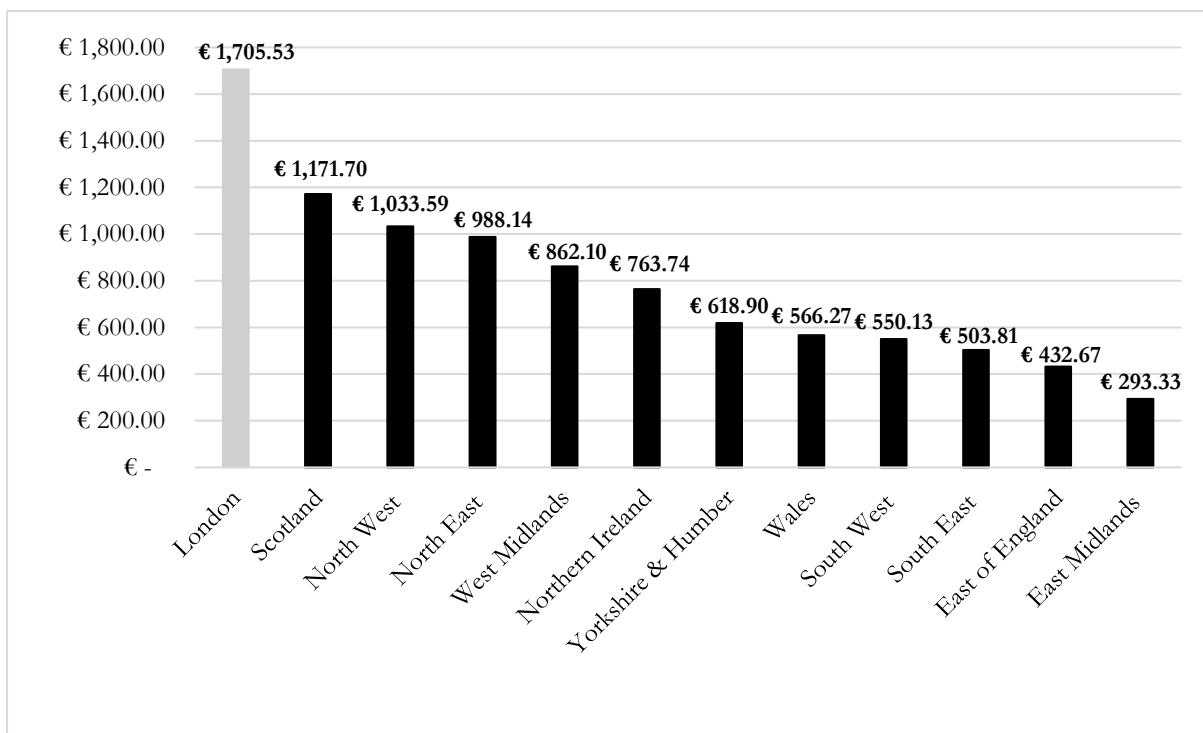


Figure 5: EIB investment in UK regions and nations per capita (Euro) (2001-16)

Source: Institute for Government (2017)

³ 'Public spending' means expenditure by UK government department.

In an effort to develop a long-term strategic approach to infrastructure and to articulate a potential ‘deal-flow’ of projects attractive to international public and private investors, the UK’s National Infrastructure Plan (NIP) (HM Treasury/IUK 2010; 2011; HM Treasury 2012; 2013; 2014; 2015) identified a ‘pipeline’, over the next decade, of over 500 planned public and private infrastructure projects costing £310 billion. The NIP sets out a ‘broad vision’ of the infrastructure investment required to support national growth (HM Treasury 2012; 2013), and outlined the UK government’s approach to funding and financing infrastructure, including greater use of government guarantees to underwrite loan agreements, sovereign wealth fund, and pension and insurance fund investment. Despite historic low interest rates, the UK government has been reluctant to increase state borrowing to fund and finance additional infrastructure on account of its commitment to reduce public debt, contrary to advice from international institutions that have called on governments to spend more on infrastructure to boost global growth (OECD 2016; IMF 2016). Moreover, this position runs counter to evidence demonstrating that the cost of servicing private capital finance debt in the UK is twice the cost of servicing similar government debt (NAO 2015) (Table 5). The reclassification of Network Rail as part of the public sector, resulting in Network Rail’s borrowing and debt being added to national state borrowing and debt, means the sector and its investment falls within the government’s sphere of managing total public sector expenditure (Shaw 2016). The previous Conservative government’s legal obligation to bring the public finances into surplus by 2019-20, coupled with an apparent belief within parts of the UK Treasury that the public sector ‘crowds-out’ private investment (Cable 2016), has compelled national state actors to source alternative infrastructure funding and financing mechanisms

Type of debt	Debt level over the year (£bn)	Financing costs in year (£bn)	Implied interest rate (%)
Government borrowing	965.5-996.2	33.2	3.3-3.4
Private finance (including finance leases)	41.4-41.9	3.1	7.4-7.5

Table 5: Financing costs of UK government borrowing and private finance (estimated in 2012-13 Whole of Government Accounts

Source: NAO (2015) using data from HM Treasury (2014a)

A number of government or quasi-government institutions have a direct and indirect responsibility for UK national infrastructure investment and delivery. The Infrastructure and Projects Authority (IPA), based in the UK Treasury, is responsible for co-ordinating and simplifying the planning and prioritisation of investment in infrastructure and achieving greater value for money on projects and transitions. In November 2013, the then Coalition government created the Regeneration Investment Organisation (RIO), an operational arm of UK Trade and Investment (UKTI) to encourage international private actors to invest in large-scale regeneration and infrastructure projects in UK cities and city-regions. The National Infrastructure Commission (NIC) is a new agency with the remit to assess and identify the UK's strategic infrastructure needs over the next thirty years (HM Treasury 2016). In one of its first outputs the NIC published analysis and recommendations on London's future strategic transport infrastructure (NIC 2016), with specific reference made to proposed major projects, such as Crossrail 2. The NIC will review the projects seeking public investment, and suggest options on how they should be planned, governed and funded.

At local, city and city-region levels, 'City Deals', 'Growth Deals', 'Devolution Deals' and other deal-making mechanisms have sought to incentivise local authorities to identify and prioritise 'asks' of UK and devolved governments, in order to fund,

finance and deliver infrastructure and other economic development and public service interventions, and to reform governance structures to improve strategy development, planning and ‘unlock’ growth (O’Brien and Pike 2015). The deals have sought to encourage and promote innovation in funding and financing, although ‘there has been an uneven allocation of national and local state resources earmarked to support new initiatives (NAO 2016). The ‘deal-making’ culture is extending and deepening the decentralisation of public policy and governance in the UK (Pike *et al.* 2016b). While London was not formally granted a ‘City Deal’ initially, it nevertheless has been able informally to negotiate and reach a succession of agreement or ‘deals’ with the UK government that have leveraged public investment for new transport infrastructure. In November 2017, the Mayor of London and London Councils did sign a Devolution Deal with government and National Health Service to improve health and social care services in London (GLA 2017).

A key line of enquiry concerning geographies of investment and public expenditure is the extent to which cities and city-regions in the UK, including London, have sufficient fiscal ‘space’ (Vammalle *et al.* 2014) to deploy tax and borrowing mechanisms to plan, fund, finance and maintain new urban infrastructure. The UK has a highly-centralised system of taxation and expenditure in an international context (Travers 2012), and British local authorities have limited local fiscal autonomy and rely heavily upon inter-governmental transfers (Table 6). The London Finance Commission, launched by Mayor Johnson, called on national government to devolve the full range of property taxes (council tax, business rates, stamp duty land tax, annual tax on enveloped dwellings and capital gains (i.e. ‘Mansion Tax’)) to London (London Finance Commission 2013), while other cities and city-regions have lobbied for devolved power over property taxes, limited powers to raise consumption taxes (i.e. Value Added Tax), and new borrowing powers. However, in the absence of national equalisation and distributive

mechanisms, a narrow definition of fiscal decentralisation, stemming from a highly-competitive model of urban development, could harden and even widen inequalities between core (larger and higher level tax base) and peripheral (smaller and lower level tax base) places. The spatial imbalances in the tax raising capacity of local areas in England are significant, including those between London and the so-called ‘second city-region’ – Greater Manchester (Figure 6).

	Municipal operating expenditures per capita (£)	Municipal taxes (local and shared taxes per capita) (£)
London – GLA plus Boroughs (2011)	3,199	476
Berlin	4,910	2,570
New York	4,561	3,078
Paris	2,699	1,896
Tokyo	3,301	2,312

Table 6: Municipal operating expenditures and taxes per capita

Source: Adapted from Slack (2013: 5)

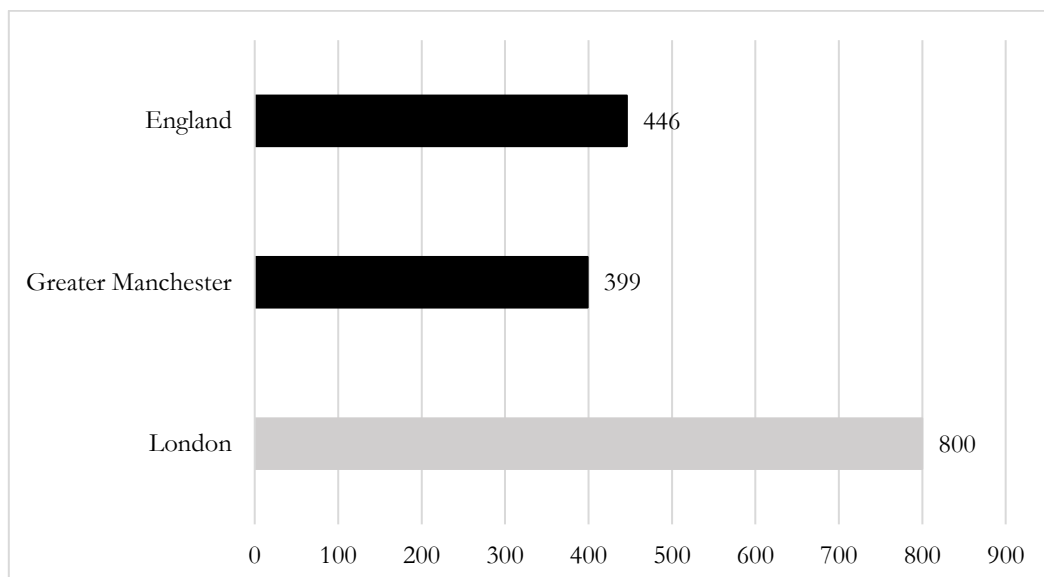


Figure 6: Forecast business rate income (2016/17), per £ head

Source: DCLG (2016)

The call by London and elsewhere for greater fiscal autonomy to help generate new sources of infrastructure funding and financing has come at a time when local government has faced major budget reductions. Central government funding for councils in England was reduced by 37 per cent between 2010-11 and 2015-16 (NAO 2014). New arrangements for funding councils have been introduced in England and Wales, including schemes to enable local authorities to retain 50 per cent of the growth in local business rates (or taxes). Pilot exercises have been launched in London, Manchester and Liverpool where local areas can trial the process of retaining 100 per cent of business rate growth. The UK government has offered local authorities in England four-year funding settlements and ‘full control’ of all business rate revenues by 2020 (HM Treasury 2015). However, government proposals to introduce tax relief for small businesses could see councils facing further reductions in revenue (Butler 2016), and (re)confirms the historic role of central government exercising and retaining control over local government in the UK. The proposed changes in how local authorities are funded could directly influence the nature of the built environment in cities and city-regions. Particular forms of urban development may be prioritised as assets generating higher business rate income are encouraged. Local government faces a difficult choice in deciding what kind of urban development to support and where. If authorities become dependent on business rate income to fund infrastructure and core public services, they may release more local land and property for employment. However, if authorities are able to generate more revenue through residential real estate development, they may bring forward housing schemes. The use of specific fiscal incentives to ‘encourage’ particular forms of development in the face of austerity is evident in London:

Facing sharp reductions to their day-to-day budgets and to capital spending, London Boroughs and the Mayor have turned their attention to the

construction of often densely packed housing developments to bring in additional resources (Travers 2015: 293).

The London Economic Development Strategy (EDS) sets out the Mayor's long-term vision for London's economy. As London's Local Enterprise Partnership (LEP), the London Enterprise Panel is one of 39 LEPs in England. LEPs are local public-private economic development bodies established and designated by central government in 2010/11 to replace statutory Regional Development Agencies (NAO 2016a). The London LEP is chaired by the Mayor of London (Pike *et al.* 2015), and it prepares an Economic Development Plan (EDP) that is expected to fit within the framework of the Mayor's EDS. In February 2015, the UK Chancellor of the Exchequer and Mayor of London published a joint economic plan (2015-2030) for London, which included the objective of securing "London's strong economic future by setting the ambition to outpace the growth of New York, adding £6.4bn to the London economy by 2030" (HM Treasury/Mayor of London 2015).

5.2 Strategic spatial planning in the London global city-region

The funding, financing and governance of infrastructure enjoys a distinct relationship with spatial planning. Strategic spatial planning within the administrative boundaries of London is the shared responsibility of the Mayor of London, the London Boroughs and the City of London. As the Mayor's strategic planning document, the spatial plans of the London Borough and City of London must conform with the London Plan. The Mayor has to keep the London Plan under review, and to provide an integrated and over-arching economic, environmental, transport and social framework for the spatial development of London over a 25-year period. In its current guise, the Plan has identified 38 'Opportunity Areas' for new housing and commercial development and 7

‘Intensification Areas’ (Figure 7), which are earmarked to provide land for 575,000 new jobs and 303,000 new homes (London First 2015). The Mayor has responsibility for designating the Opportunity Areas, while the Boroughs lead on development activity within the Opportunity Areas.

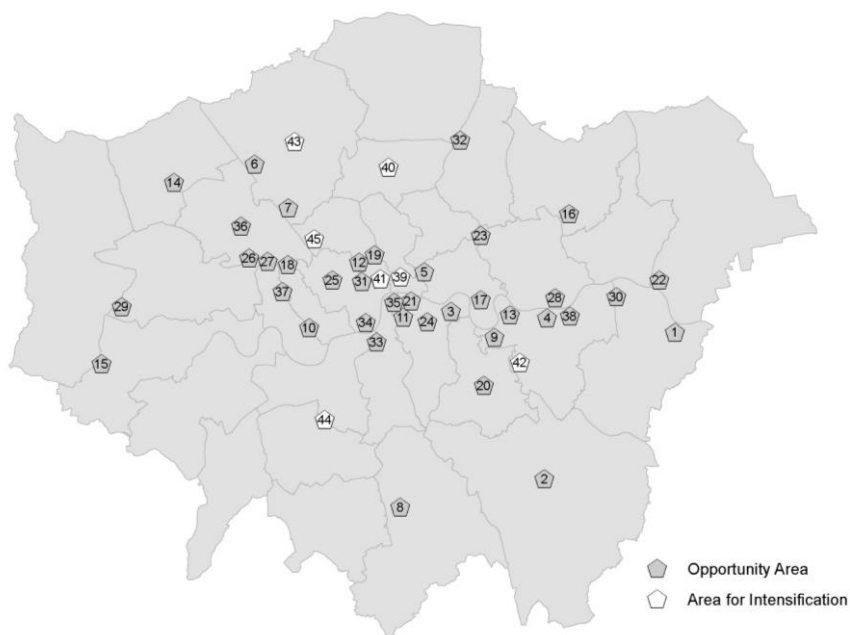


Figure 7: Opportunity Areas and Intensification Areas in London

Source: Mayor of London (2015), map drawn by Colin Wymer.

Opportunity Areas	Opportunity Areas	Areas for Intensification
1 Bexley Riverside	20 Lewisham, Catford & New Cross	39 Farringdon/Smithfield
2 Bromley	21 London Bridge, Borough & Bankside	40 Haringey Heartlands/Wood Green
3 Canada Water	22 London Riverside	41 Holborn
4 Charlton Riverside	23 Lower Lee Valley (including Stratford)	42 Kidbrooke
5 City Fringe/Tech City	24 Old Kent Road	43 Mill Hill East
6 Colindale/Burnt Oak	25 Paddington	44 South Wimbledon/Colliers Wood
7 Cricklewood/Brent Cross	26 Park Royal	45 West Hampstead Interchange
8 Croydon	27 Old Oak Common	
9 Deptford Creek/Greenwich Riverside	28 Royal Docks and Beckton Waterfront	
10 Earls Court & West Kensington	29 Southall	
11 Elephant & Castle	30 Thamesmead & Abbey Wood	
12 Euston	31 Tottenham Court Road	
13 Greenwich Peninsula	32 Upper Lee Valley	

14 Harrow & Wealdstone	33 Vauxhall, Nine Elms & Battersea	
15 Heathrow	34 Victoria	
16 Ilford	35 Waterloo	
17 Isle of Dogs	36 Wembley	
18 Kensal Canalside	37 White City	
19 King's Cross - St Pancras	38 Woolwich	

Since 2010, changes to strategic planning in England have attempted to reduce the cost of infrastructure delivery (HM Treasury 2010), which has been influenced, in part, by claims that certain planning policy interventions – notably restrictions on development in the Green Belt – stall development (Cheshire and Hilber 2008), stifle growth (Overman 2013), and contribute towards over-inflated property prices and rising living costs due to restrictions on new housing supply (Nathan and Overman 2011). Alternative perspectives claim that spatial planning delivers unique value by stimulating market activity (Adams and Watkins 2014), and that a formal, regulated planning system is needed to ensure that housing and other strategic infrastructure is built when needed and maintained (Haughton *et al.* 2014). The Localism Act 2011 and the 2012 National Planning Policy Framework established a new local planning architecture in England to replace regional spatial planning (Smith 2013). The Growth and Infrastructure Act 2013 attempted to further ‘streamline’ the local planning system. A ‘duty to cooperate’ was introduced requiring neighbouring local planning authorities to work together on transport, flood protection, housing and other infrastructure issues (DCLG 2011), although there is no formal duty to reach agreement. The London Plan is not covered by the duty to co-operate, but the Mayor is required to consult with the London Boroughs and neighbouring local authorities that border the administrative boundaries of London but lie within the broader global city-region.

Dealing with the implications of population growth raises a particular challenge for the planning, governance, funding, financing, operation and maintenance of infrastructure in the London global city-region, which covers a large area as

evidenced by its labour market geography (Figure 8). There is no formal strategic planning framework covering the London global city-region. Within the city-region there are noticeable differences in the institutional capacity, statutory responsibilities and resources of the GLA, London Boroughs and local authorities and LEPs in south east England, which makes governance, long-term planning and assembling public and private infrastructure funding and financing at the city-region level difficult. Some local authorities are said to act for local interests rather than those of the city-region, “The loss of regional planning means that local self-interest overrides economic functionality” (South East local authority chief executive, Authors’ Interview, 2016). The Mayor, Boroughs, south east local authorities and LEPs have attempted to address the challenge of ungovernability by working through the voluntary ‘Wider South East Summit’, which advocates hope will enable more development to be planned jointly, while larger geography and institutional scales are used to pool resources, share risk and raise capital to invest in infrastructure that benefits the city-region as a whole. However, in a further illustration of the centralised nature of the UK political economy, and the continued intervention of national government in the governance of London, the Planning Minister, Brandon Lewis, restated the government’s position on strategic spatial planning in the London global city-region a letter to Boris Johnson:

I note your obligation and welcome your commitment to work closely with local authorities and other partners outside London as part of the full scale review of the London Plan. Authorities outside London face their own issues and challenges in meeting their needs, which may impact on their ability to accumulate any of London’s unmet housing needs. This Government abolished the top-down Regional Strategies, which built up nothing but resentment and we have no intention of resurrecting SERPLAN or the South East Plan from the dead (Lewis 2015).

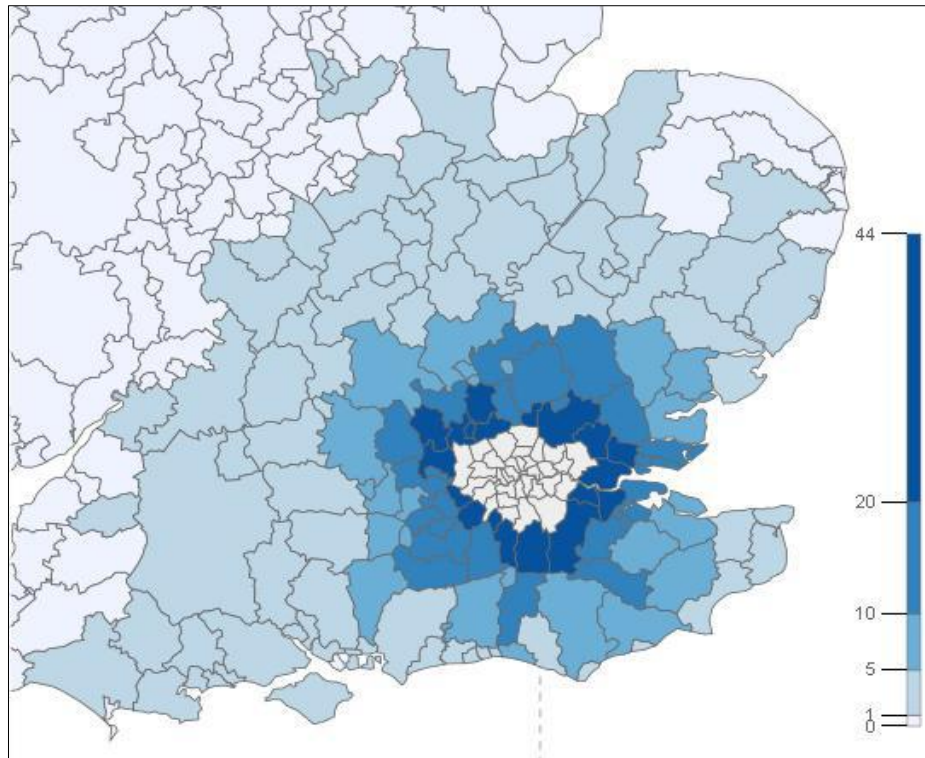


Figure 8: % of working residents, by local authority, who commute to London (2011)

Source: ONS (2014)

Institutional reform represents a policy response to local fragmentation and an attempt to improve the planning, governance and investment in urban infrastructure and development (Storper 2014). Research suggests that effective strategic governance can play a positive role in the economic performance of cities and city-regions (Ahrend *et al.* 2014). The establishment of Métropole du Grand Paris, and the Greater Sydney Growth Commission’s statutory plan for the Sydney metropolitan area, demonstrates how local and national actors are continually seeking to improve the co-ordination, planning and governance of global city-regions to support the funding and financing of critical infrastructure (GSC 2016). London’s particular and distinct geography, and complex governability, has resulted in a “number of ad-hoc solutions to the city’s governance problems” (Travers 2015: 26), while there have long been arguments for planning and co-ordinating infrastructure and development both within and beyond London’s administrative boundaries (Hall 1989) as “urban geographers and planners have

generally viewed London as an area of economic and social activity that extends far beyond the continuous built-up area of the city” (Travers 2015: 337).

Unlike most global city-regions, London had, until recently, not produced an infrastructure strategy. London is said to face, despite major national government investment, an infrastructure funding short-fall, by international comparison, with London spending 5 per cent of annual Gross Value Added (GVA) on infrastructure while competitors invest up to 12 per cent per annum (Travers 2013). The London Infrastructure Plan (LIP) 2050 (Mayor of London 2014), sets out a pipeline of proposed new investment in transport, housing, green infrastructure, digital, energy, water and waste infrastructure, totalling £1.3 trillion, which London is forecast to need between 2016 and 2050 (Table 7). The development of a pipeline and deal flow of infrastructure projects and programmes in London mirrors that of the UK’s National Infrastructure Plan and is designed to instil and sustain investor confidence, and provides an example of how national and local state actors embrace and combine entrepreneurial and managerial urbanism by seeking to attract private investment while adopting more strategic and planned approaches to urban infrastructure renewal.

Infrastructure type	Capital expenditure (£bn)	% Total
Housing	547	42
Transport	466	35
Energy	148	11
Schools	68	5
Water	49	4
Green	22	2
Waste	14	1
Digital	8	1
Total	1,324	100

Table 7: Estimated required infrastructure expenditure in London (2016-2050) by sector

Source: Arup (2014)

The Mayor of London is required to produce a Transport Strategy setting out a long-term vision for how transport services will be delivered by London's strategic transport authority – Transport for London (TfL) – and partners, including the London Boroughs and the City of London. The Transport Strategy has to align with the London Plan, and the Mayor's EDS (Mayor of London 2010), and the performance of TfL is monitored continually and reported publically each year. Capturing the symptoms of London's infrastructure overload, the NIC (NIC 2016) has suggested that London would reach 'mega city' status by 2030, exacerbating existing housing shortages and placing further pressure on the city-region's transport infrastructure. The Commission identified four specific challenges: overcrowding on major London Underground lines; limited capacity on commuter rail routes and in Network Rail stations; insufficient orbital links around the city-region, especially east London; and the need for transport to promote and increase housing growth. The NIC also recommended government approval for Crossrail 2 (see below).

Linked to transport capacity, housing is arguably the most pressing issue facing the London global city-region (Cochrane and Colenutt 2015), and is integral to the new demands and stresses being placed upon London's existing infrastructure assets and systems. With the population in London's administrative geography set to rise to over 10 million by 2030, increasing housing supply is a major priority:

Housing is a massive issue. There is little open space. We have seen house prices rising and we need to find space for new homes. We have seen a 26 per cent increase in house prices because of Crossrail. We can't meet the demand. People are being pushed out from the London market and house prices are being pushed up (South East England local authority chief executive, Authors' Interview, 2016).

International private investment in central London has been a major driver of the residential property market (Atkinson *et al.* 2016), with two-thirds of the £1m-plus homes bought for cash in the UK, since 2011, purchased in London (Kollewe 2016). Almost ten per cent of properties in the City of Westminster are owned by offshore companies (Transparency International 2015). Chinese investment in London real estate totalled £7bn between 2005 and 2014, compared with £5.2bn of Chinese investment in UK infrastructure over the same period (Pinsent Masons/CEBR 2014). Before the EU referendum in June 2016, demand for London real estate was continuing to grow, with £560m worth of deals completed by Chinese investors between 1 January and 29 February 2016 (Vyas 2016). Although high property prices in London (Figure 9) – for owner-occupied and rented sectors – are driving values upwards, and strengthening property as a financial asset, London is becoming more expensive and unaffordable as a residential and business location. Towns such as Reading – to the west of London – and adjacent to the M4 motorway and new Crossrail rail line, have seen significant house price growth, with prices in December 2015 rising by over 17 per cent on the previous year (MacDonald-Read 2016). However, the global nature of London’s real estate and property markets means that residential property prices are particularly vulnerable to external shocks and financial instability (Wright 2016).

The rise in property and land values, and private wealth accrued through state-led transport infrastructure improvements, is raising questions about how public authorities in London can introduce new speculative funding and financing mechanisms that simultaneously embody managerial forms of regulation that enable the state to capture financial gains from land and property value uplift that can be redirected into new public transport infrastructure and services (CBRE 2013; NAO 2014a).

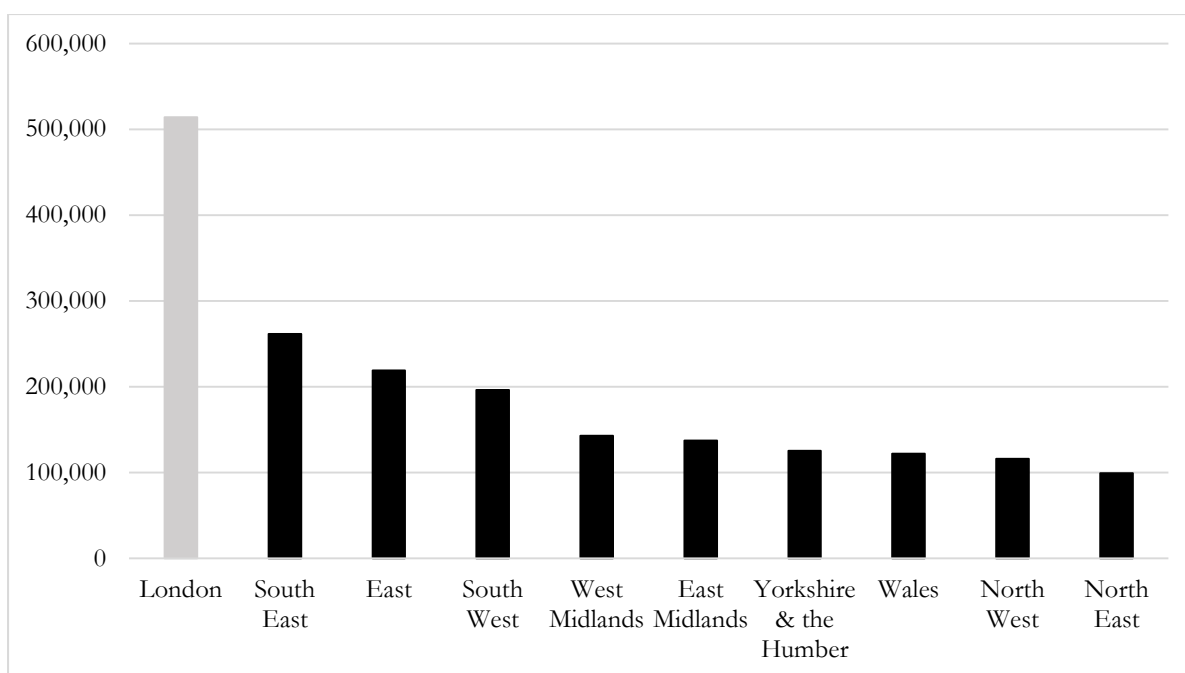


Figure 9: House price index (average price (£)) by region in England and Wales (2015)

Source: Land Registry (2015)

The Mayor of London is responsible for producing a statutory Housing Strategy, and for allocating resources to the Boroughs to invest in housing, but the Mayor is not responsible for building and managing social housing (Travers 2015). The London Assembly reviews the Mayor’s Housing Strategy, and can recommend improvements. The London Plan had an initial target of 32,000 new homes to be built per year in London (Mayor of London 2016), but this has been revised upwards to 42,000 new dwellings per annum. A strategic housing assessment suggests that if London wants to meet its long-term housing needs over the next two decades then it needs to build 50,000 new homes per year, and if it wants to achieve the same target within the next decade it needs to build 60,000 per annum (Mayor of London 2013). There is a particular challenge in identifying land for housing, and increasing housing supply within London’s administrative boundaries and broader city-region, which is why ‘green belt’ development is being proposed (Shelter 2016; Clark *et al.* 2014).

In June 2015, Boris Johnson announced the creation of 20 new housing zones, with ‘relaxed’ planning rules, in an attempt to build 50,000 new homes by 2025. The zones have been set to receive a share of £400m in central government and GLA loans to remediate brownfield land and deliver infrastructure, and the Boroughs will be responsible for delivering new housing in return for investment. In March 2016, Johnson announced 11 new zones to provide 24,554 new homes, equipped with a further £200m of investment. The public sector is also being asked to sell and/or release public land in London for housing. The London Land Commission is compiling a register of all publically-owned land and property in London, across national, city-region and local institutions, in order to identify ‘surplus public assets’ that could be disposed of or sold to private developers for new housing schemes (Mayor of London 2016a).

The growth in population and overload in London’s transport, housing and other infrastructure illustrates the challenges that public, private and civic actors face in governing, funding and financing urban infrastructures, and how governance is complex within a global city-region that encompasses many different international, national and local public and private institutions and actors engaged either formally and/or informally. The narrative of strategic (including infrastructure) planning in the London global city-region sheds light on the nexus between planning, housing and transport, and how the governance, funding and financing of infrastructure is shaped by varying spatial and temporal-specific conditions and institutions. New and additional infrastructure fixes for London, without similar or reciprocal investment elsewhere in the UK, risks undermining efforts by the national government to reduce regional disparities through sectoral and spatial ‘rebalancing’. Partly in response to the political sensitivity surrounding London’s privileged position in the hierarchy of territorial spending on infrastructure, actors in the London global city-region are adopting pragmatic approaches and assembling investment packages which are increasingly based on the rediscovery

and adaptation of municipal entrepreneurialism *and* managerialism for urban infrastructure provision and renewal.

5.3 Governing, funding and financing transport infrastructure in the London global city-region

The strategic management and governance of transport assets and services in London has undergone numerous revisions, and it was not until the 1960s that London had its first strategic and unified transport system under the GLC and London Transport. In 1984, in advance of the abolition of the GLC, control of London Transport was transferred to a nationalised board appointed by the UK government, which also took over the management of London's transport strategy. Between 1985 and the establishment of the GLA in 2000, the governance of London's transport became splintered, but the deep institutional roots of public sector-led urban managerialism for collective provision in transport infrastructure were strengthened. London's road network was the responsibility of the Highways Agency, London Boroughs and the Traffic Director for London. London Transport managed London Underground and bus services; and over-ground trains were run by British Rail and private operators.

In the 1990s, London's business community, led by London First, lobbied vociferously for a new strategic transport body (Travers 2015), thus demonstrating the influence of private interests keen to push urban entrepreneurial and managerialist institutional solutions to address London's economic, planning and infrastructure challenges. The Labour Government's 1997 consultation paper on the GLA (DETR 1997) proposed three objectives for transport in London: first, an integrated and sustainable transport strategy for London; second, a unified body for transport on a London-wide scale; and third, to define the different responsibilities for transport in London between central government, the GLA and the London Boroughs. Under the GLA Act 1999, 'London's buses, trains,

underground system, traffic lights, taxis and river transport were brought under the control of TfL.

TfL is a hybrid entrepreneurial/managerialist institution with origins in a previous earlier era of municipal entrepreneurialism. It has institutional control over strategic transport planning in London and a role that sees it simultaneously engaged increasingly in entrepreneurial and speculative financialised activity in an attempt to raise capital and revenue. Given the size and complexity of global city-regions, and the challenge of governing, planning and investing in urban infrastructure across multiple units of local government, institutions such as TfL have to adopt a variety of approaches to raising large amounts of infrastructure funding and financing from public and private actors.

TfL is a transport authority that is answerable to city government. The Mayor of London has significant control over TfL, with the power to issue guidance and directions over TfL duties, operations and policies, whilst TfL has general powers to form companies and make agreements to transfer property, rights and liabilities. However, TfL is constrained by powers held by the UK government and by its under-bounded administrative geography, which does not extend far out into the wider city-region, unlike equivalent transport authorities in Paris and New York, which have jurisdiction across large metropolitan regions (Table 8), although the City of Paris is much smaller geographically and in population terms than either London or New York.

Table 8: Metropolitan Transport Governance in London, Paris and New York

City	Transport Authority	Geography	Governance	Funding/Financing	Responsibilities
London	Transport for London (TfL)	Greater London Authority (GLA) area (32 Boroughs plus City of London), population of 8.6m. Manages some Tube and rail services beyond GLA boundary.	Statutory body and agency of GLA. TfL Board chaired by Mayor of London.	2015/16 budget: £7bn revenue; £4bn capital. Income from fares, fees, charges, assets, reserves and council tax. £1.8bn in revenue and capital grant from UK government, including ring-fenced funding for Crossrail. Retains local business rates for investment projects. Has issued bonds. Development tax for some projects.	Duty to prepare transport strategy. Strategic responsibility for: London Rail and Underground; Crossrail and surface transport (buses, cycling, taxis, congestion charge, local highways, river services and coach stations).
Paris	Syndicate des Transport d'Ile de France (STIF)	Paris (Ile de France) region covering 12m people.	Created in 1959 by the French government, which chaired STIF until 2005. Now chaired by elected president of Paris region. A syndicate of the region, the city of Paris, 7 départements and other partners. Board of 29 members: 15 (region); 5 (city) and 7 (départements). 1 representative of	2015 budget: 5.5bn Euros operating; 1.03bn Euro investment. Grant income (state, region and department), and Versement Transport (VT) – a hypothecated employer tax. Income subsidises operator losses, contributes to asset modernisation. Investment costs shared with government, local authorities and operators.	Organising, modernising and financing public transport. Co-ordinates transport operators, determines routes, timetables, modes, operating conditions, fares, budgets, and manages operator subsidies and major investments.

City	Transport Authority	Geography	Governance	Funding/Financing	Responsibilities
			towns/villages in region, and 1 business.		
New York	Metropolitan Transportation Authority (MTA)	5,000-square-mile area, including New York City through Long Island, south-eastern New York State and Connecticut – population of 15.2m.	Transport system governed by municipal, state, and bi-state authorities. A public benefit corporation, governed by 22 board members representing 5 NYC boroughs and each county in the New York State service area.	2015 budget: operating \$14bn, with 50% spent on MTA transit (subways and buses), 18% commuter rail lines and 17% debt servicing. Revenues from fares (40%), taxes (35%), tolls (12%) and state/local government subsidies (7%). No federal funding for operations. Investment budget of \$4bn p.a. financed by MTA Bonds and federal government.	NYC transit (subways and buses), MTA Bus Company, Long Island Railroad, Metro North Railroad, bridges, tunnels and MTA Capital Construction.

Table 8: Metropolitan Transport Governance in London, Paris and New York

Sources: Allport *et al.*, (2008) and Authors' Research

The historic funding and financing of London transport demonstrates how the state (nationally and locally) and the private sector, at various times, have worked to govern and steer transport infrastructure investment in London, using both managerial *and* entrepreneurial practices and mechanisms to fit with political, economic and social circumstances of the time. Private sector engagement and investment in London's transport infrastructure has a long history, and can be linked to the complex governance of London (Travers 2015). The London Underground, for example, was largely built with private capital, and the network shaped the growth and geography of London (Wolmar 2002), moreover:

unlike its near contemporaries, the Paris Metro and the New York Subway, financed and planned as a whole by the city authorities, the initial Tube network, was a product of private company promotions subject to little or no central government interference, [and] followed no logical plan (Croome and Jackson 1993: 6).

Wolmar (2002) finds it remarkable that private actors led the funding, financing and construction of the London Underground: "It is already sufficiently incomprehensible to the 21st century mind that a sub-surface railway can be built through large sections of London using largely private capital...but it seems even more of a miracle that anyone should have embarked on the building of the deep tube tunnels on the basis of share capital and consequently the expectation of making a profit" (25). Private operators constructed rail lines to support particular forms of urban development and to improve local labour market mobility:

The private sector soon recognized the network's ability to bring suburban residents directly to their central city jobs. They set out to both tap existing residential areas and create new ones, extending their sub-surface lines above ground at the city's outskirts to serve as of yet undeveloped land.

Golders Green, a suburban town of 3,600 homes, shopping parades, and recreational facilities planned around Golders Green Tube Station in North London, is an early example of the close relationship between transit and real estate development (Durst Conference 2013: 3).

By the early 1900s, the financial strain of operating the Underground had become intolerable for private operators, who sought greater state intervention in fiscal, planning and regulatory terms. Extensions to the Underground before and after the First World War had a genuine speculative and entrepreneurial flavour. Anticipated uplifts in land values saw stations built in advance of urban development projects “enabling London to grow by creating new lines which stimulated development” (Wolmar 2002: 223). Private operators wanted the managerial, regulatory and fiscal power of the state to be deployed to enable greater financial value to be generated and captured from developers, and land and property-owners, who were benefitting financially from new transport infrastructure, but were paying little towards the cost of investment; a continued feature of the UK transport sector (Wolmar 2002). Rebuffed by central government, the private sector consolidated its ownership of the Underground but continued to push for more active national and local state involvement, and the creation of a fully-integrated urban transport system for London.

It was not until the 1930s, that London Transport, as a publicly-owned body responsible for the London Underground, was able to issue bonds to raise capital to invest in the Underground system. In response to London’s massive transport investment requirements, the UK government agreed that a new finance corporation could raise up to £45m at the lowest interest rates available under a sovereign government guarantee. Wolmar (2002) suggests that this gave borrowing flexibility to local actors and also confidence to investors that the national

government's balance sheet would underwrite the debt. Future Underground revenues and fare income were securitised against the borrowing.

The post-war years saw a decline in London's Tube network as London Transport was nationalised in 1948, and lost its independence, and there was falling investment as the Underground became part of the British Transport Commission and had to compete with other public services for government funding (Wolmar 2002). The absence of a strategic body, speaking exclusively for London, was said to be a factor in explaining why the Underground failed to secure new public investment (Wolmar 2002). Nationalisation also meant that London Transport could no longer raise finance in a similar way to the government-backed mechanisms used in the 1930s. Instead, restrictions were placed on investment, and national policy focused on re-building the UK's over-ground railways. In response, London Transport switched focus to the cheaper mode of buses, which left the Underground starved of resources, resulting in a major backlog of repairs, maintenance and investment building up between the 1950s and 1990s (Butcher 2012). What little investment there was for the Underground was squeezed between central government, local government in London and London Transport. This scenario persuaded London Transport to turn towards public private partnerships (PPPs) as a means of loosening central government control and securing long-term transport infrastructure investment (Wolmar 2002). A legacy of urban managerialism and overt centralisation left London with overloaded and outdated transport infrastructure. These acute pressures forced local actors to adopt more entrepreneurial, speculative and riskier governance and investment models in the guise of PPPs.

PPPs gained prominence (and notoriety) during the London Underground Jubilee Line Extension (JLE), a project that illustrates how TfL and public and private actors have sought to fund and finance transport infrastructure in London.

Positive and negative impacts can materialise in equal measure from the relationships between new transport infrastructure and particular urban development schemes (as was the case in London Docklands and the JLE). The challenges posed by the JLE were used by national government to stimulate political support for a particular entrepreneurial mode of infrastructure funding and financing – in this case transport PPPs – without the value for money and operational efficiency of PPPs having been fully evaluated. As mentioned earlier, governments in the UK have historically failed to introduce effective regulatory mechanisms to capture large-scale land and property value uplift to fund major transport infrastructure. In the case of the JLE, land values increased by £2.8bn as a direct consequence of the extended Underground line, while property prices in Canary Wharf grew by £2bn (Jones *et al.* 2004). However, no systematic attempt was made to capture the uplift in land and property values to fund the JLE and thereby reduce taxpayer contributions. To add insult to injury, private developers in the Canary Wharf scheme failed to honour original commitments to contribute towards the estimated cost of the JLE. The JLE was linked to the Docklands development, led by Olympia & York (O&Y) who lobbied the UK government to pay towards the cost of substantial new transport infrastructure, and who themselves also promised to contribute funding. The final cost of the JLE was £3.5bn: financed by a £2.2bn central government grant and £1.3bn from London Underground's investment programme. O&Y promised £0.4bn, to be paid over 24 years. However, the developers went into administration in the mid-1990s and by 2000 O&Y had contributed £0.15bn and was offering a final payment of £0.05bn, meaning their total contribution was 50 per cent of what had been promised initially. The figure represented 6 per cent of the final bill for the JLE. Wolmar (2002) suggests that the JLE project gave successive UK governments licence to push for privatised funding and financing models in the form of PPPs in response to what the government saw as publically-owned London Underground's failure to manage and control JLE construction costs.

By the late 1990s, the London Underground desperately needed new investment. Falling fare income had reduced revenues, and the repairs and maintenance backlog was estimated to be £1.2 billion (Butcher 2012). While the Conservative Government (1992-97) had announced its intention to privatise the Underground, the new Labour Government, in 1997, opted for a PPP, but faced stiff opposition from the incoming (independent) Mayor of London, Ken Livingstone and his Transport Commissioner, Bob Kiley (former head of the New York MTA), who championed a model used previously in London: bond issuance secured against future fare revenues. However, the proposal was firmly rejected by the UK Treasury, which had been instructed by the Labour Chancellor, Gordon Brown, to stick steadfastly to the previous Conservative government's tax and spending plans and who was unwilling to provide any fiscal licence to the new independent London Mayor. Business, via London First, pushed for the creation of a London Transport Trust, a public interest company, with a clearly defined legal structure, which could borrow directly from the financial markets. The revenues for servicing the debt would be generated by hypothecated taxes, and the model would see central government relaxing the rules on public sector borrowing (Butcher 2012). The Treasury, however, rejected the alternative mechanisms, and the PPP went ahead in 2003, with one bidder suggesting that London Underground reluctantly supported the PPP model as it was the only practical means it had of guaranteeing long-term government funding (Butcher 2012).

The PPP saw LU infrastructure assets maintained by private companies but ownership and operations remaining with LU. Tube Lines, a private entity, was awarded a 30-year contract for the Jubilee, Northern and Piccadilly lines. Shortly after the start of the contract, the PPP encountered financial problems and London Underground was asked by Tube Lines to bring forward a £5.75bn payment. The PPP arbiter rejected the request and proposed a £4.4bn payment

instead. Plagued by ongoing financial and management problems, the Tube Lines PPP collapsed in 2010, resulting in TfL buying out the private companies within the consortia. Metronet, another private sector operator, collapsed in 2007 when it failed to secure bank lending facilities, and was unable to obtain further payments from London Underground. The UK government eventually had to pay £1.7bn to cover 95 per cent of the public sector debt guarantee written into the PPP contract, as well as an additional £300m in administration costs.

While the London Underground PPP failed, the exercise nevertheless is said to have helped TfL make the case to government for long-term transport infrastructure investment in London.⁴ In an illustration of the UK's highly-centralised state, the PPP revealed the tensions between national, devolved and local governments, at a time when London's fledgling governance institutions were still in their infancy. National government introduced a regulatory regime in which the new devolved London institutions – led by a Mayor opposed politically by the then Prime Minister and Labour government – was forced to work within, providing further illustration of the historic, centralist and interventionist role played by national government in the governance of the London global city-region.

The nature of UK inter-governmental relations, coupled with London's limited devolved settlement, means that the Mayor and TfL have to prepare individual business cases to secure central government funding for major transport infrastructure schemes in London. The GLA Act stipulates that the GLA, on behalf of TfL, receives grant funding from national government annually, and that the Mayor cannot spend the grant on anything other than transport (Tomaney 2001). TfL has argued for multi-year settlements to help with long-term investment planning, and for greater borrowing powers. TfL and the GLA account for over 16 per cent (£11.2bn) of total local authority borrowing in England (£52.2bn) (HMT

⁴ According to Sir Peter Hendy, former TfL Commissioner, in a lecture at the University of Leeds in July 2015.

2015). In 2015, the UK government announced that it would ultimately withdraw TfL's operational grant, indicating that the grant reduction would "save £700m in 2019-20, which could be achieved through further efficiency savings by TfL, or through generating additional income from the 5,700 acres of land TfL owns in London" (HM Treasury 2015: 95), pushing the case for greater urban entrepreneurialism but also a requirement for the state to plan and deploy managerially a new set of investment instruments, including value capture to support transport infrastructure funding and financing.

From 2019, TfL's objective is to cover operational costs through 'non-grant' income, and to accelerate an internal efficiency programme, as total grant income is set to fall by £2.8bn. This scenario is compelling TfL to consider alternative funding and financing mechanisms, some highly-speculative and entrepreneurial in nature, to increase revenues, while freezing fares, which Mayor Johnson and his successor, Sadiq Khan, both pledged to do, but which TfL officials suggest will be problematic for the business 'bottom line':

We have a £16bn efficiency programme that has been running since 2009. With less funding we have the mechanics and the maturity to deal with this. We have made a huge £16bn set of assumptions. In reality, in order to balance the budget, we will also look at fares. We have to look at things we may need to stop and what services we are offering (TfL official, Authors' Interview, 2015).

At the same time, TfL faces acute challenges in its private sector-led Sub-surface UPgrade Programme (SUP) designed to increase capacity on the London Underground's District, Circle, Metropolitan and Hammersmith and City lines (TfL 2014). Completing the SUP by 2018 was a key condition of central government providing TfL with a capital grant of £1bn a year until 2020-21

(London Assembly 2015). In June 2011, TfL awarded a signal replacement contract to Bombardier Transportation, with a target price of £354m. However, the work was severely delayed and TfL ended the contract in December 2013, paying the private contractor £85m in a final settlement. Following a new procurement exercise, TfL awarded the contract to Thales. According to the London Assembly (2016), the signalling element of the SUP is expected to cost £886m more than originally planned and completion will be five years late (2023 instead of 2018). TfL expects the programme to cost £5.4bn – an increase of £1.15bn – which it will have to find from its own resources, while £1.3bn in planned extra fare revenue will also be foregone, illustrating both entrepreneurial *and* managerialist failures in the planning, funding and delivery of transport infrastructure investment:

They [TfL] are a very, very long way from meeting the milestone deadline that we set them a few years ago, and they ran into all sorts of problems with their signalling contract. They had let a contract to Bombardier to re-signal those four lines and it became clear a year into the contract that Bombardier frankly weren't going to be able to do it, Bombardier promised more than they could actually deliver, so TfL ended up having to buy Bombardier out of the contract and they've kind of had to go back to the drawing board really in working out what's possible (Department for Transport Official, Authors' Interview 2015).

These examples indicate how transport infrastructure projects fail for different reasons and are used as arguments against TfL's case for the London global city-region to be given more financial freedom from UK government to plan, invest in and manage transport infrastructure. Equally, these experiences also undermine claims that the private sector should automatically be afforded a greater role in transport infrastructure renewal and maintenance. Attempts to improve the governance of transport infrastructure funding and financing are bedevilled by

infrastructure overload, built-up through increased population, demands on services and years of chronic under-investment, inefficient and ineffective planning and project management by the state, in regulatory and financial terms, coupled with greater demands for improved accountability, operational performance, and the need to shift towards greater sharing by private interests of the captured proceeds of financial uplift and value as a result of public investment. The following case studies demonstrate how TfL and public and private partners – at international, national and local levels – are using, amidst financial, political and economic constraints, a hybrid mix of managerialist *and* entrepreneurial funding and financing mechanisms, on a project-by-project basis, to govern, plan, invest in, maintain and operate transport infrastructure in the London global city-region. Projects are based on particular, often bespoke, models of governance and funding and financing, which attempt to knit together coalitions of public and private actors, intersecting at particular scales and temporal junctures with local commercial and residential property markets, and which shape the condition of the urban and sub-urban built environment in the London global city-region.

5.3.1 Northern Line Extension

The 3.3km Northern Line Extension (NLE) is a major feature of the redevelopment of the ‘Vauxhall, Nine Elms, Battersea Opportunity Area’; a new employment and residential district located on the edge of central London. TfL is extending the existing London Underground Northern Line to Nine Elms and Battersea, and two new stations will open by 2020. The development is part of the Mayor’s London Plan, London Transport Strategy and the London Infrastructure Investment Plan. The NLE is estimated to cost £1.04bn. In November 2012, the UK Treasury agreed that up to £1bn of Public Works Loan Board (PWLB) borrowing, supported by a public sector guarantee (totalling £750m) under the UK Guarantee Scheme, would be offered to the GLA, on behalf of TfL. In November 2011, the Government said it would consider designating an Enterprise Zone (EZ)

allowing the local retention of growth in business rates for 25 years. The offer was subject to a binding agreement being reached with a developer by the end of 2013, and further due diligence on project costs. However, in a bi-lateral deal with the UK government, the GLA and TfL were able to source cheaper finance than that offered by the PWLB through a £480m long-term loan from the EIB. In this deal, £200m of finance is also being drawn from an index-linked bond issuance, and the remaining £300m of capital is being raised from developers. The GLA will repay the project financing costs using developer contributions collected by Wandsworth and Lambeth Boroughs. Business rate income above a defined baseline in the new EZ will be retained by the Boroughs and the GLA. Once the NLE is operational, fare revenues will pay the operational costs of the extension as part of a bespoke funding and financing model (Figure 10).

The development is a major ‘test case’ for the UK government’s EZ policy and the developer-contribution model of infrastructure financing. When viewed in a national context, these mechanisms have more chance of succeeding in London with its buoyant commercial and residential property markets than in most other UK cities and city-regions. However, foregoing local taxation in a successful urban economy and property market environment raises critical questions about potential economic deadweight – publicly subsidising a development that would have occurred anyway. Commercial and property developers, both private and state-led, have a keen interest in the NLE, given its potential for significant rates of return for real estate investors. The developers are majority-owned by the Malaysian Government through a Sovereign Wealth Fund.

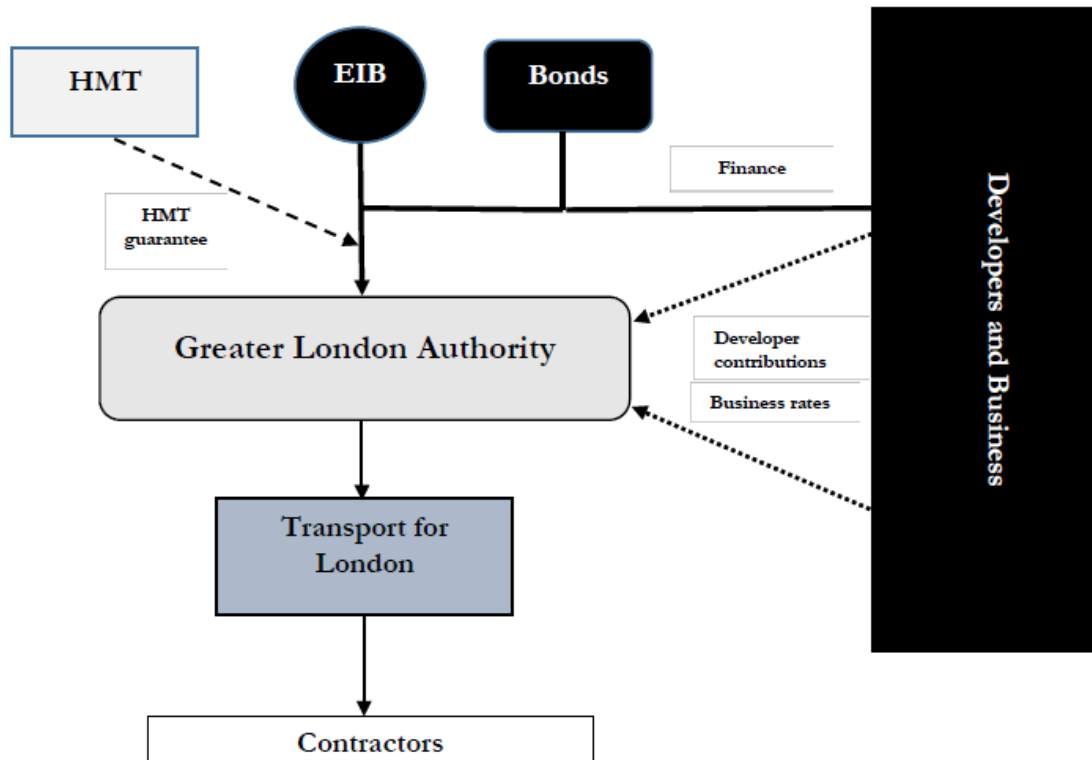


Figure 10: Funding and financing model for the Northern Line Extension

Source: Adapted from TfL (2013)

The NLE is seen by the UK government as a model of how TfL should embrace entrepreneurial funding and financing mechanisms, such as property-led development, to support investment in transport infrastructure: “we are encouraging TfL to think very innovatively about how future bits of transport infrastructure might be funded and the Northern Line Extension is probably the best example” (DfT Official, Authors’ Interview, 2016). However, there are concerns that the NLE is more about “developing finance than financing development” (Hildyard 2012: 1) and an illustration of the reach and extension of financialised real estate development predicated upon the need to achieve high levels of densification and rates of return: “The Northern Line extension is a good infrastructure project, but the justification and levels of density to pay for it are questionable. It is based on a TIF scheme and business rates. The project needs high levels of density to pay for itself” (GLA Official, Authors’ Interview, 2015).

In terms of ungovernability and infrastructure investment in a global city-region, TfL, the GLA and two London Boroughs are subject to statutory requirements as local government institutions, and must to adhere to the Local Government Prudential Borrowing Code. HM Treasury, DfT, EIB, bond markets and credit rating agencies have an interest in ‘monitoring’ project delivery and performance of the NLE, especially Treasury, given the public loan guarantee. The EIB, which is providing the majority of the finance, has long played an active project management role in urban infrastructure and development, so will be involved at most stages of construction. Other state and private sector interests, principally developers, will be engaged in the governance of the NLE scheme.

Bringing this complex array of different public and private sector actors together in a coherent and cohesive governance framework is a difficult process. It represents a product of the search by the state and private interests in the London global city-region for new means of investment in transport infrastructure against a background of national austerity and limited fiscal decentralisation, mixing entrepreneurial and managerial practices and governance forms. It is also a reflection of London’s continued dominant ‘national champion’ role within the UK political economy, and divergence with other UK cities and city-regions, as the national government is more willing to sanction innovative and relatively risky investment arrangements in London than elsewhere.

5.3.2 Crossrail

Crossrail – Europe’s largest infrastructure project – is a new rail line, including 26 miles of tunnel running from Reading and Heathrow Airport to the west of London, through central London and into Essex. Crossrail Limited, a wholly-owned subsidiary of TfL, is delivering the programme, with Network Rail improving existing surface infrastructure. In 2007, DfT and TfL agreed to make

£15.9bn of funding available for Crossrail. By 2009, the estimated cost of the programme had increased to £17.8 billion, and Crossrail Limited initiated an assessment to reduce project costs and risks. In May 2010, with a new government committed to fiscal consolidation, project costs were revised downwards to £14.8 billion (NAO 2014). Additional costs, including £1bn for new rolling stock, will be funded directly by TfL. Table 9 provides a breakdown of the £14.8bn of funding.

Source	Total	Source	Total
TfL direct contribution	£1,900m	DfT direct contribution	£4,800m
Private sector funding (TfL responsibility) <ul style="list-style-type: none"> - BRS (£4,100m) - Sale of surplus land and property (£500m) - CIL (£300m) - Developer contributions (£300m) 	£5,200m	Private sector funding (DfT responsibility) <ul style="list-style-type: none"> - City of London (£250m) - Heathrow Airport (£230m) 	£480m
Network Rail	£2,300m	Voluntary contributions from London business	£100m

Table 9: Funding Crossrail

Source: NAO (2014a)

The Business Rate Supplement (BRS) – a hypothecated tax collected over 30 years – which the London Boroughs will collect on behalf of the GLA and TfL – began in 2010, and will raise £4.1bn from commercial buildings worth more than

£55,000 in rateable value. TfL officials were surprised at the straightforward operation of the BRS:

the borrowing has all been done, the extra money that came in the early construction period has come in as expected, and of the total of £4.1bn to be put into the project, everything has gone in except, I think, £9m, which is earmarked for the end of 31 March 2016. And there's been very little complaint, which always strikes me as a highly successful policy" (TfL official, Authors' Interview, 2015).

London First played an important role in 'encouraging' business to support the BRS: "The BRS was seen by us and by the business community in London as a good investment and one that should be supported, and we strongly supported it" (London First official, Authors' Interview, 2015). In an illustration of London's distinct nature, and the preferential treatment that London continues to receive in relation to infrastructure investment, the 2009 Business Rate Supplement Act exempted the GLA from a requirement to ballot or hold a referendum of business on introducing a BRS before 1 April 2011 (GLA 2010). Without this legal exemption, London's private sector may not have voted to increase business rate contributions, thus leaving Crossrail with a £4.1bn hole in its budget.

In terms of financing, the "basic principle of Crossrail 1's financing structure has been that the entity which receives funds is also the entity which raises finance" (PwC 2014: 33), with TfL and GLA both borrowing from the EIB and PWLB, and the GLA providing £0.6bn of bond finance on behalf of TfL. Other finance is provided by central government, Network Rail's regulated asset-base model, the private sector and the City of London (Table 10). Sovereign wealth funds, and infrastructure and pension funds, have not financed Crossrail and are reluctant to finance in their entirety Crossrail 2 and other large transport projects because of

potential construction risks. Instead, direct government, state-backed guarantees are being sought, due to the size and complexity of such projects (PwC 2014).

One criticism of the Crossrail funding model is that more monetary value could have been captured from land and property owners who have benefited financially from the infrastructure development (PwC 2014). Since the Crossrail project began, property prices proximate to stations on the Crossrail link have increased on average by 20 per cent (CBRE 2013). However, as noted in the development and expansion of the London Underground, the UK state has struggled to introduce mechanisms that capture value uplift (Wolmar 2002):

what we didn't realise was that Crossrail appears to be putting property prices in Ealing up by twenty five percent for residential property. Where there is new build, the Mayor's CILCommunity Infrastructure Levy means that we will take some of that, but existing residential property is not going to be contributing anything (TfL official, Authors' Interview, 2015).

This illustrates the political challenge of increasing property-based taxation, and the constraints on widening and deepening particular managerialist and entrepreneurial approaches to funding and financing urban infrastructure.

Responsible organisation	Funding source	Total Finance Raised	% of Total Funding	Source
TfL	Crossrail Revenue	£1.9bn	12.9%	£1.0bn EIB loan £0.9bn PWLB loan
GLA	Business Rate Supplement	£4.1bn	27.7%	£3.5bn PWLB loan £0.6bn bond issue as a direct contribution to TfL
DfT	Department Capital Budget	£4.96bn	33.6%	Central government grant
	Network Rail Track Access Charges	£2.3bn	15.6%	Financed through Network Rail's Regulatory Asset Base (RAB)
	Private Contributions	£0.6bn	4.9%	Negotiated agreements with private companies, and the City of London

Table 10: Financing Crossrail

Source: PwC (2014)

5.3.3 Crossrail 2

Crossrail 2 is framed within the context of the London Plan's 'Opportunity Areas' (London First 2015), and is designed to enable an extra 270,000 people at peak times to access central London from different parts of the city-region. The project is intended to integrate real estate and transport infrastructure by opening up new spaces for residential development (NIC 2016): "Crossrail 1 is very different to Crossrail 2. Crossrail 2 is about housing development in outer London. Central London has money but no land. Elsewhere has land but no money" (London Borough official, Authors' Interview, 2015).

TfL estimates that Crossrail 2 will cost between £27bn and £32bn (with a 66 per cent optimism bias included), including the cost of new trains and Network Rail infrastructure works. A London Chamber of Commerce poll found that 44 per

cent of business members regarded Crossrail 2 as the main transport priority for London (LCC 2015). The cost of Crossrail 2 is nearly twice the annual capital investment budget for London (£15bn), and will cost approximately £376m for every mile of the 85 miles of proposed new rail line. The UK government has indicated that at least 50 per cent of the funding should come from private investment, which some business organisations believe is feasible (London First 2014). However, a premium will be placed on the GLA and TfL identifying efficiency savings given that business has cited the high cost of transport schemes in London as a barrier to effective planning, investment and operation of infrastructure. In addition, Crossrail 2 poses profound questions about the implications for other cities and city-regions in the UK and spatial rebalancing due to the concentration of public and private infrastructural resources in London. London has received significant investment recently for new transport infrastructure (e.g. Crossrail and NLE) and political pressure is increasing for the UK government to invest more public resources in transport infrastructure outside of London, especially in the north of England (Transport for the North 2016). In 2014, a 'Funding and Financing Feasibility Study' recommended that the hybrid funding and financing model used for Crossrail was the most appropriate for Crossrail 2 (PwC 2014).

Like Crossrail, the Crossrail 2 route extends beyond the GLA boundary and into the broader city-region (Figure 11). This requires careful governance and planning, involving multiple local units of governance, within the context of no statutory strategic planning framework for the functional economic area. Representatives of local authorities from London, the south east and east of England have called on the National Infrastructure Commission (NIC) and government to ensure that Crossrail 2 is built (Ames 2016). The NIC believes that the benefits from Crossrail 2 will be felt equally within the London global city-region, and that consideration

should be given as to how south east local governments, as well as the GLA and London Boroughs, fund the costs of the project.

In March 2016, the NIC recommended that government should take forward Crossrail 2, and funding should be made available to develop the scheme, with the aim of a hybrid legislative Bill being submitted to Parliament by late 2019, meaning that Crossrail 2 would open in 2033. In March 2016, the government agreed to contribute £80m towards further development work (HM Treasury 2016a). The NIC report on Crossrail 2 (NIC 2016) outlines four next steps to move the scheme forward: first, sponsors should produce proposals to increase the affordability of the project; second, a strategy should be developed to ensure that Crossrail 2 ‘unlocks’ housing growth; third, a funding plan should identify how and where London will contribute towards the costs of the project; and fourth, private sector development and funding of new stations and surrounding local areas should be maximised. The NIC calls for a ‘London deal for Crossrail 2’ where the government contributes financially to the cost of the project and in return the Mayor and Boroughs give commitments to build new housing. The Commission also recommends further fiscal autonomy so that London can raise new tax revenues and hypothecate them to invest in the project. London, according to the NIC, should also be incentivised to receive additional government funding for Crossrail 2 in return for increased GVA and property values – akin to a ‘City Deal’ for London based on the Greater Cambridge ‘gain-share’ infrastructure investment model (O’Brien and Pike 2015). In its response to the NIC report, the UK government agreed that Crossrail 2 should be taken forward as a priority as the scheme is ‘central’ to London’s long-term investment plans. The government proposes that London should fund more than half the cost of the project, and that new funding from locally-raised tax revenues should be considered. The government also wants to reduce the total cost by £4bn (HM Treasury 2016a).

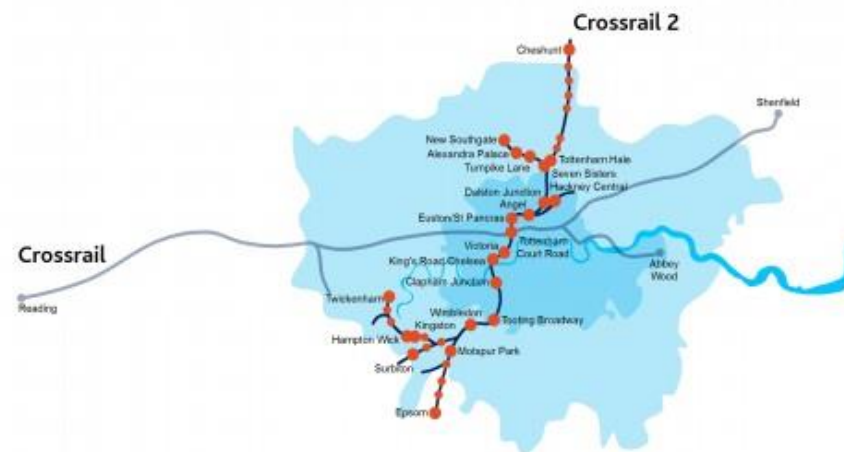


Figure 11: Proposed route of Crossrail 2

Source: Temple Group

Crossrail 2 illustrates how national and local state actors in the London global city-region are deploying a hybrid mix of managerial *and* entrepreneurial funding and financing mechanisms to generate and leverage public and private investment into major transport infrastructure. Here, a nexus is being formed between residential housing development and transport infrastructure. Crossrail 2 also demonstrates the practical challenges of governance and ungovernability within and across the London city-region given the multiple actors involved in planning, funding, financing and constructing the project.

5.3.4 Metropolitan Line Extension

TfL is also involved in relatively smaller transport infrastructure renewal projects involving different actors and institutions within and outside the GLA boundary. The case study of the London Underground’s Metropolitan Line Extension (MLE) illustrates further the uneven institutional capacity, capability and resources that exist between TfL, as part of the GLA governance arrangements, and local authorities and LEAs, which although part of the London global city-region, are outside the GLA formal administrative area. The MLE – a 3.4 mile rail link –

extends into Hertfordshire County Council (HCC), and is due to be completed by the end of 2020 (DfT/Mayor of London 2016). The MLE aims to increase capacity on the London Underground, and connect the Underground to the West Coast Mainline railway via Network Rail's Watford Junction station (TfL 2015). London dominates the economic activity and commuting patterns within south Hertfordshire, where there are strong labour market linkages with the capital and many high-income commuters to London live.

In 2011, DfT gave provisional approval for a £76.2m central government grant towards a scheme estimated to cost £116m. The initial funding package envisaged no direct TfL financial contribution. However, since 2011, HCC, has faced major reductions in grant funding from central government. Coupled with cost escalations and programme slippages, DfT recommended that project delivery responsibility be transferred from HCC to TfL. TfL commissioned due diligence, which concluded that the cost of delivering the project had risen to £284.4m, a figure that formed the basis of a new funding package agreed in March 2015 by the Mayor of London, central government and local actors. The funding comprised £49.2m from TfL, £125.4m of local contributions (including £87.9m of Growth Deal funding from Hertfordshire LEP – which represents over 40 per cent of the LEP's total Growth Deal resources) and £109.8m from DfT. TfL secured a deal with HM Treasury for a £30.5m increase in TfL's prudential borrowing limit (TfL would retain future fare revenues to service debt and pay back the capital sum) and TfL contributed £16m from its Growth Fund (London Assembly 2015). Once agreement was reached on the new arrangements, the Mayor of London directed TfL to assume full responsibility for the MLE in March 2015.

TfL has taken the lead for a strategic transport infrastructure project located primarily outside London's administrative geography. HCC officials have indicated that the local authority should adopt a similar approach as London in the funding,

financing and planning of transport infrastructure: “All south east local authorities need to do long-term planning. We need to plan our infrastructure and copy London” (Hertfordshire County Council official, Authors’ Interview, 15 May 2015). It is unlikely, however, that individual local authorities would have the capacity and resources to perform a similar role to that of TfL. This case illustrates how national and local state actors have employed managerialist approaches to funding and financing transport infrastructure, and adopted particular governance models to fit specific geographies and project objectives. The case also provides a further example of London’s ability to re-cast national-local state relations and strike financial and regulatory deals with national government when necessary; in this case new financial flexibilities for TfL, and how some of the inherent challenges surrounding the governance of infrastructure investment in the London global city-region are managed in bespoke ways on a project-by-project basis.

5.3.5 TfL’s transformation into a property development agency?

One of the things we need to do is increase the revenue streams from TfL. We should be sweating the assets better. Hong Kong’s transport network raises more money by clever use of property than from fares, and London should follow the same model (Sadiq Khan MP, then Labour candidate for the Mayor of London, in a speech to London business, 9 March 2016).

With a 5,700 acre property portfolio, TfL is one of the largest land and property owners in London. In 2012, TfL revised its strategy of uniform disposal of ‘non-essential’ property and land assets towards a new approach where sites are developed jointly with the private sector to generate long-term revenue streams (TfL 2014a). TfL owns 500 ‘commercially-viable’ sites across London and has short-listed 75 for development in the next 10 years to generate £1.1bn of non-fare

income by 2022/23 as part of a broader effort to raise £4.2bn through commercial development activity. The plans are being accelerated given the reductions in central government grant funding and the political constraints TfL faces in increasing fares:

We've strongly encouraged TfL to get more savvy in the way it generates income from its estate, for example, so it's got a very ambitious commercial development programme now, which covers everything from, you know, the sponsorship deals for Santander cycles to advertising at tube stations, to flogging off the old headquarters at 55 Broadway, which is all going to be turned into luxury homes (DfT official, Authors' Interview, 2015).

In February 2016, TfL announced that it had appointed 13 property development companies and consortiums in a new development framework tasked with bringing forward development on 50 sites on the TfL estate (TfL 2016). The firms will have preferential bidding rights for work from TfL or will work in joint ventures in which TfL either sells land at market value and receive an immediate return or acquires an equity stake and take a share of future receipts.

TfL is actively engaged in one joint venture – the Earl's Court development scheme – with Earls Court Partnership Ltd, an arm of Capital and Counties Properties (Capco), one of the largest listed property companies in London that manages £3.7bn of real estate assets (Capco 2015). The Earls Court redevelopment is said to be worth £8bn, with Capco having a 63 per cent controlling interest and TfL the remaining 37 per cent stake. Capco is the leaseholder and London Underground (on behalf of TfL) the freeholder. The scheme has plans for 7,500 new homes, 1.5m square feet of retail and office space on the site of the Earl's Court Exhibition Centre, adjacent to a new transport depot. Outlining the rationale for the joint venture, TfL stated that:

[P]arties will be able to merge their respective land interests into a single vehicle to promote development, thereby allowing both parties to participate in the development in a flexible way and share both the risks and the rewards. London Underground would not be able to derive this benefit at this time without joining with Capco. The anticipated returns that TfL makes on its investment over time will be available for reinvestment into the transport system in accordance with the TfL Business Plan (2014b: 1).

The joint venture has proved controversial (Hill 2015; 2016). Agreements between Hammersmith and Fulham Borough and the joint venture required the developer to fund ‘community benefits’, worth £452m, which enabled outline planning consent for the main part of the redevelopment to be granted. Out of the £452m, £315m is for 1,500 new ‘affordable’ homes. Capco and TfL expect to sell 6,000 housing units on the market, in addition to 1,500 affordable homes based on London prices (i.e. 80 per cent of local commercial market rates). No new properties will be available for social rent, despite social housing being the most affordable tenure. In addition, 760 of the 1,500 new homes are replacements for houses refurbished recently by the public sector, but which are set to be demolished. So-called ‘collateral agreements’ written into the Earls Court scheme, at the request of the developer, oblige local planning authorities to reject any challenges to the project (Hill 2015).

In response to the increasingly entrepreneurial terrain it is moving into, TfL has established a Commercial Development Advisory Group to oversee its property development strategy. TfL has also sought national regulatory changes to strengthen its foothold in real estate development. The ‘Transport for London Act 2016’ has given TfL new financial powers in relation to land and property, allowing TfL to form limited liability partnerships (LLPs) with different actors, including

offshore vehicles. Controversially, limited liability partnerships are not required to publish annual accounts, which could hamper scrutiny of TfL and the London Transport Strategy by the London Assembly, which has sometimes found it difficult to obtain data on TfL's commercial deals and contracts.

TfL's engagement with the London property market to raise funding and financing for transport infrastructure is predicated on entrepreneurial and speculative investment mechanisms that are dependent upon the financial appreciation of assets. While the returns, particularly in some parts of the city-region, have been and could continue to be substantial, there are also inherent risks in using property markets as a major source of institutional capital and revenue. Buyer appetite for 'luxury' London properties, which has increased during the past decade, is now said to be reducing (Evans 2016). JLL, a US-based property developer, predicted that the prices for new-build high-value homes in central London would fall 3 per cent in 2016, and not rise again until 2018. The London market is said to be shrinking due to a combination of over supply and falling demand, and shares in Capco – the Earl's Court developer – fell 8 per cent after the company revealed that the sales of luxury apartments in west London had not risen in value since November 2015. Analysis in the aftermath of the EU referendum vote and new tax changes suggested that London's high-end property market had seen prices fall by 6.9 per cent (Davies 2017). Volatile market conditions, fuelled by external shocks, are sowing doubts about TfL's capacity and capability to widen and deepen its involvement in property development, with one London Borough official stating that "TfL should not be in the development game at all" (Authors' Interview, 2015). Others have expressed similar sentiments:

[TfL] will of course need to manage its estate properly. It has not always done that well in the past, and I doubt the capability and competence of transport organisations – even though many very good people work for

them – to deal with some of the most rapacious and greedy property developers in London. Somehow the public sector also seems to come off worse when it enters into such deals (Andy Slaughter, Labour MP for Hammersmith, speaking in a Westminster Hall debate on ‘Transport for London Funding’, 15 December 2015).

In a further illustration of TfL’s entrepreneurial use of urban land and property assets, TfL signed the ‘world’s largest outdoor advertising contract’ in 2016 (TfL 2016a) to sell advertising space on trains and London Underground stations in the expectation of generating £1.1bn in revenue. This builds on the first station sponsorship deal for the Underground when, in April 2015, TfL sold the rights to Nestlé for Canada Water station to be renamed for 24 hours as ‘Buxton Water’ (Farrell 2015). In 2012, transport authorities in Madrid agreed to sell sponsorship rights to the city’s metro stations (Milmo 2012).

TfL’s use of land and property assets, in an entrepreneurial and financialised manner, represent an attempt to generate new income to invest in transport infrastructure and services, and comes against a background of austerity and fiscal decentralisation, and price appreciation in London’s residential and commercial real estate markets. TfL is seeking to extract greater financial value from its land and property asset holdings to meet growing demands on services and address infrastructure overload, and to exploit London’s distinct position as a major global city-region and magnet for international capital. As a model, using income from property development to fund transport infrastructure is highly speculative, dependent to a large degree on direct state ownership of land and property, and is reliant upon planning and regulatory processes that facilitate high density levels. In Hong Kong, for example, the transport authority, MTR, has pioneered an integrated rail and property infrastructure funding and financing model. However, it is a distinct mechanism that reflects the specific governance, planning, market

and geographical environment in Hong Kong. Transport infrastructure investment, although shaped by, and an influencer of, processes of financialisation, is also framed by the specific urban built environment and governance and regulatory regimes of individual global city-regions.

5.3.6 Devolution of suburban rail services

As London’s economy and population have grown, journeys on rail-based transport in and around the city-region have doubled over the last 20 years (Figure 12). Faced with passenger growth, pressures on transport infrastructure, and demands for new investment, TfL and recent Mayors have lobbied UK government greater control over national and regional rail services. In the first half of 2016, the DfT consulted on rail devolution to London and the Greater South East (DfT/Mayor of London 2016), while Mayor Khan was invited in autumn 2016 by the DfT Secretary of State, Chris Grayling, to submit a business case to government setting out the case for rail devolution to TfL.

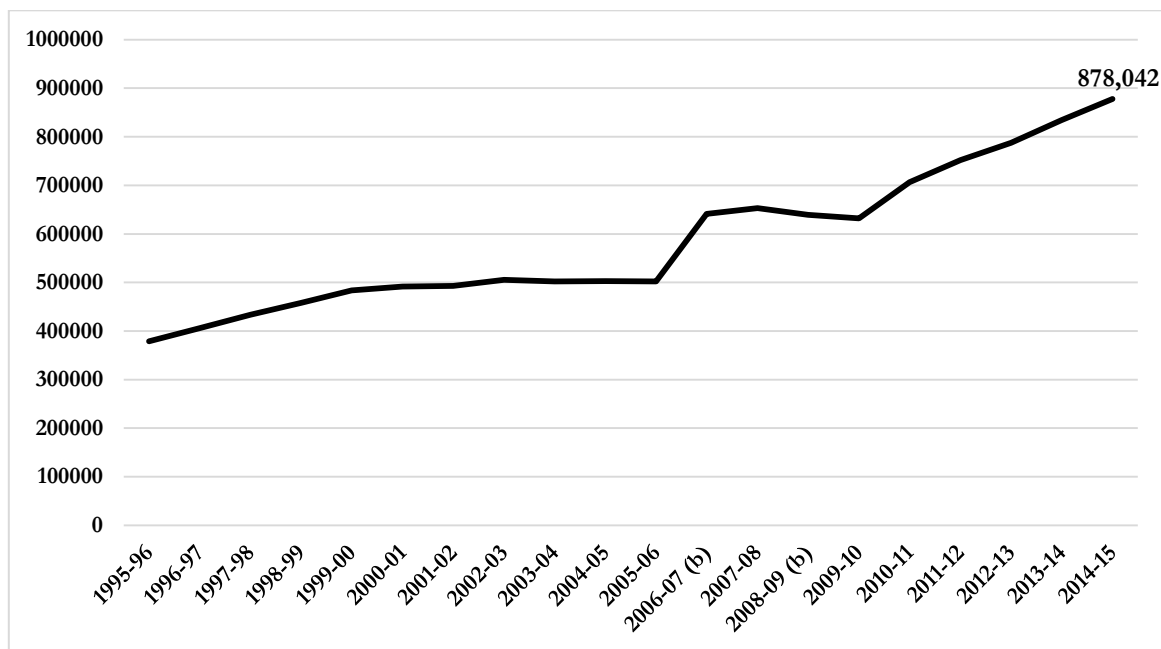


Figure 12: London regional rail passenger journeys (thousands) to/from/within region

Source: ORR (2016)

TfL has been seeking a new contract model of commissioning, similar to the rail services operating on the London Overground network. Under the new proposals, services operating under the Southern, South West Trains and Southeastern franchises would be devolved to TfL. Suggestions that the London Overground has been ‘transformed’ since TfL took control in 2007 (Centre for London 2016), coupled with growing dissatisfaction at the performance of suburban rail services in south London, has given further weight to the case for greater devolution of nationally-franchised rail services elsewhere in the London global city-region (London Assembly 2015a):

We are looking to apply TfL operational experiences to suburban rail services. In some examples, we have seen dramatic transport improvements to franchises. We have a strong case for taking control of some franchises. We are also looking for a stronger strategic role in planning alongside Network Rail (TfL official, Authors’ Interview, 3 November 2015).

A different regulatory model operates in London compared to elsewhere in England. London’s devolved governance system influences how the ‘state’ commissions the private sector to operate local rail services in London, and differs from the DfT national franchise model (Table 11). Scotland, Wales, Northern Ireland and the north of England are seeking to move away from the franchise model and shift towards a more ‘direct control’ mechanism. In the concession model, TfL, because of its institutional capacity and autonomy, can absorb and retain revenue risk. It can also integrate local rail services with the Underground. The DfT franchise model puts a higher risk premium on the private operator, who is dependent on revenues to break even. If revenues decline then the operator has to take a financial hit and has less incentive or resources to invest in the network. In the concession model, TfL pays the operator a fee to run the service and offers incentives for improved performance. Passenger satisfaction levels play an

important role in determining the choice of operator; a ‘metric’ that DfT wants to adopt within the franchise model, as part of its move away from narrow price-based calculations. In the concession model, because all ticket revenue is retained by TfL, fare income can be used to (re)invest in the network.

Model	Scale	Risk	Value
TfL ‘Concession’ – operator is awarded a contract to run a ‘tightly-specified’ service on behalf of TfL. TfL leases or buys trains, and TfL branding appears on the service.	City and city-region level (e.g. London Overground) – Mayor of London	Risk lies mainly with TfL who pays a fee to the operator to run the service for a fixed term. All revenues are retained by TfL. Incentive payments encourage the operator to improve performance.	Service-driven model. Strong integration between a concession service, the Mayor’s economic and transport strategies and the wider urban transport system managed by TfL.
DfT ‘Franchise’ – operator runs a contracted service on a particular part of the rail network under licence from UK Government and national regulator. Operator leases or buys trains and uses its own branding.	National, pan-regional and regional (e.g. West/East Coast Mainline, Northern Rail) – UK Government	Possibility of greater profit for operator, who retains revenues, but faces greater risk as income needed to break-even and pay government (premiums), train leasing charges and track access charges.	Cost-driven model. Company chosen on basis of ‘best value for money’. Operator paid fee/subsidy to run service for DfT. Rail infrastructure owned by Network Rail.

Table 11: TfL concession model v DfT franchise model

Source: Authors’ Research

Owing to the piecemeal way in which the London global city-region and its transport network have developed, south London is more reliant upon UK National Rail services than other parts of London. The joint DfT/Mayor of London devolution consultation prospectus (2016) suggested that a South London metro service should be created with more frequent services and stops, and outlined a mechanism for how local authorities within and outside the GLA boundary could influence services planned jointly by DfT and TfL. Proposals include the transfer of responsibility to TfL for inner suburban rail services

operating mostly or wholly within the GLA geography, but significantly the prospectus recognises that the Mayor and TfL will need to work with local authorities and other institutions across the wider city-region:

With the region's railways under more pressure than ever, we can't afford to focus only on the needs of London or the South East individually, ignoring the reality that the economy of the region as a whole has to work together (DfT/Mayor of London 2016: 9).

National, sub-national and local governments play a significant role in managing rail services in other global city-regions, such as Tokyo, New York and Berlin (London Assembly 2015a). Mindful of the challenge of building and maintaining multi and cross-institutional mechanisms for governing transport infrastructure, and reflecting national government's historic involvement in the governance of London's strategic transport, DfT and TfL advocated a new relationship between national government, London and local actors:

The precise boundaries [of inner and outer London suburban services] will take time to agree, but we want to start those discussions as soon as we can, and in good time for transfer of South Eastern inner suburban services when the current franchise ends. Working with local authorities and other stakeholders we will agree clear safeguards about future services for passengers from outside London... The creation of this joint initiative between DfT and TfL allowing greater input to the services from all across the region heralds a new era of partnership between national, regional and local government (DfT/Mayor of London 2016: 31).

Defining and reaching agreement on the geographies at which to plan and operate transport services within the London global city-region cannot be divorced from profound questions relating to London's administrative and economic geographies:

People see the sense in TfL being responsible for the main lines coming into London. And that absolutely, again, invites you to say well, is the boundary of London right when we're going to be taking over lines that go way outside the political boundaries? It does become rather unsustainable. Occasionally, if you had the odd line that went over the boundary, it doesn't matter too much, but when it's wholesale, which is what it will be when they've transferred all the local routes over to TfL, there's a point at which it's unsustainable (Conservative London Assembly Member, Authors' interview, 2015).

Responding to the DfT/TfL consultation, South East England Councils (SEEC) sought representation on the TfL Board to avoid a 'democratic deficit' (Ames 2016a), amidst concerns that rail devolution would create a 'two-tier transport system' in which some areas in south east England would become more dependent on their proximity to central London to benefit from new investment and services (SEEC 2016). The London Boroughs welcomed the proposals, but called for a greater say in the governance of new services. Unsurprising, as the Boroughs currently fund concessionary travel outside of London; a figure expected to increase under a new devolved arrangement (Ames 2016a).

The Shaw Review, published in March 2016 (Shaw 2016), has also been expected to influence the governance and functional arrangements for managing rail services within and across the London global city-region. The Review was tasked by national government to reflect upon the current political devolution agenda in the UK, the significant growth in rail passenger numbers and the proposal to devolve

responsibility within Network Rail to ‘regional units’. Significantly, the final recommendations in the Review recognised calls for more devolved transport responsibilities outside London, and recommended greater strategic focus upon rail in the north of England and a stronger role for local government within the rail industry.

If TfL acquired greater devolved responsibility for suburban rail services then studies have suggested that the existing infrastructure and rolling stock used on south London services would need major upgrades, which Sims *et al.*, (2016) estimates could cost £12.3bn. In terms of funding and financing new infrastructure, the Centre for London suggests a mix of mechanisms. First, government should provide new grant funding, alongside TfL revenue streams and additional business tax and other levy contributions. Second, TfL’s commercial development team should work with the London Boroughs to ‘exploit’ real estate and land development in and around stations earmarked as part of an extended London Overground network. Network Rail and the (national) Homes and Communities Agency have been working with local authorities to explore development opportunities around Network Rail railway stations. While this model could, in theory, generate new capital and revenue, history suggests that any new investment will only materialise if the state, at different spatial levels, and operating through particular governance frameworks, encompassing different public and private actors, plays an active managerialist role in fiscal and regulatory terms to enable local actors to use entrepreneurial approaches to capture financial value that can be used as a source of investment in the new network.

Since the fieldwork for this study was conducted, the UK government has decided to adopt a different approach to rail devolution. In the business case Mayor Khan submitted to the Transport Secretary, Chris Grayling, Southeastern rail services would have been devolved first to TfL, from 2018; an first step towards TfL taking

charge of all new franchises and services. However, this proposal was rejected by the government, which instead of direct devolution to TfL has announced its intention to establish a franchise ‘partnership’ between the DfT, TfL and Kent County Council when the new Southeastern franchise is issued:

Having read the Mayor’s business case carefully...I thought, rightly or wrongly, that we could deliver the service improvement that TfL was talking about by forging a partnership. Crucially, we would involve Kent, because this is not a London issue; as this railway runs from London to the south coast, we cannot think of the railway system just in terms of London (Chris Grayling MP, House of Commons, 6 December 2016, Hansard: Vol 618).

Citing concerns about democratic accountability, and suggesting that “if you live in Guildford...why should the Mayor of London be responsible for a train from Guildford?”⁵ (Murphy 2016), the Secretary of State questioned the viability of the governability of transport infrastructure within the London global city-region under the auspices of devolution to TfL. The publication of a letter written by Chris Grayling, in his capacity as a local MP, to Boris Johnson, who himself supported rail devolution when Mayor, gives a sense of the rationale behind Grayling’s decision as Transport Secretary not to proceed with devolution. In the 2013 letter, Grayling indicated that he could not support devolution to TfL because he was opposed to a future Labour Party mayor gaining control of local transport services (Mason 2016).

Responding to the government’s announcement, Mayor Khan said:

The only proven way of improving services for passengers is giving control of suburban rail lines to TfL. This is why the government and previous

⁵ Guildford in Surrey, outside the GLA boundary, would be defined as being within the geography of the London global city-region.

Mayor published a joint prospectus earlier this year. There is cross-party support for this from MPs, assembly members, councils inside and out of London and businesses and their representatives... We will keep pushing the government to deliver the rail devolution they have promised and that is needed (Sadiq Khan, Mayor of London, 'Statement from the Mayor of London', 6 December 2016).

Whatever the future of rail devolution, the direction of travel envisaged in early 2016 has since shifted and attempts to strengthen the managerialist approach to transport infrastructure funding and financing through greater local state control of sub-urban rail transport services, via TfL, have stalled. The perceived challenge of governing transport infrastructure in a global city-region is cited as a reason for rejecting direct rail devolution to London. Instead, governance of the new franchise services will be determined by national government in the form of a partnership framework comprising DfT, TfL and local state actors; heralding a 'push-back' by the national state, using existing regulatory functions to determine how aspects of the local state should be governed and how critical urban infrastructure is planned, funded, financed and operated. The continued and disproportionate interventions and involvement by national government in the direct governance of London continues (Tomaney 2001).

6. Conclusions

This paper has examined the governance of urban infrastructure funding and financing in global city-regions, drawing upon analysis of transport infrastructure in the London global city-region. Assembling funding and financing for investment in infrastructure renewal and development has become a critical focus and site for the agency of national and local state and private actors embroiled in and wrestling with the ungovernability of global city-regions. The central arguments are

threefold. First, in the context of the global financial crisis, uneven economic recovery and austerity, national and local state actors are being compelled into increasing entrepreneurial and speculative activities and forms of urban governance to locate and anchor new sources of capital, develop ‘innovative’ new instruments and models to capture value from growth, and adapt existing institutional arrangements in ongoing attempts to fund and finance urban infrastructure. Second, the particular nature of global city-regions and their continued expansion and growth has fomented infrastructure overload, and their dominant positions within their national political-economies have amplified the ungovernability problem. Third, urban entrepreneurialism in the global city-region has been fuelled and extended through the financialisation of urban infrastructure but not in isolation because financialisation is being mixed with urban managerialism in efforts to address the ungovernability of the global city-region.

Global city-regions are particular cases because of their unique international position, their expansion and growth trajectories, and roles and relationships within host national economies. Their typically fragmented local jurisdictions hamper the strategic planning and governance of extended metropolitan areas, generating inherent challenges in assembling entrepreneurial *and* managerialist infrastructure funding and financing packages involving local, national and international public and private actors and institutions.

With its dominant role and position within the UK political economy and particular history of urban evolution and administration, the governance of infrastructure funding and financing in the London global city-region has been continually re-shaped by a distinct set of state and private capital institutional relationships and arrangements, operating across a range of geographical scales. Drawing upon empirical analysis of the London global city-region and its transport infrastructure, several wider conclusions can be drawn. First, there is said to be

chronic and enduring ‘ungovernability’ within global city-regions. The analysis of London supports the argument that governing global city-regions is problematic and challenging because they are complex economic, social and spatial entities (Storper 2014). At the same time, places such as London have been successful economically despite the problematic urban governance. Issues become acute in global city-regions that are expanding because of increases in population, rising employment and intensifying pressures on existing infrastructure and land use. The London case study demonstrates how such concerns are amplified in situations of economic renaissance as national and local state and private actors seek to arrest, reverse and catch-up from episodes of urban decline, under-investment and deal with resurgent growth amidst outdated and creaking infrastructures, and cope with inequality and polarisation across the city-region (Sassen 1991). In global city-regions, such as London, which have disjointed and fragmented governance systems across a wide functional economic area, assembling and maintaining long-term infrastructure investment in the absence of a strategic spatial planning framework across the city-region level is problematic. Governance in the global city-region of London is characterised by multiple governance units, both inside London and in the wider travel-to-work-area, numerous of which were created on an *ad hoc* and incremental basis, and some for project-specific reasons. As London’s growth is redrawing and extending the economic-geographical footprint of the city and city-region, shifting demands in employment and housing are redrawing the geographies of transport infrastructure needs as new pressures emerge on urban and sub-urban land use. In the absence of formal city-region-wide planning and governance architectures, fragile institutional coalitions are being invented and mobilised. Some are drawing TfL into an unequal relationship with local governments and LEPs endowed with limited capacity and resources. Such fragmented governance is functional to TfL in its articulation of ungovernability as a rationale to acquire greater control over transport networks and services beyond its current geographical reach. But TfL finds itself constrained

by the current administrative geography of London, and a national government committed to retain influence and the means to regulate and intervene in the governance of infrastructure planning, investment and operations in the city-region because of London's critical contribution to the national economy. The lack of a city-region wide spatial planning framework and hostility towards developing one is encouraging greater informal governance and deal-making in local development and planning, resulting in *ad hoc* trade-offs and transactional fixes negotiated between different public and private actors. Any benefits of longer-term strategic planning are lost as a result.

The search for new sources of infrastructure funding and financing is serving to rework governance arrangements through the engagement of state and private actors at the international, national and local levels. Under certain circumstances, ungovernability enables more speculative and financialised urban infrastructure development as investors can play-off local state institutions against each other in order to secure the best deals and potential returns on investments. In other areas, ungovernability creates disincentives as private actors price the cost of risk and finance higher because of perceived institutional and regulatory instability and uncertainty. A central dilemma for national and local state actors is how to capture more of the value of London's growth through enlarging the tax base and leveraging more tax revenues from residential and commercial real estate and land development activity, especially with rising values, to re-invest in transport infrastructure projects.

Second, global city-regions, such as London, act as a magnet and laboratory for experimental financialisation due to their size, growth prospects and infrastructural needs and the potential returns these offer to private investors. But despite their draw for entrepreneurial, speculative and financialised forms of urbanism there remains a continued and integral role for a reworked state at the national and city-

regional scales. There is a contradiction between, on the one hand, urban state actors being encouraged to adopt ‘innovative’ and speculative financialised approaches as part of urban entrepreneurial strategies and policies, heightening risk and uncertainty in austerity and uneven economic recovery. And on the other hand, the persistence of urban managerialism and its mixing with entrepreneurialism because of the particular nature of urban infrastructure and the magnification of its scale, construction risk, regulatory, capital intensive and long-term attributes and ramifications in global city-regions. National state actors remain integral as the only entities able credibly to underwrite and/or guarantee borrowing at the required scales in the context of the international investment community and revenue retention to provide private actors with confidence and surety to invest in long-term urban infrastructure. The current and previous Mayors of London and TfL have articulated demands to national government from various public and private actors that London is given greater direct devolved public control over sub-urban rail services. In the UK, elements of the mixing of entrepreneurial *and* managerial urbanism are evident within a highly-centralised governance system in which national state actors still seek to intervene and exercise fiscal, regulatory and political control over the ‘national champion’ London global city-region given its weight within the national political-economy.

The conceptual position is that financialisation is an uneven, negotiated and messy process unfolding in differentiated ways in particular geographical and temporal contexts (O’Brien and Pike 2018). The role of state actors at different scales has been reinforced rather than reduced in the context of the financialisation of infrastructure and its uneven transformation into an asset class because of its particular form and nature, amplified in the global city-region setting. Whilst the national state retains a pivotal role, national, sub-national and local state actors are looking to lever in new private capital, using both new and adapted mechanisms and practices, some of which are increasingly financialised and hybrid in nature.

Struggles in dealing with fiscal stress amidst rising state indebtedness and budget deficits have generated further pressures for experimentation, innovation and risk displacement, albeit constrained by the UK's centralised and conservative governance system. Financialised urban infrastructure often fails to answer the critical question of infrastructure funding, however. With an apparent wealth of international global capital wanting to invest in infrastructure (Prequin 2016), particularly in growing global city-regions such as London, how the state and/or consumers ultimately pay – either through taxation and/or user fees – for infrastructure is often hidden or given limited attention often because of political concerns about increasing state borrowing and raising taxes or user fees.

Third, under certain conditions, traditional and tried-and-tested funding and financing models are being revived and brought together with newer approaches in hybrid packages rather than the wholesale invention of new and innovative mechanisms to fund and finance infrastructure. In the London global city-region, growth and national government political strategies to reduce national public indebtedness through austerity are forcing the Mayor of London, London Boroughs and TfL to consider mixed and varied approaches to infrastructure funding and financing in transport and, where possible, to link transport more closely to wider and priority employment and housing strategies and programmes. Reworking elements of urban managerialism, many of the mechanisms and practices proposed to deliver new transport infrastructure investment are instruments that were available to and used by previous institutional incarnations of the GLA and TfL. Emergent and new funding and financing packages are evident, revealing innovation and adaptation in the current economic, social and political setting.

Simultaneously, despite London's relative political autonomy, the UK's centralised governance structure continues to limit the strategic fiscal and regulatory space and

capacity of London and other UK cities and city-regions to devise and implement financial packages for new and renewed infrastructure. Furthermore, the politically-damaging and costly experience of particular forms of private and quasi-private transport infrastructure investment, ownership and management, such as London Underground PPP, has reduced the appetite and options for exclusive private investment in critical transport infrastructure, and made national and city government actors in London reluctant to pursue similar ventures. Given the risks and uncertain financial returns associated with large-scale transport engineering projects, such as Crossrail, the national state is required to underwrite investment, particularly at the initial stages of infrastructure projects, in order to encourage private actors to invest and reap the returns to pay for the financing of the investment in the later and more lucrative operational stages. Connecting urban entrepreneurialism *and* managerialism, this situation reinforces the interdependent and mutual relationship between public and private actors in large-scale, *grand projet*-type infrastructure in global city-regions.

Fourth, global city-regions are critical sites of investment for national growth and economic recovery in a period of austerity, amidst rising international inter-urban competition for investment, economic activities, jobs, people and new flagship events and projects. As national economic ‘champions’ (Crouch and Le Galès 2012), global city-regions are regarded as the drivers of national economies, and facilitators or gatekeepers of international investment to other national cities and regions. They act as a magnet for international and national state and private investment and resources. Global city-regions are also major generators of tax revenues for national exchequers, and central to redistributive fiscal transfers within national economies. However, as ungovernability intersects with the demands of growth and expansion in global city-regions such as London, claims for retaining greater shares of locally generated tax revenues are putting national redistributive systems under stress. The purpose and effectiveness of equalisation

mechanisms transferring public resources between richer and poorer areas are being openly questioned. As city actors strive to gain greater fiscal control to construct financial packages for infrastructure programmes, numerous may be tempted to engage in aggressive modes of intra-national tax competition to attract new forms of investment. But, at the same time, city actors are mindful of the importance of balancing greater fiscal autonomy with the scope to increase or create new tax instruments to raise the revenues needed to fund critical urban infrastructure assets and systems. Urban development strategies geared too far in favour of tax incentives for private developers and infrastructure investors risk reducing the fiscal space that actors require to generate and recycle local tax revenues constantly to (re)invest in what appear to be continuously rising demands for urban infrastructure and the built environment.

Fifth, concentrated investment in global city-regions, particularly in infrastructure, risks undermining national and local state efforts at national spatial rebalancing. The domestic environments in which global city-regions reside remain critical (Hall and Pain 2006), even though there is evidence that they are ‘de-coupling’ from national economies (McCann 2016), since they still retain a unique position and status within a centralised political economy like the UK and articulate strong claims upon public and private resources with implications for the rest of the national economy and polity. The cost of transport infrastructure projects in London is significantly higher than elsewhere in the UK (HM Treasury 2010), and the growth and expansion of the London global city-region is fuelling seemingly ever-greater demands for new investment in transport, housing, communications and water infrastructure systems. The funds to pay for such investments have to be found from either tax-payers or consumers from across the UK. Especially in times of austerity, national governments have to make difficult political choices about where to invest public money, and if and how investment will help to create

economic, social and/or environmental ‘returns’, and on what basis will the value of these returns be calculated in spatial terms.

The UK national state, London government and private interests have (re)constructed and sustained a geographically-biased national infrastructure narrative with a particular sub-national imperative that prioritises the infrastructure demands and needs of the London global city-region as the main route to national economic competitiveness, growth and recovery. This is because of the London global city-region’s dominant size, weight and power in the UK’s political-economy and variegation of capitalism, and the national importance of its economic prosperity and prospects. This aspiration for a UK ‘globally connected’ and ‘competitive’ through the London global city-region has been reinforced amidst the uncertainties of Brexit and the UK’s economic future outside the EU. Entrenched and persistent geographical disparities in city infrastructure provision across the rest of the UK are the result.

The UK national state’s geographical bias and emphasis upon the London global city-region are mirrored, supported and reinforced by the same spatial inclination and reinforcing focus of private infrastructure investors on the larger scale, more lucrative and high profile investment opportunities in the same national economic core of the London global city-region. While not to the total exclusion of private sector investment in other cities and regions in the UK, in a global competition for the most lucrative infrastructure investments, those in the London global city-region are more attractive in the private sector’s search for specific levels of returns, risks and maturity profiles. The mutually reinforcing geographical bias and supportive inter-relations in city infrastructure investment between the UK state and increasingly internationalised private sector are compounding and exacerbating the existing geographical disparities in city infrastructure provision and urban and regional development across the UK.

Limits on public resources, market pressures and political ideologies and strategies suggest that further investment will be directed towards the UK's global city-region champion. Yet, in the context of national ambitions for rebalancing and the creation of pan-regional 'powerhouses' and 'engines' elsewhere in the UK, there remains no clear understanding and appreciation of whether, when, where and how the costs and diseconomies of concentrated urban agglomeration will reach a 'tipping point' disrupting the growth trajectory of London. There is recognition amongst local state and private actors that a very strong case will need to be made for national government to contribute significant national public funding to major transport schemes, such as Crossrail 2. The articulation of such projects as 'nationally' important and significant because of their location in the UK's economic engine by the actors involved is central to this process (London First 2014). There is recognition too that the case for continued London investment will have to be made alongside growing political clamour, and institutional pressure from new and emergent city-region authorities and metro-mayors, for national government to invest in transport infrastructure in the of the north of England, midlands and south west. Given the chronic problem of ungovernability and infrastructure overload raising the political-economic pressure wrapped-up in such claims, whether and how state actors in the London global city-region will be able to continue the appropriation of national resources will be a critical test of national state ambitions and strategy for spatial rebalancing in the UK.

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