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The Role Played by Financial Services Clusters and Centres in Local, City and Regional Growth

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Alfonso Silva Ruiz, Michiel N. Daams, Philip McCann
Raquel Ortega-Argilés, and Colin Mayer

Outline of the Structure of the Research and Executive Summary

The research undertaken and detailed here examines the two questions of:

(i) Through what channels do FS hubs contribute to UK GDP growth, and what is the relative contribution of London vs. regional hubs?
(ii) Do regional FS hubs generate distinct growth benefits compared with additional growth in London?

Our research addresses these questions by means broadly of a threefold approach. We begin in Part 1 by conducting an OECD-wide investigation and literature review of all of the available evidence on the links between national and regional financial services (FS) centres and national and regional growth. Then on the basis of a four-decade long analysis integrating economic geography and economic history perspectives, we proceed to set the international evidence against the specifics of the UK context, identifying the broad areas where the UK experience appears to concur with, or diverge from, the experiences of other countries. We use this comparative perspective to frame our empirical approaches to the research questions.

The wide-ranging literature and evidence put forward here in Part 1 raises various important and puzzling issues which are specific to the UK. The growth of the financial services is intrinsically related to the four decade-long growth in UK interregional inequalities, but no clear consensus has emerged regarding the nature of, nor the direction of, causality. However, there do remain today some profoundly paradoxical and puzzling features of these relationships. Even though London hosts some of the deepest capital markets in the world, and the share of high growth innovative firms and university spinouts varies very little by UK region, there are still highly skewed core-periphery geographical patterns of access to business finance for SME start-ups and scale-ups. This skewness is very hard to account for, other than on the basis of UK-specific behavioural and structural perceptions on the part of investors, especially when compared to other countries. Related to this, in the aftermath of the 2008 global financial crisis, the UK experienced unparalleled core-periphery regional spreads in investment risks, and no interregional narrowing has been subsequently observed. Moreover, it was the central business districts (CBDs) of second-tier and third-tier city centres which bore the brunt of these shocks. Yet, when London is host to such deep capital markets, why this dramatic core-periphery regional partitioning should have arisen in the first place, and why it was focused on city centres, is again all unclear. Indeed, this core-periphery partitioning implies that the UK

Sterling-area is now so far away from being an optimal currency area (OCA), as to make monetary policy almost entirely ineffective outside of London and its hinterland.

Take together, what these puzzles and paradoxes point to is the fact that the wider economic and productivity growth implications of Financial Services Sector (FSS) and banking clusters in the UK are much less straightforward than might previously have been considered to be the case. In the UK, both financial markets and the UK banking system in general do not appear to play the regional economic convergence-driving and national growth-enhancing role that might have been expected in the light of all of the liquidity, competition, deregulation, and regulatory advantages of the UK economy.

In order to further our understanding of these various puzzling features of the UK economy, Part 2 of this research therefore adopts an empirical approach that is grounded in the global literature and international evidence while also being nuanced and tailored with respect to the particularities of the UK experience. In particular, in order to examine the national and regional economic roles of the UK system of financial services sector (FSS) clusters in the light of the international evidence, it is necessary to identify the similarities and differences between the UK context and comparator countries regarding the structure, scale, distribution, and economic growth roles played by financial services sector (FSS) clusters and centres, and then to build a modelling strategy aimed at uncovering these differences.

Part 2 of our empirical approach is therefore to develop a gravity-type model analysis of the economic geography of UK growth and prosperity by integrating detailed firm-level data across all local authorities of the UK. This research demonstrates that the growth and prosperity transmission mechanisms within the UK between FS clusters and their wider regional hinterlands are typically very localised, whereas London has a major impact on the economic geography of prosperity of the UK across a much broader scale. At the same time, the financial services activities in London appear to play little or no observable positive growth role beyond its own immediate hinterland.

Part 3 of our research follows on from the UK-specific analysis, but then extends the empirical approach to compare and contrast the UK experience in the light of the European-wide evidence. We examine how the economic geography of major centres of financial and banking services shape city and regional growth and prosperity across Europe. Our analysis demonstrates that the UK is rather different from much of Europe in several regards. First, the potentially positive economic role of city-size is not perceived by the investment community as being nearly as important or beneficial for growth in the UK as it is across the rest of Europe. Second, there is an important underlying ‘distance-deterrence’ effect operating in the UK, whereby the favourable investment perceptions associated with a place decline as knowledge exchanges between places weaken due to the increasing distance between them. The outcome of this is that the perceived risks of investment increase with distance, resulting in higher costs of capital, which increase much faster with geographical distance away from London than they do for equivalent distances away from the principal financial centres of other European countries. In other European countries, the economic fortunes of city-regions appear to be far more influenced by access to regional banking and financial centres than is the case in the UK. Why these perceptions differ so much between the UK and other parts of Europe is beyond the remit of this research, but it clearly points to a potentially fundamental behavioural or structural problem in the UK which limits the ability of regional financial services and banking centres to foster city and regional growth in a manner which is apparent across much of Europe.

These findings suggest that in order to better understand how financial services clusters and centres can most powerfully catalyse local, city and regional growth within the UK, a more fundamental reconsideration of the relationships between the structure and decision-making logic of the UK banking system, along with the structure and logic of the UK governance and fiscal systems, would be important avenues for further investigation.

The analysis we have undertaken significantly advances our understanding of the UK links between FSS clusters and local, city and regional growth, and the ways in which the UK appears to be rather different in this regard to other European countries. Our results and findings are far richer and far more fruitful in terms of generating new insights than we first envisaged at the outset of this project. Although we always anticipated generating some novel insights, given that very little research of this particular form has been undertaken before, the results reported here are far more plentiful, nuanced and instructive than we could ever have imagined. Many of the insights we report here have never before been seen, and this offers new avenues for discussion and reflection. At the same time, the fact that much of the UK-specific data available to us is so recent, only allows us at this stage to undertake primarily cross-sectional types of models. This still leaves open questions regarding causality, which we can only comment on with recourse to indirect arguments and evidence rather than formal econometric testing. These causality questions are issues which will require further consideration at a later stage.

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PART 1. Financial Services Clusters and UK Regional Economic Growth and Development: Four Decades of Questions and Puzzles

1.1 Introduction

The aim of this research is to better understand the relationship between the UK Financial Services Sector (FSS) and the wider patterns of UK local, city and regional economic growth. The importance of this relationship lies in the fact that the UK Financial Services Sector (FSS) is on many levels the most successful UK industry of the modern era. The FSS is the fourth largest UK sector in terms of output and the 12th largest in terms of overall employment (Hutton et al. 2024). The Financial Services Sector (FSS) is the most productive UK sector, paying the highest average wages and generating a large trade surplus. The sector generates around 9% of the UK's total economic output (Hutton et al. 2024), and this share has remained very stable since the 2008 global financial crisis (Hutton et al. 2024). As of 2023, across OECD countries, this was the third-highest share of national output accounted for by the Financial Services Sector (FSS), behind Luxembourg and only just behind Switzerland (Hutton et al. 2024).

In terms of employment, the FSS also employs around 3% of the UK workforce in some 1.2 million jobs (Hutton et al. 2024). Some two-thirds of these positions are based outside London (Morrison et al. 2024), although London accounts for over half of the total UK national output of the FSS (Hutton et al. 2024). After London, the next largest regional contributions to the output of the UK Financial Services Sector are the South East at 9%; Scotland and the North West with both at 7%; the South West East, Yorkshire and Humber and West Midlands all at 5%; Wales and East Midlands at 2%; and the North East and Northern Ireland at 1% (Hutton et al. 2024). Allowing for the different population and output sizes of regions, we see that while the Financial Services Sector accounts for some 19% of London's total output, followed by 8% of Scotland's output, for all other UK regions the FSS accounts for between 4% and 7% (Hutton et al. 2024).

The three major mechanisms via which the FSS supports wider UK economic growth are via: sectoral productivity growth in financial services industries themselves; enhanced export promotion (Hutton et al. 2024) and international trade generation; and via the support for economic growth in other sectors of the UK economy (Morrison et al. 2024).

The first two mechanisms by which FSS contribute to economic growth, namely sectoral productivity growth in financial services industries themselves and also enhanced export promotion and international trade generation, are generally well understood, and there is widespread evidence of each of these mechanisms at play (Hutton et al. 2024). In contrast, however, the third potential mechanism, namely support for economic growth in other sectors of the UK economy, is a mechanism which is rather less well understood than it was considered to be two or three decades ago.

Obviously, there are clear examples of FSS driving wider economic growth. For example, investment into the UK fintech sector stood at $4.1bn in 2020, a level which is greater than the next 5 European countries combined (Kalifa 2021). The UK accounts for approximately 10% of the global market share in fintech, with the total tech spend by UK financial services firms being of the order of £95bn in 2019, and with over 70% of UK citizens engaging with Fintech companies (Kalifa 2021). Similarly, the performance of the London economy over the last four decades has been closely associated with the growth and performance of the financial services sectors (Martin and Sunley 2023), and far more so than in other regions (Hutton et al. 2024).

However, even though some two-thirds of FSS jobs are located outside of London (Morrison et al. 2024), they account for just less than half of the total national sectoral output (Hutton et al. 2024), which implies that, on average, FSS jobs located outside of London are less than half as productive as the FSS jobs located within London. In other words, the potential contribution of FSS jobs to the wider non-London parts of the economy would also appear to be significantly weaker, and this requires us to consider why this might be the case. In order to begin to consider these questions, we can consider the wider international research literature and evidence.

1.2 The International Literature and Evidence

Financial services sector (FSS) centres or hubs are places where financial and related professional activities concentrate. As a result, hubs draw in specialised firms, skilled labour, decision-making functions, and the infrastructures that support financial intermediation (Cassis 2006; Kindleberger 1974). This makes them economically important and a longstanding object of research in economic geography and regional economics (Clark and Wojcik 2007; Martin and Pollard 2018).

The academic literature suggests that FSS hubs can act as engines of growth under certain conditions. Clustering is typically associated with stronger firm performance and higher efficiency in financial organisations, and internationally connected centres can deepen access to capital and specialised knowledge (Degl'Innocenti et al. 2017; Haberly and Wójcik 2022; Pandit et al. 2001; Pažitka and Wójcik 2019). However, these benefits can come with downsides, particularly when the concentration of intermediation capacity reshapes where risks and opportunities are absorbed (Cassis 2006; French et al. 2011; Pike et al. 2006). Hubs may become dominant relative to other locations, concentrating risks and opportunities, and crisis periods can trigger *flight-to-safety* reallocations towards dominant centres that widen gaps between core and peripheral regions (Daams et al. 2024a,b).

This matters for policy because the gains from hub growth can be nationally important while remaining geographically uneven. Two clarifications from the literature are useful. First, local concentration and national growth do not automatically imply broad-based regional benefits if control, decision-making, and value capture remain centralised in the dominant hub (French et al. 2011; Haberly and Wójcik 2022; Knight and Wójcik 2017). Second, where hubs connect local actors to global markets, the relevant mechanism is often a combination of the *local capabilities* of skills, specialised intermediaries and complementary business services along with *global pipelines* of cross-city networks and deal flows (Bathelt et al. 2004; Pan et al. 2020).

Two research questions guide the analysis here:

- Through what channels do FSS hubs and clusters contribute to UK GDP growth, and what is the relative contribution of London versus regional hubs?
- Do regional FSS hubs and clusters generate distinct growth benefits compared with additional growth in London?

Financial services sector (FSS) hubs have been analysed from two complementary perspectives. First, a density lens treats hubs as places of concentrated intermediation and specialised functions, often measured using firm and employment concentration, and sometimes linked to cross-border deal activity and tradable services (Haberly and Wójcik 2022; Wójcik et al. 2018). Second, a connectivity lens emphasises that hubs are embedded in

organisational and inter-city linkages, i.e., relationships between firms, markets, and professional networks, that shape *where* high-value functions locate and how benefits diffuse (Knight and Wójcik 2017). This distinction matters for policy because high density does not automatically imply broad-based regional benefit if network structures concentrate decision-making and value capture in the dominant centre (French et al. 2011; Haberly and Wójcik 2022; Knight and Wójcik 2017; Pike et al. 2006). From these various vantage points it is possible to posit that the links between FSS clusters and economic growth are via five major channels.

1.2.1 *Channel A: Agglomeration and Firm Performance*

A first mechanism operates through agglomeration economies, i.e., productivity gains associated with co-location near competitors, suppliers, and clients. Classic evidence on British financial services documents clustering dynamics consistent with stronger entry, survival, and growth processes in clustered environments (Pandit et al. 2001). More recent evidence about the UK shows that firms embedded in financial-centre clusters and related networks can grow faster, suggesting that co-location and connectedness jointly matter for firm performance (Knight and Wójcik 2017; Pažitka and Wójcik 2019). Related work in banking indicates that performance and efficiency differ systematically with location in recognised financial centres, consistent with scale, matching, and information advantages in major hubs (Degl'Innocenti et al. 2017). As such, this literature points to the notion that FSS hubs can raise productivity locally by concentrating specialised capabilities and enabling intensive knowledge exchange in financial and related business services (Knight and Wójcik 2017; Martin and Pollard 2018). For the UK, this implies that agglomeration forces provide a credible channel through which London and other hubs can contribute to GDP by raising efficiency and enabling high-value service activity (Pandit et al. 2001; Pažitka and Wójcik 2019; Wójcik et al. 2018). The open question, however, is the extent to which these gains can be replicated partially or fully in regional hubs and whether doing so changes national performance or mainly redistributes activity (Knight and Wójcik 2017; Pažitka and Wójcik 2019; Wójcik et al. 2018).

1.2.2 *Channel B: Capital Allocation, Banking System Structure, and Capital Shocks*

A second mechanism runs through the geography of capital allocation, i.e., how savings and risk capacity translate into lending, investment, and pricing across regions. Work on 'capital shocks' highlights that crisis periods can trigger flight-to-safety reallocations in which capital moves *towards* dominant centres, with persistent consequences for regions outside the core (Daams et al. 2024a,b). Moreover, this literature frames the post Global Financial Crisis period as a regime shift in risk pricing and investment behaviour that can amplify regional divergence through constrained capital access and weaker productivity growth outside the most favoured locations (Daams et al. 2024a,b). In related work on transmission mechanisms, real-estate and balance-sheet shocks can affect real investment through collateral values, providing one pathway through which spatially uneven asset-price movements and credit tightening may translate into persistent local growth effects (Chaney et al. 2012).

A closely related strand of research also emphasises that the banking system structure may mediate these patterns. Where banking systems are highly centralised, both in terms of ownership and in decision making, credit allocation may become less responsive to local conditions, contributing to constrained access to finance in peripheral regions (Gertler 2003; Mayer et al. 2021). Daams et al. (2025) link these dynamics to UK-specific debates on banking reforms and the spatial distribution of prosperity, reinforcing that the institutional geography of finance is part of the growth mechanism, not just a background condition. The evidence suggests that Channel B has been a key feature of the UK economy over recent decades (Daams et al. 2024a,b; Mayer et al. 2021). Therefore, if capital allocation and banking structures

systematically disadvantage peripheral regions, then it may be the case that the strengthening of regional financial capacity could deliver distinct benefits by lowering persistent financing frictions, rather than simply relocating activity (Daams et al. 2025, 2024a,b; Mayer et al. 2021).

1.2.3 *Channel C: Global Financial Network Connectivity and Diffusion*

A third channel focuses on connectivity to global financial networks. Global financial networks shape where intermediation functions, specialised expertise, and tradable financial services locate, and they influence how capital and knowledge flow through national systems (Clark and Wojcik 2007; Haberly and Wójcik 2022). Research also stresses the organisational side of connectivity, i.e., how firm networks and inter-city linkages structure the industry and condition spillovers (Dörry 2015; Knight and Wójcik 2017). Case-based evidence links integration into wider financial networks with regional development outcomes, highlighting that connectivity can support local development through expanded capital availability and knowledge flows (Bathelt et al. 2004; Pan et al. 2020). However, capitalising these benefits depends on local conditions and institutional capacity (Pan et al. 2020).

In this view, hubs can function as *gateways* that connect domestic firms to global capital and expertise, but they can also operate as bottlenecks if access to those networks is mediated primarily through a single dominant node (Haberly and Wójcik 2022; Knight and Wójcik 2017). Through London, the UK is already connected to global financial networks, hence, connectivity to international financial grids is a plausible channel for national GDP gains, but it does not guarantee regional diffusion (French et al. 2011; Haberly and Wójcik 2022; Knight and Wójcik 2017; Pike et al. 2006). This makes it essential to test whether regional hubs are able to translate connectivity into local productivity and firm growth, rather than functioning mainly as satellite locations whose value capture remains centred in London.

1.2.4 *Channel D: Spillovers, Inequality, and Vulnerability*

A fourth channel concerns spillovers and distributional consequences. Evidence links changes in financial-centre competitiveness to evolving patterns of convergence and divergence across regions, including the possibility that cross-country convergence can coincide with widening within-country regional inequalities (Degl'Innocenti et al. 2018). Furthermore, recent work argues that innovation within financial centres can have a "dark side": legal-financial designs and innovations can spill into urban housing markets, increasing prices and generating new forms of vulnerability. Thus, hub-driven innovation can redistribute costs as well as benefits (Dörry 2025).

This perspective aligns with broader geography-of-finance work emphasising that financial systems are not neutral pipes; they shape economic structure, urban development, and the distribution of risk and opportunity (Clark and Wojcik 2007; Martin and Pollard 2018). It also connects back to capital-shock arguments (Daams et al. 2024a,b). The presence of shocks triggers repricing of risk and capital reallocation, and the distributional consequences can persist, becoming self-reinforcing (Daams et al. 2025, 2024a,b). As such, even if London's dominance supports aggregate output, the literature provides credible mechanisms through which the spatial distribution of benefits can be uneven and vulnerabilities can be amplified, strengthening the case for assessing "distinct benefits" from regional hubs using both growth and resilience lenses (Daams et al. 2024a,b; Degl'Innocenti et al. 2018; Dörry 2025)

1.2.5 *Channel E: The Technology Adoption of Financial Services Centres*

Finally, simply the presence of financial service centres within cities and local clusters may itself drive local and regional growth, due to the fact that firms in these sectors are typically

rapid adopters of new technologies and builders of significant intangible assets. These features of FSS firms themselves can drive local and national productivity growth.

1.3 The Lack of Consensus

Taken together, the international evidence suggests that financial services (FSS) hubs can raise regional and national output through broadly five different types of channels, but diffusion across regions is not automatic. The scale and distribution of the benefits depend on how financial intermediation, decision-making, and complementary services are organised across space (French et al. 2011; Haberly and Wójcik 2022; Knight and Wójcik 2017). In addition, shocks can reallocate capital towards dominant centres, which may amplify spatial divergence through persistent differences in risk pricing and credit conditions (Chaney et al. 2012; Daams et al. 2024a,b). Yet, despite strong evidence on mechanisms and stylised patterns, the literature is less still much settled on the marginal effects of expanding the dominant hub versus strengthening regional hubs, partly because finance and growth are jointly determined. Successful places attract financial activity, and financial activity can also shape future growth (Pan et al. 2020; Pažitka and Wójcik 2019). Moreover, several mechanisms, such as capital shocks, banking structure, network connectivity, and spillovers, likely interact, and their relative importance may differ across time, sectoral composition, and policy regimes. However, the wider evidence from financial-centre competitiveness and cluster dynamics is consistent with the possibility that multiple specialised hubs can coexist within national systems, sharing talent and professional functions while serving different market segments (Degl'Innocenti et al. 2018; Wójcik et al. 2018).

When considering the relationships between FSS clusters and growth in UK context, this wider international literature and evidence provides a conceptual basis for testing whether regional hubs generate distinct benefits (e.g., improved access to finance, stronger firm growth outside London, reduced exposure to capital shocks) compared with marginal increases in London concentration, while recognising that market forces alone may reinforce centralisation (Daams et al. 2024a,b; Haberly and Wójcik 2022; Knight and Wójcik 2017; Mayer et al. 2021). Various lines of international evidence imply that for promoting national growth, in the UK context this might imply that there is a serious case for strengthening regional financial services sector (FS) hubs which is not necessarily about displacing London. As such, in terms of national growth considerations, the key policy-relevant question is whether additional FSS hubs improve wider and deeper access to finance, resilience, and place-based growth on the part of firms across the whole country relative to further geographic concentration (Mayer et al. 2021; Wójcik et al. 2018). However, in the specific case of the UK, there appear to be many rather unclear or puzzling aspects of relationships between the role played by financial services centres and local, city, regional and national growth. Therefore, in order to consider how best to model the links between FSS clusters and local, city and regional growth, it is necessary to consider the longstanding puzzling features of the role played by FSS clusters in UK growth and development against the backdrop of the wider international literature and evidence. In particular it is essential to understand how the UK financial services industries have evolved since the 1986 'Big Bang' in parallel with the emerging interregional growth and prosperity inequalities. These issues appear to be interrelated in the UK in a manner which is not the case in most comparator countries.

1.4 The Economic Geography of UK Growth since the 'Big Bang'.

During the post-war era from the late 1940s right up to the late-1980s, UK interregional inequalities were low by global standards (Carrascal-Incera et al. 2020; Allen 2024), and the UK urban size distribution most closely corresponded to Zipf's Law (McCann 2016). These observations suggest that neither the spatial distribution of activity nor regional productivity differences played any major role in shaping the economic geography of UK prosperity. This was primarily because during the post-war and Cold War era up to the mid-1980s, as the UK economy was expanding, it was also undergoing a four decade-long convergence process, whereby the economically weaker regions were slowly converging, i.e. catching up, to the more prosperous regions overall economy expanded (McCann 2016). Indeed, for most of the post-war period right up to the 2008 global financial crisis, these types of regional convergence processes were evident in almost all industrialised countries (Blanchard and Katz 1992, Barro and Sala-i-Martin 1992, 1995; Carrascal-Incera et a. 2020) to the extent analytically, that regional convergence and national economic growth were assumed to be fundamentally the same thing (Borts and Stein 1964).

From the mid-1980s right up to the eve of the 2008 global financial crisis, mainstream thinking in UK academic, policy and governance circles heavily emphasised the notion that deregulated markets allied with strong pro-competition policies and well-designed and well-enforced regulatory systems, will in general foster both convergence and economic growth in all contexts where these features are evident. Within UK economics this type of thinking leant heavily on US-dominated arguments, and unfortunately persisted for almost three decades beyond the time when it was analytically or empirically meaningful. A key problem was that the UK was the first industrialised country to move rapidly away from an underlying interregional convergence framework to an underlying divergence framework. Without sufficiently detailed and standardised data across OECD countries with which to compare the UK, the UK governance authorities had no real sense that what was taking place in the UK was unusual (McCann 2016). It would be another thirty years before such data became available (McCann 2016). As such, the prevailing dominant thinking among influential economists (McCann 2024) between the mid-1980s and the next three decades was that any UK regional divergence shifts would be logically only transient effects, before the interregional economic system once again reverted to its convergence framework.

In hindsight, over the last decade and a half since the 2008 global financial crisis, it has become apparent that these lines of thinking were somewhat incomplete at best, or at worst, rather naïve. The reason is that in the specific case of the UK, a context in which pro-competition policies and well-designed and regulatory systems were adopted across almost all aspects of the economy, economic growth over the last four decades has been observed to be highly skewed.

The London-centric surge in UK interregional economic inequalities is first observed in the data in around 1988 (McCann 2016), during the immediate aftermath of the 1986 'Big Bang' in London's financial markets. The mid-1980s also saw the first signs of UK governance centralisation (McCann 2024), a process which, in England, continued largely unabated for three decades and only began to attenuate somewhat with the three Devolved Administrations from the late 1990s onwards, and the city-region devolution agenda of the last decade. The reasons for this four-decade-long increase in regional inequalities and the resulting highly skewed economic geography of UK growth involve a complex mixture of the UK's highly monocentric geographical structure, the highly asymmetric regional impacts of modern globalisation, and rapidly increasing centralisation of the UK governance system since the mid-

1980s (McCann 2016). However, these transformations have had powerful implications for how the local, city and regional economies function in many parts of the UK.

The combined effects of these transformations mean that today most second- and third-tier UK cities have very small central business districts (CBDs) compared with their OECD and especially European counterparts and comparator cities (Breach and Swinney 2024). The outcome of this is that UK second-tier and third-tier cities tend to display no real systematic agglomeration economies of scale or density (McCann and Yuan 2022), an observation which is almost unique amongst OECD countries. As a result, in comparison to OECD-wide, and especially European counterparts, the UK's large second-tier and third-tier urbanised regions typically underperform economically (Swinney and Enenkel 2020) relative to what is observed and expected on the basis of international comparisons (Arbabi et al. 2019, 2020).

This four-decade-long underperformance on the part of much of the UK's second-tier and third-tier urban system is in part a hangover from the adverse deindustrialisation-related economic shocks which took place four and five decades ago (Rice and Venables 2021). The deindustrialisation shocks most sharply and adversely impacted those regions which had previously been most heavily dominated by manufacturing and heavy industry, including may parts of the Midlands, the North, the West of Scotland and South Wales, except that is, for the case of London.

In contrast to many other UK regions, however, the emerging mixture of deindustrialisation and servitisation that the UK experienced since the late 1970s, and which accelerated dramatically from the mid-1980s onwards, has not adversely affected the London economy, even though London was a major manufacturing centre for two centuries. On the contrary, the transition from a large manufacturing centre to an overwhelmingly service-dominated economy has been broadly and markedly in favour of the London economy, whose productivity and prosperity levels have increased sharply relative to the rest of the UK since around 1988 (McCann 2016). The result of these profoundly different regional industrial transition experiences means that London and its immediate hinterland have been largely decoupling from the rest of the UK across many different socio-economic dimensions over the last four decades (McCann 2016). Not surprisingly, the UK today has been characterised as a "hub, no spokes" (Haldane 2018) economy.

Within the field of economics, following on from many prior decades of US convergence-type analytical frameworks and observations (Borts and Stein 1964; Blanchard and Katz 1992; Barro and Sala-i-Martin 1995) dominating the literature, many of today's explanations for the UK's particular patterns of regional productivity and growth differences still tend to be overwhelmingly sought in terms of supply-side issues and supply-side rigidities. For example, the current differential regional skills and educational attainment profiles are often seen as a central issue. While it is obviously true that human capital and labour skills respond to regional differentials via labour mobility and migration (Xu 2025), the UK's regional productivity differences emerged well before the current regional gaps in skills and educational attainment appeared (McCann 2016). Moreover, UK interregional mobility has hardly changed in four decades (McCann 2024). As such, while skills distributions, the regional patterns of human capital and labour migration all undoubtedly play a role in the UK's geography of uneven development, even today the UK interregional differences in both unemployment rates and educational levels are small by OECD-wide standards (OECD 2018), and relatively far smaller than the UK's regional productivity differences. Furthermore, outside of London, the second- and third-tier UK cities exhibit diminishing marginal returns to higher education (Stansbury et

al. 2023), whereas all major US cities, along with the case of London, display constant or increasing marginal returns to higher education (Burn-Murdoch 2023). These observations all suggest that supply-side considerations surrounding skills cannot be the primary driver of UK regional productivity differences. Similarly, while land-use planning constraints clearly heavily distort and restrict the economy, it is very hard to argue that they provide any explanation as to the emergence or continuance of UK regional productivity disparities (McCann 2016).

In contrast, on the basis of careful and exhaustive analysis it is possible to argue both that national government decisions regarding the provision and location of major infrastructure investments have been a key driver of the growth and continuation of UK regional inequalities (McCann 2016), and also that four decades of UK governance centralisation have been a major contributor to the growth and continuation of UK regional inequalities (McCann 2016). However, while governance restructuring to greater centralisation and decisions regarding the nature and location of major infrastructure investments are indeed important contributors to the UK's regional productivity and growth regional inequalities, alongside other structural features relating to the UK's largely monocentric connectivity structures, the longstanding effects of previous asymmetric deindustrialisation and globalisation shocks suggest that other demand-side explanations must also be considered as to why so many UK regional economies have failed to adjust or transition a manner we observe in the case of London.

In order to search for clues as to how we might proceed regarding other demand-side explanations, it is important to return to point that from the mid-1980s onwards right up to the eve of the 2008 global financial crisis, the overwhelming thinking in mainstream UK academic, policy and governance circles assumed that deregulated markets allied with strong pro-competition policies and well-designed and well-enforced regulatory systems, will in general foster economic growth in all parts of the economy. Indeed, prior to the 2008 global financial crisis, there was almost no serious research undertaken examining the links between access to finance, growth and economic development (Wegrzyn 2025), as these links were largely taken as read, and straightforward, as long as widespread deregulation processes alongside well-designed competition and regulatory enforcement mechanisms were all implemented. In other words, it was almost universally assumed that all regions would benefit, as had been the dominant thinking and experience across OECD countries for many decades. Indeed, in many arenas, these assumptions regarding the ubiquity of growth became, in effect, assertions in both analytical and policy circles. Yet, after four decades of deregulated markets allied with strong pro-competition policies and well-designed, well-enforced regulatory systems, the UK's 'hub, no spokes' (Haldane 2018) lack of widespread knowledge diffusion and dissemination increasingly casts serious doubts on these framings.

1.5 Financial Services Sectors and UK Regional Economic Growth

All of these insights raise the question of whether the comparison between today's observations and those from four decades earlier at the time of the 1986 Big Bang reflects causes or consequences, drivers or outcomes. London has clearly benefited hugely over the last four decades from the growth and performance of the UK Financial Services Sectors (FSS), both in terms of the growth and productivity of the FSS themselves, and also the impacts of FSS on many other sectors operating in the London economy. What is much less apparent is the nature of links between the growth of the FSS in other UK regions and the performance of those other regions. In particular, given the growth in UK interregional inequalities, it is unclear whether the growth in FSS in other regions outside of London has been a positive feature, in that it has

partially attenuated the relative decline of these regions, or whether it has be largely neutral in the sense of playing no real mitigation role in the decline of these regions.

In the light of the 'hub, no spokes' (Haldane 2018) characterisation of the UK economy today in comparison to the earlier economic convergence notions which previously dominated economists' thinking, we can now reconsider how the patterns of economic growth across all parts of the UK economy have emerged in the light of the transformations associated with the Financial Services Sectors (FSS). High-level, overarching, and nationally-framed narratives regarding the importance of ensuring that domestic firms are well provided with the access to capital that they need to grow tend to ignore the types of issues that we are discussing here (CLC+HMT 2022), so it is therefore necessary to delve into much greater depth to search for insights.

Across various rankings of global financial centres, London always emerges as amongst the top three global centres of finance and global connectivity (McCann and Acs 2011; Taylor and Derudder 2016; Derudder and Taylor 2018; Derudder et al. 2024; Wang et al. 2025) and the most global city in Europe. Within Europe, London is also one of the three leading European locations for venture capital, along with Paris and Berlin (Crisanti et al. 2026). In the UK's highly deregulated economy with well-established competition and regulatory frameworks and enforcement mechanisms, the fact that London hosts some of the deepest capital markets in the world, one would have expected a priori that no parts of the UK would be regarded as being 'financial deserts' when it comes to key stages of finance. Indeed, the important employment role played by FSS across the country would prima facie suggest that access to finance should not be a constraint anywhere in the UK.

The fact that venture capital (VC) is not ubiquitously spread across regions is a well-known observation from many countries. The concentration of venture capital investments in major agglomerations, which also benefits economic growth in their immediate hinterlands, sitting alongside large geographical disparities in VC investment with regard to peripheral locations, is notable in large countries such as China (Shi and Wang 2024; Sheng et al. 2024). However, the UK as a whole is smaller than the US states of Michigan, Wyoming and Oregon, while England is smaller than the US states of Alabama, North Carolina, Louisiana and Iowa, and all but two of China's provinces and Autonomous Regions. As such, on the basis of comparisons with other very large countries, the role of distance in shaping the geography of VC investments would prima facie appear not to be a relevant consideration.

The logic here is underpinned by the general understanding that financial capital is understood as being the most mobile and liquid factor of production, and indeed far more mobile than the more widely-discussed human capital (Xu 2025). In the UK context, with very significant interregional cost differences over very short distances, the logic of investment implies that potential investors will be actively seeking out opportunities for higher rates of return in lower-cost regions, thereby fostering a more even distribution of investment and contributing to the rejuvenation of economically weaker regions. Indeed, this was precisely the logic that so strongly underpinned the widespread and longstanding assumption-assertion that the convergence framework was the underlying model of the UK economy. Yet, this is not what we have observed in the UK, and this has previously represented something of a profound puzzle (Mayer 2024a,b; Mayer et al. 2021).

Regarding the various types of UK equity investments, both the number of deals and the total amount of capital raised rose steadily from 2015 onwards, peaking in 2021-22, since when the

number of deals has fallen by roughly 40%, while the overall value of capital raised has fallen by something of the order of 55% (Beauhurst 2025a). In regional terms, annually London typically accounts for around 50% of the total number of deals and 60% of the total equity capital raised in the UK (Beauhurst 2025a,b), with London plus its wider hinterland including the South East and East combined typically accounting for some 75% of the total capital raised in the UK (Beauhurst 2025a,b). Outside the wider South East, the next largest regional recipient of equity capital is the North West, accounting for something of the order of 10% of the UK total, followed by the West Midlands and Scotland, both accounting for something of the order of 4%-5% (Beauhurst 2024b). All other UK regions typically account for just 1%-2% of the total equity raised in the UK (Beauhurst 2025a). For specifically private equity deals, London accounts for 44% of the UK total, with other UK regions each accounting for between 3% of deals in the North East to 11% in the North West (KPMG 2026).

Similarly, in terms of angel investments, one might expect a priori that the investments of angel investors will be very evenly spread geographically, as angel investors would be expected to search locally for intra-marginal niches (Cowling et al. 2021). However, the econometric evidence suggests that only one quarter of angel investments within the UK are local in nature, while the spatial patterns of angel investments are heavily regionally biased towards London and the South East (Cowling et al. 2021). Outside of London and the 'Golden Triangle' also incorporating Oxford and Cambridge, firms face major obstacles to raising equity for scaling up (Wang and Breach 2026). Indeed, it is the London-bias for London-based business angels mediated by the thick nature of the informal risk capital market. which accounts for almost all of the UK local investments (Cowling et al. 2021).

Finally, in terms of Deep Tech venture capital (VC), since 2020 the Golden Triangle of London, Oxford and Cambridge has accounted for some 77% of UK Deep Tech venture capital (RAE 2025). Although there is some evidence that Deep Tech VC momentum is growing in other places such as like Sheffield, Glasgow, Edinburgh, Bristol, and Manchester (RAE 2025), in a highly deregulated economy with well-established competition, regulatory frameworks, and enforcement mechanisms, and allied with the enormous depth of the London capital markets in the world, the economic geography of these various equity, VC and angel investment observations are difficult to explain.

One response might be to argue that for some unspecified reason, the number and geographical patterns of new investible investment opportunities systematically and profoundly shifted in the UK into a very small number of regions in and around London in a manner that has not been matched in other countries, even tentatively, until several decades later. There is some evidence which is suggestive of such a centralisation force, as some 37 out of the top 50 £1bn+ 'unicorns' in the UK are headquartered in London, with only 5 headquartered in the North West, just 2 headquartered in each of the East, the South West, Scotland, and 1 headquartered in each of the South East and the West Midlands (McRea 2025)

Yet, at the same time, there is also important evidence which points rather to the contrary. In the UK context, the share of active high-growth firms varies little by region (Oliver Wyman 2024). This implies that new technological and commercial knowledge is widely diffused. Similarly, in terms of the number of university spin-outs, a good measure of technology-commercialisation transitions, while the 'Golden Triangle' of Oxford, Cambridge, and London accounts for 27.7% of the total spinout population, London itself only accounts for 18.6% of the spinout population (RAE+Beauhurst 2025). London's regional spinout share is halfway between its relative shares of the UK's population and output (Martin and Sunley 2023).

Meanwhile, the university spinout shares in the South East at 15.6%, and the East at 10.6% (RAE+Beauhurst 2025), are only marginally above their respective regional shares of UK national output. On many levels, these observations are not surprising because the UK university system is one of the very strongest university systems globally, and has world-ranked institutions located all over the country. The quality and spatial distribution of the UK university system potentially offer widespread investment opportunities for highly innovative spin-outs, start-ups and scale-ups in many locations. Indeed, while the Golden Triangle of Oxford-Cambridge-London (RAE+Beauhurst 2025) is the leading region in terms of the number of university spin-outs, as we see here high numbers of university-related new spin-outs are evident all over the UK.

The Oliver Wyman (2024) and RAE+Beauhurst (2025) data, therefore, suggest that potentially investible opportunities are distributed widely across the UK regions, and that a serious lack of technological and commercial know-how across UK regions cannot be a primary explanation of the UK's highly unequal regional productivity and growth differences. What is therefore puzzling is why these geographical patterns of potentially investible opportunities bear so little correlation with the geography of equity investment and access to lending (Oliver Wyman 2024).

The overwhelming bulk of UK research suggests that a firm's geographic location plays a crucial role in its ability to access finance (Brown 2018), and the most noticeable adverse effects are on innovative and growth-oriented firms in peripheral and rural areas with sparse bank branch networks (Brown 2018; Mayer et al. 2021). New automated lending technologies and the rapid decrease in the size of the UK bank branch network are key drivers of these geographical disparities (Mayer et al. 2021), leading to widespread SME borrower discouragement (Brown 2018). The extent to which other more recent forms of substitutive finance are able to plug some of the funding gaps and shortfalls remains, as yet, unknown (Brown 2018). However, if we consider the sequential steps in the progression of financing in terms of seed funding, early-stage venture, late-stage venture or private equity progression, the UK geographical bias in financing is focused primarily on the first-stage seed funding and fourth-stage private equity stages, with no discernible geographical advantages observed for the second- and third-stage early and late-stage ventures (Brown et al. 2025). The important point here, however, is that without both the first-stage seed funding and the fourth-stage private equity funding, very few firms will be able to achieve the types of high growth necessary for unicorn status. The fact that only London and its close hinterlands are the regions where all four stages of finance are readily available provides an explanation as to why unicorns are so geographically concentrated in London, even though spinouts and high-growth firms are distributed across the country.

These geographically skewed investment patterns are also even more evident in the case of international foreign equity investment in UK enterprises. Brown et al. (2025) find that the 'Golden Triangle' of London, Cambridge and Oxford remain dominant in terms of attracting international equity investments, and this is because of what they call 'spatial myopia' significantly influencing investment patterns (Brown et al. 2025). In particular, Brown et al. (2025) find that increased geographical distance from the Golden Triangle correlates strongly with a reduced likelihood of securing international equity finance. This observation concurs very closely with other findings regarding the geography of knowledge transmission mechanisms associated with publicly-funded research-related investments (Ortega-Argilés and Yuan 2026) in which proximity and connections to the 'Golden Triangle' dominate. Moreover, the national and regional growth impacts of the UK's highly skewed economic geography of

SMEs' access to finance has been even further accentuated by the effects of Brexit (Cowling and Brown 2024). SMEs in all UK regions except London and Northern Ireland have faced strong levels of disengagement from exporting and consequently longer-term productivity scarring effects instigated by reduced exposure to EU markets (Cowling and Brown 2024).

We know that some 20% of the UK population, accounting for one third of the labour market, are extremely risk-averse in matters of money and investment (Capital.com 2025). However, this characterisation is unlikely to reflect the attitudes of UK entrepreneurs and SME owners searching for greater access to capital and business credit and funding. As such, it cannot be an explanation for the types of widespread SME borrower discouragement observed by Brown 2018), or the dramatic falls in UK SME lending in comparison to countries such as Germany, Spain, or France (Megaw 2025). Bank loans provide some 70% of the finance for SMEs (da Silva Gomes et al. 2025), yet whereas just 4% of SME loan requests were turned down by UK banks in 2007, in 2024 the number was 40% (Megaw 2025).

Comparisons of the UK with other countries, including the USA, Germany, France and Sweden, point to having a high-quality client-focused and decentralised structure of the banking system with autonomous local branches being an important factor in the provision of long-term finance for innovative SME start-ups and scale-ups (Mayer et al. 2021; da Silva Gomes et al. 2025). Similarly, research in other European countries suggests that a high quality local banking system (Hasan et al. 2009; Coccorese 2024) is associated with higher regional economic growth rates, including where banks engage with public-private partnerships (Coccorese 2024), while the closure of local bank branches is associated with a decrease in bank financing and declining productivity growth in firms with higher credit rating scores (Siranova 2025).

These various observations are consistent with the schema of Flögel and Hejnová (2024), who argue that there are two mutually non-exclusive explanations for why regional banks may enhance economic resilience via enhanced countercyclical funding, namely the distance and diversity explanations. The distance explanation emphasises the importance of client proximity to regional bank branches as providing for a better handling of soft information, thereby improving access to access to finance in any context of economic turmoil (Flögel and Hejnová 2024). Meanwhile, the diversity explanation of a financial system links the heterogeneity in a decentralised financial system to its built-in resilience in the face of financial crises, in that regional banking offers resilience, which also benefits its local clients (Flögel and Hejnová 2024).

SME bank funding in the UK has declined continuously since the onset of the global financial crisis, and the UK portfolio of SME bank loans as a share of GDP is today amongst the smallest in Europe, and ranks only 34th out of 41 OECD countries (Megaw 2025). Funding from non-bank institutions has been unable to counteract these trends (Megaw 2025). Yet, this was not a result of an overall fall in commercial bank lending, in that while bank loans to SMEs of less than 250 employees have consistently fallen, bank loans to large companies of over 250 employees have steadily increased since the onset of the 2008 crisis (Megaw 2025). As such, the two decade-long process of the closing of local UK bank branches and the centralisation, rationalisation and increasing automation of the British banking system would therefore appear in all likelihood to have contributed to the continuous decline in SME bank funding (da Silva Gomes et al. 2025) and also to have exacerbated the UK's already highly geographically skewed patterns of commercial investment finance, especially for SME start-ups and scale-ups (Mayer et al. 2021).

At the same time as we are seeing major changes in the SME funding landscape, the funding landscape for larger UK enterprises is also changing. Stock exchanges across the world are becoming smaller as alternative sources of capital, such as private equity or venture capital, are growing, meaning in general that firms are staying private for longer or opting out of public markets altogether (*The Economist* 2024). However, the recent decline of the UK stockmarket is far more marked, characterised by falls in the number of listed companies allied with falling individual valuations (*The Economist* 2024).

There have been various UK policy initiatives which attempt to counteract some of these adverse UK banking and finance trends, in particular as they impact innovative SMEs. On this point, Ruaah (2025) argues that in the period since the immediate aftermath of the 2008 global financial crisis, the UK has undergone several major stages in the structural evolution of how UK government policy has shaped the environment for equity investments.

In the early years after the 2008 crisis, the Seed Enterprise Investment Scheme (SEIS)[1] was established in 2012. This UK government initiative aimed at complementing the UK government's Enterprise Investment Scheme (EIS)[2] which had been operating since 1994 and was specifically designed in order to encourage equity investments in SMEs so as stimulate innovation and growth (Ruaah 2025). Along with reforms to R&D tax credits, generous tax reliefs and the protection of loss relief, the evolving environment aimed to spur the actions of angel investors into UK start-ups (Ruaah 2025). These initiatives were complemented with the 2012 establishment of the British Business Bank and the 2018 British Patient Capital programme, all aimed at improving the conditions for later-stage companies to raise capital domestically, rather than having to search for overseas opportunities for Series B, C, and beyond (Ruaah 2025).

At the same time as aiming to foster more UK-based start-ups and scale-ups, other government-backed initiatives sought to spread investment opportunities geographically across the UK. These include: the Northern Powerhouse Investment Fund and the Midlands Engine Investment Fund[3], both of which are managed by the British Business Bank; the 2020 establishment of a Scottish National Investment Bank[4]; the 2017 creation of The Development Bank of Wales; and the 2023 establishment of an Investment Fund for Northern Ireland[5]. While there is some evidence that equity inflows into UK start-ups and scale-ups have indeed increased in response to these various initiatives (Ruaah 2025), whether the geographical spread of SME equity finance has been rebalanced and enhanced is much less clear. Indeed, the overall evidence points to no such effects being really evident (Brown 2018; Mayer 2021; Cowling and Brown 2024; Brown et al. 2025).

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[1] https://www.british-business-bank.co.uk/business-guidance/guidance-articles/finance/what-is-the-seed-enterprise-investment-scheme-seis

[2] https://www.fuel.ventures/the-uks-enterprise-investment-scheme-empowering-small-businesses-for-30-years#:~:text=The%20History%20of%20EIS%2C%20a,Future%20at%20Fuel%20Ventures%20Ltd

[3] Both of these funds are now in their Mark II versions, with the previous Mark I versions linked with EU regional development funds and also with the networks of now-abolished networks of Local Enterprise Partnerships (LEPs).

[4] https://www.thebank.scot

[5] https://www.british-business-bank.co.uk/finance-options/nations-and-regions-investment-funds/investment-fund-for-northern-ireland

Moreover, the overall investment climate has become more difficult in recent years due to the shockwaves associated with the Covid-19 lockdown, followed by the energy price crisis associated with the war in Ukraine and the 2022 budget. Taken together, these combined shocks have subsequently led to a lower number of equity deals with large falls in deals' volume, especially among later-stage companies (Ruaah 2025). Similarly, the stakes invested by universities in university spinouts in recent years have also fallen, as has the number of deals, even while the value of the individual deals has increased (RAE+Beauhurst 2025). Indeed, the only two sectors where the number and scale of deals are increasing are in Digital and Clean Energy, two of the key sectors seen as being central to the aims of the UK Industrial Strategy and the UK National Wealth Fund (Ruaah 2025).

While these publicly backed policy initiatives are in many respects very welcome, in reality, the impacts of these initiatives, along with various other policy schemes and competition probes (Megaw 2025) have failed to bring about any substantive changes to the functioning of the UK financial and investment capital markets, especially as regards SMEs.

One powerful argument for this is that the whole functioning of the UK investment capital markets and their links to the wider growth performance of the wider UK regional economic system were fundamentally altered by the 2008 global financial crisis. More specifically, these profound changes to the functioning of the system are specifically and explicitly related to economic geography.

Building on an econometric methodology (Daams et al. 2024a) which was first developed in the context of the US urban economic system, Daams et al. (2024b) using uniquely detailed large-scale commercial real estate investment data, (Daams et al. 2024b) demonstrate how financial markets perceived the attractiveness of investing in UK regions during the last two decades. The analysis showed that prior to the 2008 Global Financial Crisis, all regions of the UK were perceived similarly in terms of risks, with investors being broadly sanguine regarding the investment opportunities available in almost all UK regions. In marked contrast, the 2008 global financial crisis rapidly ushered in an investment regime change from one of quantifiable risk to one of radical uncertainty (Kay and King 2020). The result of this sudden regime change was a 'flight to safety' of capital into the London economy and its immediate hinterland.

In the wake of the 2008 crisis, London suddenly enjoyed large capital inflows, with capital being priced very favourably. Locally resident potential innovators and entrepreneurs who held real estate equity suddenly found that their collateral leveraging positions had improved dramatically, and this is important because real estate equity is the most important private collateral for firm start-ups and early-stage scale-ups. In the post-crisis era, London enjoyed favourable financial and investment market conditions, which helped drive its recovery.

In marked contrast, in the post-crisis era, other regions outside of the wider South East and East faced capital withdrawals and a sudden rise in the cost of capital, allied with declining collateral positions for those whose business credit was leveraging via their real estate equity (Daams et al. 2024b). More broadly, in general, regions further away from London typically faced greater sudden and longstanding increases in the cost of capital, and not surprisingly, these capital cost increases adversely impacted their medium and long-term economic growth (Daams et al. 2024b). These asymmetric capital shocks wrought by the 2008 global financial crisis have since led to a profound and adverse shift in the subsequent productivity growth of those UK regional economies which were most adversely affected by these capital shocks (Daams et al. 2024b).

Whereas in the USA the capital 'flight to safety' favoured two dozen or so large cities over all other places (Daams et al. 2024b), in the UK the 'flight to safety' favoured only London and its immediate hinterland over all other regions (Daams et al. 2024b). The resulting core-periphery spreads in regional risk premia and investment yields between London and other parts of the UK are typically of the order to 150-250 basis points, while those between London and the central business districts (CBDs) of cities outside of the South East are today of the order of 250-300 basis points (Daams et al. 2025a). These 250-300 basis point spreads are akin to the sovereign spreads between the UK and Romania or Chile (Mayer et al. 2025a). In other words, the interregional spreads in risk premia and investment yields between London and city centre central business districts (CBDs), other UK regions are today on a continental-wide scale (Daams et al. 2025b).

We know from research in other parts of Europe that the medium and long-term growth in regional GDP per capita moves inversely with investment risk perceptions (Inekwe 2021), and this is exactly what Daams et al. (2024b) demonstrate has been the case for UK regions during the post-crisis period. However, whereas evidence from the USA (Daams et al. 2024a) and eastern Europe (Inekwe 2021) suggests that the adverse impacts of increasing financial risk perceptions are somewhat attenuated for large cities in comparison to other types of regions, the UK evidence suggests precisely the opposite; namely, that it was central business districts (CBDs) of the UK's second-tier and third-tier large cities which bore the brunt of the increasing financial risk shocks in the wake of the 2008 crisis.

As we have already seen, the central business districts (CBDs) of UK city centres outside of London are typically too small compared with those of comparator cities, and this is held to be a key reason why these cities underperform in terms of productivity relative to the peer group of cities in comparator countries. During the late 1990s and early 2000s the first green shoots of recovery in UK second-tier and third-tier city centres are observable in many places including the Arndale Centre in Manchester, the Liverpool One development, the Cardiff Bay developments, the waterfront developments in Bristol and on the River Tyne, and the regeneration of the centre of Glasgow (ODPM 2006a,b; CLG and BERR 2008: Martin and Sunley 2023). However, the dramatic regional capital market partitioning in the wake of the 2008 crisis was so profound that many of these first green shoots of city centre regeneration and development trajectories were stymied or even truncated for more than a decade.

Regarding responses to macroeconomic and monetary policy, London was the only UK region which responded strongly to Quantitative Easing (QE), as demonstrated by the close correlation between the track of London investment yields and the path of UK sovereign yields, up to the 2016 Brexit vote, after which QE ceased to work even in the case of London (Daams et al. 2025a). In almost total contrast, other UK regions shifted rapidly into junk bond territory, and most have remained there ever since with no major trends towards mean reversion in over seventeen years. In other words, monetary policy, and quantitative easing (QE) in particular, had little or no traction whatsoever on the majority of the UK outside of London, and least of all on the financial fortunes of the city centres in the UK's second-tier and third-tier cities (Daams et al. 2025a). Moreover, this regional partitioning in UK regional risk premia and investment yields was typically more dramatic in the UK than in other countries such as France, Germany or the USA (Daams et al. 2025b). The post-2008 partitioning of UK capital markets means that the UK today is further way from being an optimal currency area (OCA) than either the Eurozone or even the non-Euro parts of the EU (Daams et al. 2025b).

Yet exactly why this is the case is still unclear, although some clues arise from observations of the behaviour of the Eurozone banking sector in the aftermath of the post-crisis period. In wake of the 2008 global financial crisis, there was large-scale monetary intervention and quantitative easing (QE) undertaken by the European Central Bank (ECB). Bassens and Lindo (2025) scrutinised whether these actions have helped to realign the Euro Area money space with its financial space, and their findings suggest this was not the case. The main reason was that, while the banks themselves benefited from QE, they did not necessarily increase local or cross-border lending and investing within the Euro Area or even within the non-Euro parts of the EU, rather preferring to switch investments to the USA and elsewhere (Bassens and Lindo 2025). Indeed, following on from the ECB's mid-2014 initiation of its quantitative easing programme, QE-spurred investments within the Eurozone barely increased at all during the next five years, whereas Eurozone banks' asset purchases outside of the Eurozone increased rapidly by 60%. Moreover, this capital-switching surge in non-Eurozone asset purchases was not only for assets outside of the Eurozone, but actually outside of the European Union as a whole, primarily driven by a surge of Eurozone banks' asset purchases in the USA economy (Bassens and Lindo 2025). Today, the Eurozone banks' holdings of non-Eurozone assets are almost equal in scale to all of their Eurozone assets, and 88% of these non-Eurozone assets are actually non-European Union assets (Bassens and Lindo 2025). In other words, while Eurozone QE programme reinforced the stability of both the Eurozone banking system and the Euro itself, it appears to have done little or nothing to directly spur investments in the Eurozone economy, instead fostering investments mainly in the USA.

In Europe, the overall downward drift in private sector investment yields broadly followed the path of the ECB's QE programme (Daams et al. 2025a) in a manner which was not evident in the UK except in London. As such, the obvious inference from this is that, apart from London-based asset purchases, the Bank of England's QE programme spurred a surge in non-UK asset purchases on the part of UK banks. Indeed, the extreme international orientation of The City of London financial markets suggests that the relative scale of this capital-switching effect is likely to have been at least as large, if not larger, than what happened in the Eurozone, and provides a powerful explanation of the However, without any specific data on these points, this can only be speculation.

1.6 Conclusions: The Current Puzzles

The wide-ranging evidence put forward here regarding the fact that:

(i) even though London hosts some of the deepest capital markets in the world while the share of high growth innovative firms (Oliver Wyman 2024) and university spinouts (RAE+Beauhurst, 2025) varies very little by UK region, there are still highly skewed core-periphery geographical patterns of access to business finance for SME start-ups and scale-ups.

and the fact that:

(ii) the investment risk perceptions in UK investment markets partitioned in a core-periphery manner to such a dramatic extent in the aftermath of the 2008 global financial crisis, with no subsequent narrowing observed, and with the central business CBS city centres bearing the brunt of these shocks:

and the fact that:

(iii) The UK Sterling-area is now so far away from being an optimal currency area (OCA), as to make monetary policy almost entirely ineffective outside of London and its hinterland:

all mean that understanding the wider economic and productivity growth implications of Financial Services Sector (FSS) and banking clusters in the UK is much less straightforward than might previously have been considered to be the case.

In the UK, both financial markets and the UK banking system in general do not appear to play the regional economic convergence-driving and national growth-enhancing role that might have been expected in the light of all of the liquidity, competition, deregulation, and regulatory advantages of the UK economy, we therefore adopt a two-pronged approach. As such, the UK evidence today suggests that these relationships are far from being straightforward and that many aspects of these links in the UK are very puzzling. It is therefore necessary to adopt an empirical approach that is grounded in the global literature and international evidence while also being nuanced and tailored with respect to the particularities of the UK experience. In particular, in order to examine the national and regional economic roles of the UK system of FSS clusters in the light of the international evidence, it is necessary to identify the similarities and differences between the UK context and comparator countries regarding the structure, scale, distribution, and economic growth roles played by financial services sector (FSS) clusters and centres.

PART 2. An Econometric Analysis of the UK Relationships Between Financial Services Hubs and Clusters and Regional Growth and Productivity

2.1 Introduction

The central question we aim to address here empirically is straightforward, namely: in the UK, does proximity to a financial centre translate into better local economic outcomes, and does it matter whether that centre is London or a regional hub? To answer this, we develop a measure of financial services access for each of the 361 local authorities in the UK, and embed it in a regression framework that allows us to separately identify the role of total financial exposure and the degree to which that exposure is concentrated in London.

To begin our empirical analysis, from the outset a key distinction in our framing is between financial services *hubs* and financial services *clusters*. Financial *hubs* are major globally-connected banking centres where national and international strategic banking and investment decision-making is concentrated. In the UK, London is the clearest example, with firms establishing headquarters there to direct activity across the rest of the UK. In our framing, *clusters*, by contrast, are groupings of local authorities with a local presence of firms in the financial services sectors (FSS). These clusters of financial services sector (FSS) activities include activities that support other banking hubs, including back-office operations, legal advisory services, and similar functions, along with fintech and local intermediation activities, without being at the centre of strategic decision-making. This distinction matters because these two types of centres may have different effects on surrounding local economies.

In practice, we operationalise this distinction in two ways. Clusters are identified using a data-driven approach whereby we apply a hierarchical density-based clustering algorithm (HDBSCAN) to financial services activity across local authorities, which yields 14 distinct financial services clusters.[6] Hubs are defined using the Global Network Connectivity index of banking centres (Derudder and Taylor 2018; Derudder et al. 2024), which draws on a broader set of indicators to rank banking and financial services centres across Europe. For the UK, this identifies 20 metropolitan areas (Daams et al. 2025). We report results under both definitions, which allows us to assess whether the findings hold regardless of how financial centres are drawn.

2.2 The Datasets

Before we commence our empirical-econometric work we begin by outlining the types of data that we employ.

The Data Lab[7] at The Productivity Institute led by Professor Raquel Ortega-Argilés syntheses, standardises, builds and publishes comprehensive datasets[8] based on a variety of different data sources produced by the Office for National Statistics, the OECD Paris, the Bank of England, and the Conference Board, amongst other institutions. These data provide the bedrock for our

[6] Our choice of HDBSCAN over DBSCAN is due to the Hierarchical approach of the former, leading to more stable labelling. See Campello et al. (2013) for more details.
[7] https://lab.productivity.ac.uk/data/
[8] https://lab.productivity.ac.uk/data/data-portals/

analysis at the local, city and regional levels. In addition, for the purposes of this research project we augment these Data Lab datasets with three additional data sources.

First, we employ the recent Real Time Industrial Classification (RTIC) datasets generated by The Data City, which allows us to analyse the spatial distribution of FSS activities across the UK and identify the UK FSS hubs. These localised-industry-firm data are generated using large-scale machine learning techniques that analyse the web content of UK companies via web scraping. The RTIC classification, based on clustering bottom-up real-time industrial activities undertaken by millions of firms as described on their company websites, allows us to classify FSS firms in a more up-to-date, sectoral and spatially granular, and timely manner than standard SIC codes or other administrative data.

Second, the Global Network Connectivity (GNC) indices datasets of international banking and financial centres have been provided to us for the purposes of this research. Building on their earlier work (Taylor and Derudder 2016; Derudder and Taylor 2018) on an Interlocking Network Model (INM) of cities and financial centres, Derudder et al. (2024) chart the interactions between the offices of 75 of the world's largest banking firms and then these interactions are aggregated at the city level for 453 cities across the globe in order to provide an index of the centrality role of each city within the global financial system. The three most globally connected cities are 1. Hong Kong, 2. New York and 3. London, while other European centres include 9. Paris, 11 Luxembourg, 13 Frankfurt, 27 Milan, 29 Amsterdam, 38 Madrid, 39 Zurich, and 42 Warsaw. Importantly, however, global finance displays highly complex and overlapping polycentric patterns (Derudder et al. 2024). Other types of global city rankings for financial centres (Wang et al. 2025) also give similar results for the top-tier cities. The WCN data provide not only international rankings, but also actual city-level absolute values for 125 European cities, reflecting their connectivity in the global financial system. Within this, we also have the global rankings and absolute values for 20 UK cities.

Third, the UKRI-funded Smart Data Foundry[9] (SDF) provides a unique dataset which allows us to examine the financial strength and buoyancy of the local ecosystem of small and medium-sized enterprises (SME). For our purposes, the Sage Small Business Tracker (SSBT) uses data on 140,000 SMEs from Sage's accounting and payroll software. The SDF aggregates and cleans the data before CEBR deflates and analyses the data ahead of its publication. The SSBT provides timely insights into the growth, revenue flows, cash balances, capital expenditure, debt positions, timeliness of payments and receipts, productivity and profitability of UK small businesses, broken down by company size, industry and region.

In our research here on the UK economy, we are able link the Data City FSS cluster-mapping RTIC data for identifying UK FSS *clusters* with the broader portfolio of local and regional data on economic and productivity growth built by the TPI Data Lab[10], as well as the World City Global Network Connectivity (GNC) data for the scale of UK banking and financial centres cities (*Hubs*), and also the MSCI data[11] on the risk premia and investment yields for UK cities and regions. This allows us to build various gravity models linking local economic prosperity and growth to the presence of, and access to, FSS clusters and financial hubs in the UK,

https://onlinelibrary.wiley.com/doi/10.1111/1475-5890.70002
https://www.productivity.ac.uk/research/is-the-uk-sterling-zone-an-optimal-currency-area-comparisons-with-the-euro-area-and-the-rest-of-europe-using-city-and-regional-investment-data/

[9] https://smartdatafoundry.com

[10] https://lab.productivity.ac.uk/data/productivity-datasets/

[11] Se Part 3 for details.

conditioning on investors' confidence and perceptions. We are also able to undertake similar analyses at the European scale, whereby we are able to benchmark and assess these UK-specific features in the light of international comparator cities, regions and countries.

2.3 The Econometric Framework: Measuring Access to Financial Services

For each local authority in the UK, we construct a measure of financial services access that captures both the size of nearby financial centres and how quickly their influence fades with distance. The intuition is simple: a local authority benefits more from a large financial centre nearby than from a small one far away, and the rate at which distance erodes that benefit is controlled by a bandwidth parameter b. Shortly we will illustrate this decay for three values of b.

Formally, financial services access for local authority i is given as:

$$FS_i = \frac{1}{M_{H_j}} \sum_{h \in H_j} M_h \, e^{-d_{ih}/b}, \qquad \forall \, H_j \in \mathcal{H} \tag{1}$$

where $\mathcal{H}$ is the set of all financial services centres, H_j is the set of local authorities forming centre j, $M_h$is the mass of local authority h within that centre, d_{ih} is the distance between local authority i and the centroid of centre H_j, and b controls how steeply exposure decays with distance. We normalise by the total mass of each centre M_{H_j} so that access is comparable across centres of different sizes.

This overall measure of financial access can then be decomposed into two components, namely: access attributed to London (L_i) and access attributed to regional centres (R_i), by restricting the sum in Equation (1) to the relevant set of centres in each case:

$$L_i = \frac{1}{M_{H_L}} \sum_{h \in H_L} M_h \, e^{-d_{ih}/b}, \qquad H_L \in \mathcal{H} \tag{2}$$

$$R_i = \frac{1}{M_{H_j}} \sum_{h \in H_j} M_h \, e^{-d_{ih}/b}, \qquad \forall \, H_j \in \mathcal{H}, \; H_j \neq H_L \tag{3}$$

where L_i uses only the local authorities forming the Greater London Area, and R_i sums over all remaining centres. From these two components, we construct a London-share variable that captures the degree to which a local authority's financial exposure is oriented towards London rather than regional centres:

$$S_i = \frac{L_i + \varepsilon}{R_i + L_i + 2\varepsilon} \tag{4}$$

A value of S_i close to one indicates that nearly all of a local authority's financial exposure comes from London; a value close to zero indicates it draws primarily on regional centres. To work with a variable that is unbounded and symmetric, we apply a logit transformation:

$$S_i^* = \log\left(\frac{S_i}{1 - S_i}\right) \tag{5}$$

The small constant $\varepsilon = 10^{-6}$ ensures the expression is defined for local authorities with zero London or zero regional exposure, i.e., extreme values in $x \in \{0,1\}$.

2.4 The Baseline Regression

With the financial access and London-share variables in hand, we estimate their association with local economic outcomes using a cross-sectional regression at the local authority level. The outcome variable y_i captures economic performance, and we consider two measures in our baseline analysis: GDP per head and gross value added (GVA) per hour worked. As controls, we include a set of capital endowment variables that capture structural differences across local authorities.[12] Additionally, we include ITL1 region fixed effects to absorb unobserved heterogeneity at the regional level. The baseline specification is:

$$y_i = \beta_0 + \beta_{FS}\, FS_i + \beta_L\, S_i^* + \Gamma^\top X_i + \mathrm{FE}_{\mathrm{ITL1}} + \varepsilon_i \tag{6}$$

The two coefficients of interest are β_{FS} and β_L. The first captures whether greater overall proximity to financial centres is associated with better local economic outcomes. The second captures whether, conditional on total financial exposure, a stronger orientation towards London is associated with a premium above and beyond what regional centres deliver. Together, they allow us to assess not just whether financial geography matters, but whether the spatial distribution of that exposure, i.e., how much of it flows through London versus regional centres, has independent economic consequences.

We estimate Equation (6) both with and without ITL1 region fixed effects. The specification without fixed effects reflects differences across local authorities in both their financial exposure and their broader regional context. The specification with fixed effects isolates variation within ITL1 regions, offering a more conservative test of whether financial access gradients matter over and above regional-level factors.

2.5 Empirical Application: The Data

Our unit of analysis is the 361 local authorities (LAs) in the UK, as defined on 1 April 2023. For each local authority, we measure the intensity of financial services activity using firm-level data obtained from The Data City, covering 967,034 firms classified as operating in financial services.

Defining which firms belong to the financial services sector requires care. A purely mechanical approach based on SIC *Section K: Financial and insurance activities* would be too narrow, as many activities outside this section materially support the functioning of financial centres. At the same time, many broad service codes are not predominantly finance-related in practice. We therefore use a rule-based scoring approach that assigns each SIC code a financial relevance score based on four criteria: the directness of the financial function, sector specificity, transactional proximity, and structural importance to financial operations. The scoring is calibrated with limited expert judgement where the rule-based baseline would otherwise understate specialised finance-facing activities. The objective is a defensible approximation of

[12] We include variables that proxy human, social, natural, and physical capital. Financial and intangible capital are excluded given their strong correlation with economic outcomes, and institutional capital is excluded due to the difficulty of measuring it reliably.

the wider financial services ecosystem that is transparent and replicable. The complete classification is provided in Appendix A.

To measure the size, i.e., the mass, of each financial services centre, we consider three alternative variables: the number of active businesses, the number of employees, and total firm turnover. Using all three allows us to verify that our results are not sensitive to how the intensity of financial activity is measured, as we discuss shortly in the section on robustness checks.

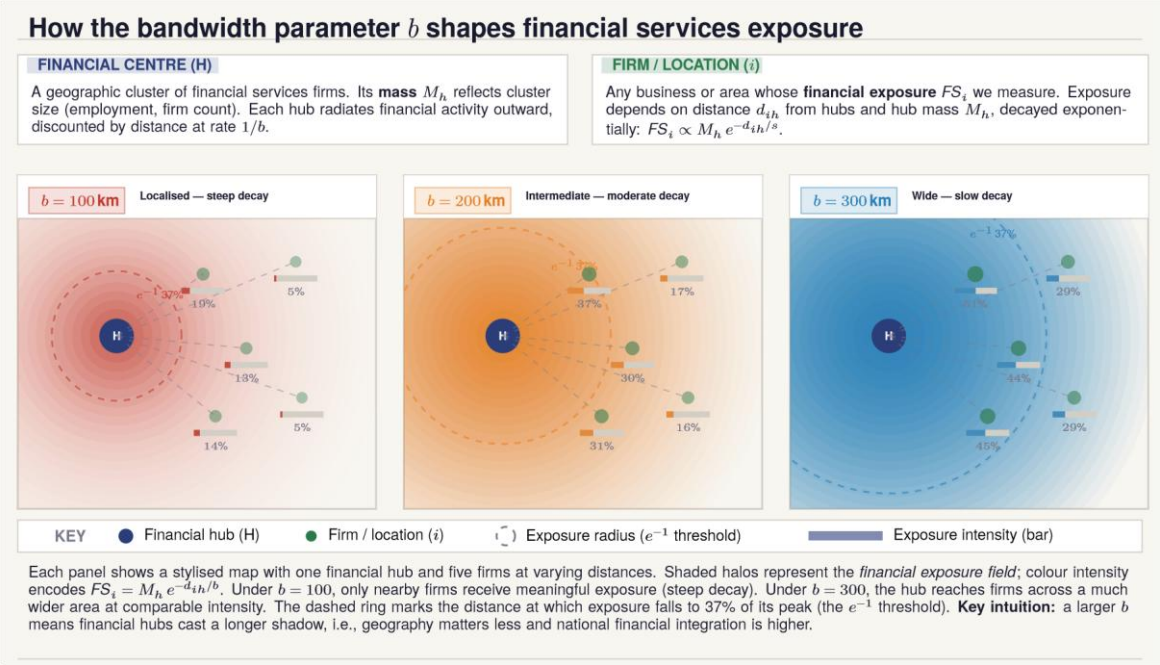


Fig.2.1. The Intuition behind Financial Services Access Variables

2.6 Spatial Data Construction

To calculate distances between local authorities and financial centres, we project local authority boundaries onto the British National Grid (EPSG:27700) and use the centroid of each local authority as its reference point. All distances are measured in kilometres. Financial services centres require a different treatment because they typically span more than one local authority. London is the most obvious example, but other centres also cover multiple contiguous areas. Rather than treating each constituent local authority separately, we represent each centre by a single mass-weighted centroid, where the weights reflect the financial services intensity of each local authority within the centre. This ensures that larger and more active parts of a centre contribute more to its representative location.

Financial services clusters are identified in a fully data-driven way, with no geographic boundaries imposed in advance. For each local authority, we construct a composite index by taking a weighted average of standardised values for business counts, employee count, and firm turnover among financial services firms. We then apply HDBSCAN to this index, which groups local authorities into clusters based on the density of financial activity, without requiring a pre-specified number of clusters or a fixed radius. This yields 14 financial services clusters which we use to construct the access variables from Equations (1), (3) and (5).

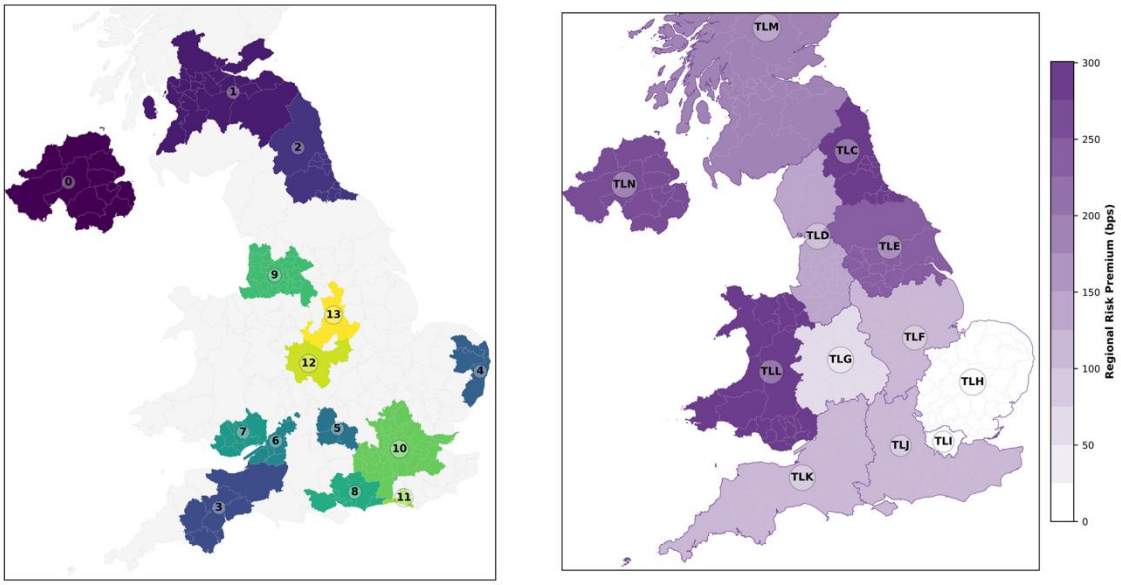


Fig.2.2 (Left) Financial services clusters obtain with HDBSCAN. **(Right)** Regional average risk premium relative to London in basis points (Daams et al. 2025a)

The final component of the spatial framework is the bandwidth parameter b, which controls how quickly financial services exposure fades with distance. A small value of b implies that only nearby centres matter, producing a highly localised measure of exposure. A large value of b implies that even distant centres contribute meaningfully, producing a wider measure of national financial integration. We report results across a range of values of b to ensure our findings are not sensitive to this choice.

2.7 Results

Table 1 reports OLS estimates of Equation (6) for GDP per head and GVA per hour, using business counts as the mass function. We use robust standard errors throughout, and the results are organised around three sets of findings.

2.7.1 *Financial Exposure and the Role of Distance*

The coefficient on total financial access FS_b tells a consistent story about the importance of proximity. Without regional fixed effects, the coefficient is positive and significant only at the shortest bandwidth $(b = 50)$: 0.19for GDP per head and 0.20 for GVA per hour, both significant at the 1 per cent level. As b increases, the coefficient shrinks and turns negative by $b = 150$ and $b = 200$. This pattern reflects the localised nature of agglomeration benefits. Proximity to a financial centre clearly matters, but at wider bandwidths the measure increasingly picks up exposure to distant centres whose influence does not translate into measurable local gains.

	(A) GDP per head								(B) GVA per hour							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	0.19***				0.28***				0.20***				0.38***			
	(0.06)				(0.07)				(0.06)				(0.07)			
FS_{100}		0.06				0.30***				0.01				0.43***		
		(0.07)				(0.09)				(0.07)				(0.09)		
FS_{150}			-0.01				0.27***				-0.08				0.42***	
			(0.07)				(0.10)				(0.07)				(0.09)	
FS_{200}				-0.04				0.24**				-0.11				0.39***
				(0.07)				(0.10)				(0.07)				(0.10)
S^*_{50}	0.18***				0.53**				0.14**				0.56***			
	(0.06)				(0.21)				(0.06)				(0.20)			
S^*_{100}		0.24***				0.30				0.25***				0.43*		
		(0.07)				(0.24)				(0.07)				(0.23)		
S^*_{150}			0.30***				0.28				0.32***				0.45**	
			(0.07)				(0.24)				(0.07)				(0.23)	
S^*_{200}				0.32***				0.29				0.35***				0.48**
				(0.07)				(0.24)				(0.07)				(0.23)
ξ_1	1.85*	1.43	1.36	1.39	3.18***	2.84***	2.56**	2.38**	-0.91	-1.41	-1.45	-1.37	1.04	0.83	0.52	0.30
	(0.97)	(0.97)	(0.97)	(0.96)	(1.03)	(1.05)	(1.05)	(1.04)	(0.97)	(0.97)	(0.96)	(0.95)	(0.97)	(0.98)	(0.98)	(0.97)
ξ_2	2.73***	2.50***	2.47**	2.49***	3.26***	3.12***	3.05***	3.03***	-1.93**	-2.20**	-2.20**	-2.18**	-1.76*	-1.97**	-2.08**	-2.11**
	(0.95)	(0.96)	(0.96)	(0.96)	(0.99)	(1.00)	(1.00)	(1.01)	(0.95)	(0.96)	(0.95)	(0.95)	(0.92)	(0.93)	(0.94)	(0.94)
N	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361
$\bar{R}^2$	0.10	0.08	0.08	0.09	0.17	0.15	0.14	0.13	0.10	0.08	0.09	0.10	0.27	0.26	0.25	0.24
R^2	0.11	0.09	0.09	0.10	0.20	0.18	0.17	0.17	0.11	0.09	0.11	0.11	0.30	0.29	0.28	0.27
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.1: Regression results for Equation (6).

Economic output y_i are GDP per head (Panel (A)) and GVA per hour (Panel (B)). We use business counts of financial services firms as mass function. Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Once ITL1 fixed effects are included, the picture changes. The FS_b coefficients become uniformly positive and precisely estimated across all bandwidth values, ranging from 0.27 to 0.30 for GDP per head and from 0.38 to 0.43 for GVA per hour, all significant at conventional levels. Two features of these within-region estimates are worth noting. First, the coefficients are larger for GVA per hour than for GDP per head, suggesting that financial access is more strongly associated with labour productivity than with income per capita once broader regional differences are held constant. Second, the stability of the coefficients across values of b within the fixed-effects specification implies that the financial exposure gradient matters for local outcomes regardless of the precise bandwidth chosen.

2.7.2 *The London Share and the Spatial Distribution of Exposure*

The London-share variable S_b^* captures something distinct from total financial access. It measures whether a local authority's financial exposure is oriented predominantly towards London or towards regional centres. Its coefficient is positive and significant across all specifications and bandwidth values in both outcome panels, including without fixed effects. This contrasts with FS_b, which loses significance at wider bandwidths in the no-FE case, and it is an important result in its own right.

Even after controlling for total financial access, local authorities with a stronger London orientation are associated with higher GDP per head and GVA per hour. Without fixed effects, the S_b^* coefficient grows with the bandwidth, reaching 0.32 to 0.35 at $b = 200$, significant at the 1 per cent level. As the bandwidth widens, the London-share variable increasingly separates places that are genuinely within London's economic orbit from those that rely primarily on regional centres. With fixed effects, the coefficients are largest at $b = 50$, at 0.53 for GDP per head and 0.56 for GVA per hour, but they lose precision at wider bandwidths and become insignificant by $b = 150$ to $b = 200$. This suggests that the London premium is concentrated at short distances and is largely absorbed by regional level factors at wider spatial scales

2.7.3 *Controls and Model Fit*

The capital endowment controls ξ_1 and ξ_2 behave differently across the two outcomes. For GDP per head, both carry positive and significant coefficients in the fixed-effects specifications, consistent with the role of capital endowments in supporting incomes. For GVA per hour, ξ_2 is negative and significant throughout: areas with large employment bases in lower-productivity activities score higher on this component but show lower hourly productivity, pointing to a composition effect. Model fit improves more substantially with fixed effects for GVA per hour, where R^2 rises from around 0.11 to between 0.27 and 0.30, compared with a rise from 0.11 to 0.20 for GDP per head. This indicates that unobserved regional characteristics account for a larger share of variation in labour productivity than in per capita income.

Taken together, these results speak to two of the channels identified in the literature review. The localised and distance-sensitive pattern of FS_b is consistent with agglomeration effects operating at short range (Channel A). Meanwhile, the persistent and positive S_b^* coefficient points to a London-specific premium that goes beyond total financial access, consistent with London's role as a globally connected dominant hub (Channel C). At the same time, the attenuation of the London premium within fixed-effects specifications at wider bandwidths cautions against overstating how far London's influence diffuses. Much of the apparent premium may reflect the broader advantages of the regions in which London-proximate local authorities are located.

2.8 Economic Growth vs Economic Levels

Baseline results show positive and significant associations between exposure to financial services centres and economic output variables *on levels*. We extend the analysis to study the linkages between economic output *average growth* and financial exposure, and whether the London premium observed at levels remains relevant. To calculate average annual growth rate, we take the average of first log-difference on annual values for the economic output variables in our study, i.e., GDP per head, GVA per hour and GVA per filled job, for the complete sample period covering 2002 to 2023. We discard growth rates from years 2019-2020, 2020-2021 and 2021-2022 to remove the volatility in official national statistics during Covid-19. Table 2.2 reports estimates of Equation (6) where the dependent variable is the standardised average growth rate of each economic outcome. The results are substantially weaker than the levels estimates, and this is to be somewhat expected in that a cross-sectional design is more suited to identifying persistent structural associations across local authorities, not year to-year fluctuations in economic performance.

Two patterns stand out. First, the positive association between financial services exposure FS_i and economic outcomes found in levels almost entirely disappears in growth. A small positive signal survives for GDP per head growth, but only at narrow bandwidths ($b < 50$ km) and only once ITL1 fixed effects are included; it is absent for GVA per hour and GVA per job growth, and is not consistent across mass definitions. This confirms that proximity to financial centres is a correlate of where prosperity is structurally concentrated, rather than a predictor of where growth is currently faster.

Second, the London-share variable S_i^* loses its positive association entirely. Without fixed effects, the estimates are close to zero or mildly negative; with fixed effects, they remain negative and imprecisely estimated, particularly for GVA per hour growth. This stands in direct

contrast to the levels results, where S_i^* was positive and significant throughout. The contrast is itself informative: London orientation marks a structural feature of local economic performance, one that is visible in the cross-section but does not translate into a detectable dynamic growth advantage.

Taken together, these results reinforce the interpretation of the main findings as reflecting long-run spatial equilibrium rather than a causal growth mechanism, and caution against reading the levels associations as implying that changes in financial geography would produce proportionate changes in local growth rates.

		GDP per head growth						*GVA per hour growth*						*GVA per job growth*					
		No FE			ITL1 FE			No FE			ITL1 FE			No FE			ITL1 FE		
		BC	EMP	TO	BC	EMP	TO	BC	EMP	TO	BC	EMP	TO	BC	EMP	TO	BC	EMP	TO
FS_b	$b = 10$	0.08*	0.08*	0.07	0.16***	0.17***	0.14**	0.06	0.08	0.09	0.04	0.06	0.08	−0.00	0.02	0.02	0.01	0.04	0.04
		(0.04)	(0.04)	(0.04)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
	$b = 50$	0.07	0.07	0.07	0.16**	0.16***	0.16***	0.08	0.08	0.09	0.17**	0.17**	0.18**	−0.02	−0.01	−0.01	0.10	0.11	0.10
		(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.08)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)
S_b^*	$b = 10$	−0.00	0.00	0.01	0.13	0.15	0.12	−0.04	−0.03	−0.02	−0.21	−0.17	−0.15	0.03	0.03	0.04	−0.07	−0.03	−0.01
		(0.04)	(0.04)	(0.05)	(0.10)	(0.10)	(0.10)	(0.06)	(0.06)	(0.06)	(0.13)	(0.13)	(0.13)	(0.05)	(0.05)	(0.05)	(0.11)	(0.11)	(0.11)
	$b = 50$	−0.09	−0.09*	−0.08*	0.04	0.06	0.06	−0.09	−0.09	−0.09	−0.18	−0.16	−0.15	−0.06	−0.07	−0.06	−0.07	−0.06	−0.04
		(0.05)	(0.05)	(0.05)	(0.19)	(0.19)	(0.19)	(0.07)	(0.07)	(0.07)	(0.24)	(0.24)	(0.24)	(0.06)	(0.06)	(0.06)	(0.21)	(0.21)	(0.21)
$\bar{R}^2$	$b = 10$	0.01	0.01	0.01	0.03	0.03	0.03	0.01	0.02	0.02	0.03	0.03	0.04	0.03	0.03	0.03	0.06	0.06	0.06
	$b = 50$	0.01	0.01	0.01	0.03	0.03	0.03	0.01	0.01	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.07	0.07	0.07
N		361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361

Table 2.2: Growth regression results: summary across outcome variables and mass definitions.

Each cell reports the OLS coefficient and robust standard error (in parentheses) from a separate estimation of Eq. (6) with the growth rate of the indicated outcome as dependent variable. Growth rates are standardised to have zero mean and unit standard deviation, ensuring comparability with the levels results in Table 1. BC = business count; EMP = employee count; TO = firm turnover. Bandwidth values shown are $b \in \{10,50\}$ km. ITL1 fixed effects are included where indicated. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.9 Robustness Checks

The baseline results in above rest on three methodological choices: the definition of financial services centres, the variable used to measure the size of those centres, and the bandwidth parameter b that governs how exposure decays with distance. This section examines each in turn, holding the other two fixed at their baseline values, to assess whether the main findings are sensitive to any one of these choices.

2.9.1 *Definition of Financial Cluster*

The main results in section 2.7 use clusters identified through HDBSCAN, a data-driven approach that imposes no geographic prior. As an alternative, we use financial centres defined by the Global Network Connectivity index ranking of banking centres (Derudder and Taylor 2018; Derudder et al. 2024), which ranks banking and financial services centres across Europe based on a broader set of institutional and market indicators. For the UK, this yields 20 metropolitan areas that rank highly as financial and banking hubs. Because this definition draws on informed, multidimensional criteria rather than on the geographic density of firms alone, it provides a useful comparison point for assessing how sensitive our results are to how financial centres are identified.

	(A) GDP per head								(B) GVA per hour							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	0.01				0.23***				-0.03				0.36***			
	(0.05)				(0.08)				(0.05)				(0.07)			
FS_{100}		-0.02				0.22***				-0.06				0.35***		
		(0.05)				(0.08)				(0.05)				(0.08)		
FS_{150}			-0.03				0.19**				-0.07				0.33***	
			(0.05)				(0.08)				(0.05)				(0.08)	
FS_{200}				-0.04				0.18**				-0.08				0.32***
				(0.05)				(0.08)				(0.05)				(0.08)
S^*_{50}	0.29***				0.49**				0.26***				0.62***			
	(0.05)				(0.22)				(0.05)				(0.21)			
S^*_{100}		0.28***				0.24				0.27***				0.47**		
		(0.05)				(0.23)				(0.05)				(0.21)		
S^*_{150}			0.29***				0.21				0.28***				0.47**	
			(0.05)				(0.23)				(0.05)				(0.22)	
S^*_{200}				0.29***				0.21				0.29***				0.48**
				(0.05)				(0.24)				(0.05)				(0.22)
ξ_1	1.37	1.30	1.34	1.39	2.73***	2.54**	2.40**	2.30**	-1.43	-1.48	-1.41	-1.36	0.73	0.53	0.36	0.24
	(0.97)	(0.97)	(0.96)	(0.96)	(1.05)	(1.06)	(1.05)	(1.05)	(0.96)	(0.96)	(0.96)	(0.96)	(0.98)	(0.99)	(0.99)	(0.98)
ξ_2	2.45**	2.52***	2.58***	2.62***	3.20***	3.16***	3.10***	3.07***	-2.23**	-2.12**	-2.05**	-2.00**	-1.79*	-1.91**	-2.01**	-2.05**
	(0.96)	(0.96)	(0.96)	(0.96)	(1.01)	(1.01)	(1.01)	(1.01)	(0.96)	(0.96)	(0.96)	(0.95)	(0.94)	(0.94)	(0.94)	(0.95)
N	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361
$\bar{R}^2$	0.08	0.08	0.08	0.09	0.14	0.13	0.13	0.13	0.09	0.09	0.10	0.10	0.25	0.24	0.24	0.23
R^2	0.09	0.09	0.09	0.10	0.18	0.17	0.16	0.16	0.10	0.10	0.11	0.11	0.28	0.27	0.27	0.26
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.3: Regression results for Equation (6) using Global Banking Index definition of financial services centres.

We use business counts of financial services firms as mass function. Economic output y_i are GDP per head (Panel (A)) and GVA per hour (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 2.3 reports the results. Three differences stand out relative to the baseline. First, the FS_b coefficient without fixed effects becomes insignificant at all bandwidth values; for GDP per head, FS_{50} falls from 0.19 to 0.01. This suggests that the alternative centre definition is less spatially precise in capturing proximity effects, likely because hub boundaries defined by the index do not align as closely with the actual geographic density of financial activity. Second, the London-share coefficient S^*_b without fixed effects is larger under the alternative definition:

S^*_{50} rises to 0.29 compared with 0.18 in Table 2.1, suggesting that the London signal is more pronounced when financial centres are drawn more broadly. Third, and most importantly, the FS_b coefficient with ITL1 fixed effects remains positive and precisely estimated throughout, consistent with the baseline results. The within-region financial exposure gradient is robust to the choice of centre definition.

2.9.2 *Sensitivity to Mass Choice*

The baseline results use the count of active financial services businesses as the measure of centre size, i.e., the mass function M_h in Eq. (1). While business counts are a natural starting point, they do not capture other economically relevant dimensions of financial activity, such as employment or revenue. We therefore re-estimate Eq. (6) using two alternative mass definitions: employee count and firm turnover.

	(A) GDP per head								(B) GVA per hour							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	0.18***				0.28***				0.20***				0.38***			
	(0.06)				(0.07)				(0.06)				(0.06)			
FS_{100}		0.05				0.29***				0.01				0.42***		
		(0.07)				(0.09)				(0.07)				(0.09)		
FS_{150}			-0.02				0.25**				-0.08				0.41***	
			(0.07)				(0.10)				(0.07)				(0.09)	
FS_{200}				-0.05				0.22**				-0.12*				0.38***
				(0.07)				(0.10)				(0.07)				(0.09)
S^*_{50}	0.19***				0.57***				0.14**				0.60***			
	(0.06)				(0.21)				(0.06)				(0.19)			
S^*_{100}		0.25***				0.35				0.25***				0.49**		
		(0.07)				(0.24)				(0.07)				(0.23)		
S^*_{150}			0.31***				0.35				0.33***				0.52**	
			(0.07)				(0.24)				(0.07)				(0.23)	
S^*_{200}				0.33***				0.39				0.36***				0.56**
				(0.07)				(0.24)				(0.07)				(0.23)
ξ_1	1.83*	1.43	1.36	1.40	3.20***	2.84***	2.56**	2.36**	-0.92	-1.41	-1.44	-1.37	1.07	0.84	0.53	0.31
	(0.96)	(0.97)	(0.96)	(0.96)	(1.03)	(1.05)	(1.04)	(1.04)	(0.96)	(0.97)	(0.96)	(0.95)	(0.96)	(0.97)	(0.97)	(0.97)
ξ_2	2.76***	2.51***	2.49***	2.50***	3.30***	3.14***	3.05***	3.02***	-1.90**	-2.19**	-2.19**	-2.17**	-1.72*	-1.95**	-2.06**	-2.09**
	(0.96)	(0.96)	(0.96)	(0.96)	(0.99)	(1.00)	(1.00)	(1.01)	(0.95)	(0.96)	(0.95)	(0.95)	(0.92)	(0.93)	(0.94)	(0.94)
N	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361
$\bar{R}^2$	0.10	0.08	0.09	0.09	0.17	0.15	0.14	0.13	0.10	0.09	0.10	0.11	0.28	0.26	0.25	0.24
R^2	0.11	0.09	0.10	0.10	0.20	0.18	0.17	0.17	0.11	0.10	0.11	0.12	0.31	0.29	0.28	0.27
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.4: Regression results for Equation (6) using employee count as mass function.

Economic output y_i are GDP per head (Panel (A)) and GVA per hour (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Tables 2.4 and 2.5 report the results. The pattern is reassuring. Under both alternative definitions, FS_b with fixed effects remains positive and significant across all bandwidth values, and the London-share coefficient S^*_b without fixed effects remains positive and precisely estimated, with a premium at short bandwidths that fades at wider spatial scales. For example, with employee count as mass, S^*_{50} is 0.57 for GDP per head and 0.60 for GVA per hour, both significant at the 1 per cent level, closely mirroring the baseline estimates in Table 2.1. Results using firm turnover are similar, with only minor differences in the magnitude of FS_b coefficients. Taken together, the main findings are stable across mass definitions.

	(A) GDP per head								(B) GVA per hour							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	0.18***				0.28***				0.19***				0.38***			
	(0.06)				(0.07)				(0.06)				(0.06)			
FS_{100}		0.06				0.29***				0.01				0.42***		
		(0.07)				(0.09)				(0.07)				(0.08)		
FS_{150}			-0.02				0.25**				-0.09				0.40***	
			(0.07)				(0.10)				(0.07)				(0.09)	
FS_{200}				-0.06				0.20**				-0.12*				0.37***
				(0.07)				(0.10)				(0.07)				(0.09)
S^*_{50}	0.20***				0.56***				0.15***				0.60***			
	(0.06)				(0.21)				(0.06)				(0.20)			
S^*_{100}		0.25***				0.33				0.26***				0.50**		
		(0.07)				(0.24)				(0.07)				(0.23)		
S^*_{150}			0.31***				0.36				0.33***				0.53**	
			(0.07)				(0.25)				(0.07)				(0.23)	
S^*_{200}				0.34***				0.43*				0.36***				0.59***
				(0.07)				(0.24)				(0.07)				(0.23)
ξ_1	1.86*	1.44	1.37	1.40	3.22***	2.86***	2.56**	2.34**	-0.90	-1.41	-1.45	-1.37	1.12	0.87	0.55	0.31
	(0.97)	(0.97)	(0.96)	(0.96)	(1.04)	(1.05)	(1.05)	(1.04)	(0.97)	(0.97)	(0.96)	(0.95)	(0.96)	(0.98)	(0.98)	(0.97)
ξ_2	2.80***	2.54***	2.51***	2.52***	3.34***	3.16***	3.07***	3.03***	-1.86*	-2.17**	-2.17**	-2.16**	-1.66*	-1.91**	-2.03**	-2.07**
	(0.96)	(0.96)	(0.96)	(0.96)	(0.99)	(1.00)	(1.00)	(1.01)	(0.96)	(0.96)	(0.95)	(0.95)	(0.92)	(0.93)	(0.93)	(0.94)
N	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361	361
$\bar{R}^2$	0.10	0.08	0.09	0.09	0.17	0.15	0.14	0.13	0.10	0.09	0.10	0.11	0.28	0.26	0.25	0.24
R^2	0.11	0.09	0.10	0.10	0.20	0.18	0.17	0.17	0.11	0.10	0.11	0.12	0.31	0.29	0.28	0.27
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.5: Regression results for Equation (6) using firm turnover as mass function.

Economic output y_i are GDP per head (Panel (A)) and GVA per hour (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

2.9.3 *Sensitivity to Radius Choice*

The financial access measure in Eq. (1) depends on the bandwidth parameter b which controls how steeply exposure decays with distance. The baseline results use four values of b from 50 to 200 km. To assess sensitivity more thoroughly, Fig.2.3 plots the estimatedFS_b and S_b^* coefficients across a finer grid of bandwidth values, from 10 to 250 km, separately for the specifications with and without ITL1 fixed effects.

Two features of the figure are worth highlighting. First, without fixed effects, the FS_bcoefficient declines steadily and turns negative as $b$increases, while S_b^*dips at intermediate values before recovering at wider bandwidths. This confirms that the no-FE estimates are sensitive to the bandwidth choice, reflecting the confounding role of regional location. Second, with fixed effects, both coefficients are stable across a wide range of bandwidth values, with FS_bremaining positive throughout and S_b^* declining gradually but staying above zero.

This stability reinforces the conclusion that the within-region financial exposure gradient is a robust feature of the data, not an artefact of any particular choice of b.

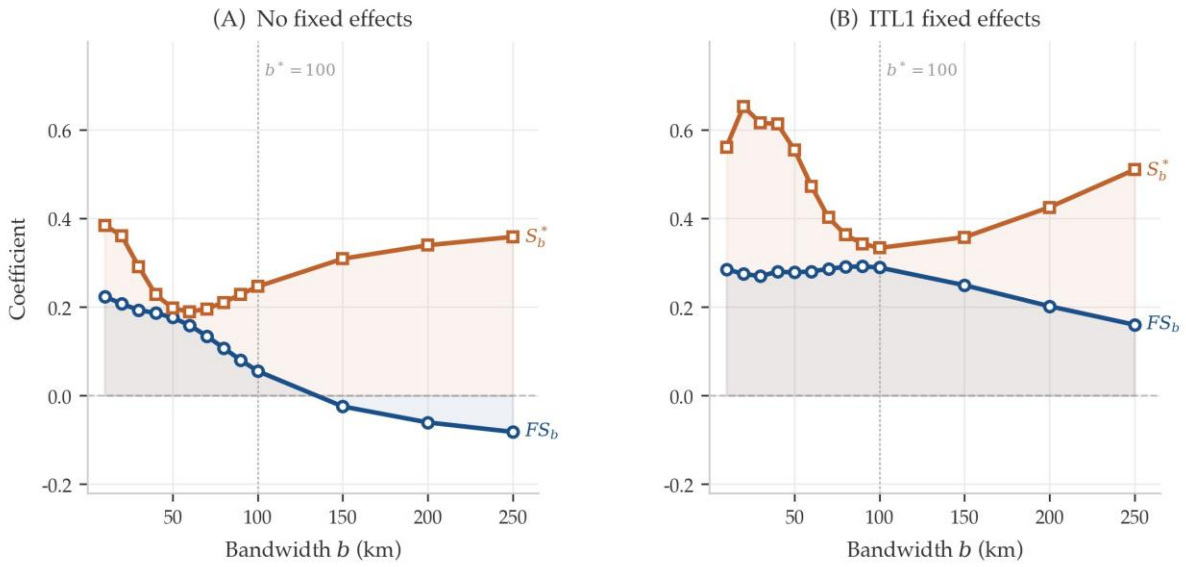


Fig.2.3: Financial services access estimates across different bandwidth levels.

Each point is an OLS coefficient from Eq. (6) at bandwidth $_b$. Panel (A) shows estimates without fixed effects; Panel (B) shows estimates conditional on ITL1 region fixed effects. We use business count for mass M_h and clusters obtained through HDBSCAN as shown in Section 3.2. Dashed vertical line marks $b = 100$ km (baseline).

2.9.4 *Firm-Level Financing Proxies*

As an additional robustness exercise, we examine whether the spatial structure of financial services exposure is associated not only with local output levels, but also with firm-level financing proxies aggregated from Smart Data Foundry (SDF) data. The motivation for this is straightforward. If proximity to financial hubs, and especially a stronger orientation towards London, reflects better access to finance, then this may also be visible in balance-sheet and financing indicators, not only in GDP per head or GVA per hour.

The financial variables described in Table A2.2 in the Appendix, are constructed from firm-level accounting data and aggregated for the purposes of this research to the local-authority level. All of the data is pseudo-anonymised and collected from SAGE and stewarded via a secure partnership with SDF. In principle, they provide a useful complementary lens on financing conditions. In practice, however, these measures should be interpreted cautiously. Several variables in the broader SDF extract, including: int_burden_ebitda, int_burden_revenue, capex_intensity, capex_revenue, equity_ratio, leverage, trade_credit_reliance, and wc_gap, all appear to contain many zero values that are more plausibly driven by missing underlying observations than by true economic zeros. This creates a non-trivial measurement problem. Accordingly, the results below are best read as indicative rather than decisive.

For the cross-sectional analysis, we use 2023 to remain consistent with the rest of the tables in the main document. Here, we fit the model from equation (6) on the main document, and we change the y_i outcome variable according to the financial variables at our disposal.

	(A) Leverage								(B) Trade credit reliance							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	0.06				0.09				0.06				0.15			
	(0.09)				(0.10)				(0.09)				(0.11)			
FS_{100}		0.12				0.17				0.01				0.11		
		(0.12)				(0.14)				(0.12)				(0.15)		
FS_{150}			0.16				0.22				0.01				0.11	
			(0.14)				(0.17)				(0.14)				(0.17)	
FS_{200}				0.17				0.24				0.01				0.12
				(0.15)				(0.19)				(0.16)				(0.19)
S^*_{50}	0.09				0.09				-0.06				0.38			
	(0.11)				(0.27)				(0.12)				(0.27)			
S^*_{100}		0.07				-0.01				-0.05				0.41		
		(0.11)				(0.28)				(0.11)				(0.29)		
S^*_{150}			0.06				-0.03				-0.05				0.42	
			(0.11)				(0.28)				(0.11)				(0.28)	
S^*_{200}				0.06				-0.03				-0.06				0.41
				(0.10)				(0.28)				(0.10)				(0.28)
ξ_1	5.58***	5.70***	5.70***	5.68***	5.16***	5.37***	5.41***	5.42***	1.90	1.66	1.62	1.63	1.47	1.08	0.97	0.94
	(1.95)	(1.95)	(1.94)	(1.93)	(1.98)	(1.99)	(1.99)	(1.99)	(1.99)	(1.99)	(1.98)	(1.97)	(1.99)	(2.01)	(2.01)	(2.01)
ξ_2	0.69	0.75	0.70	0.66	0.41	0.51	0.50	0.48	-1.06	-1.38	-1.42	-1.42	-1.32	-1.77	-1.86	-1.88
	(1.83)	(1.79)	(1.77)	(1.76)	(1.86)	(1.84)	(1.83)	(1.82)	(1.86)	(1.82)	(1.80)	(1.79)	(1.86)	(1.85)	(1.84)	(1.84)
N	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
$\bar{R}^2$	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	-0.01	-0.01	-0.01	-0.01	0.02	0.02	0.02	0.02
R^2	0.04	0.05	0.05	0.05	0.08	0.08	0.08	0.08	0.01	0.01	0.01	0.01	0.07	0.07	0.07	0.07
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.6 Regression results for Equation (6).

Economic output y_i are the firm leverage (Panel (A)) and trade credit reliance (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(A) Interest burden / EBITDA								(B) Interest burden / revenue							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	-0.01				-0.08				-0.05				-0.13			
	(0.09)				(0.10)				(0.08)				(0.09)			
FS_{100}		-0.04				-0.15				-0.19*				-0.22*		
		(0.12)				(0.14)				(0.11)				(0.12)		
FS_{150}			-0.08				-0.22				-0.31**				-0.32**	
			(0.14)				(0.16)				(0.13)				(0.15)	
FS_{200}				-0.11				-0.27				-0.38***				-0.39**
				(0.15)				(0.18)				(0.14)				(0.16)
S^*_{50}	-0.40***				-0.83***				-0.61***				-1.43***			
	(0.11)				(0.25)				(0.11)				(0.23)			
S^*_{100}		-0.37***				-0.80***				-0.53***				-1.43***		
		(0.11)				(0.27)				(0.10)				(0.25)		
S^*_{150}			-0.35***				-0.76***				-0.48***				-1.38***	
			(0.10)				(0.27)				(0.10)				(0.24)	
S^*_{200}				-0.33***				-0.73***				-0.46***				-1.35***
				(0.10)				(0.26)				(0.09)				(0.24)
ξ_1	2.43	2.39	2.35	2.33	2.63	2.65	2.62	2.60	-1.19	-1.50	-1.64	-1.70	-0.65	-0.51	-0.52	-0.54
	(1.88)	(1.89)	(1.88)	(1.88)	(1.88)	(1.89)	(1.90)	(1.90)	(1.80)	(1.80)	(1.80)	(1.79)	(1.72)	(1.74)	(1.74)	(1.74)
ξ_2	1.48	1.35	1.28	1.24	1.54	1.51	1.47	1.45	3.37**	2.97*	2.85*	2.81*	4.19**	4.23***	4.18***	4.14***
	(1.77)	(1.73)	(1.71)	(1.71)	(1.76)	(1.75)	(1.74)	(1.74)	(1.68)	(1.65)	(1.64)	(1.63)	(1.62)	(1.60)	(1.59)	(1.59)
N	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
$\bar{R}^2$	0.09	0.09	0.09	0.08	0.12	0.12	0.12	0.12	0.17	0.17	0.17	0.17	0.27	0.27	0.27	0.26
R^2	0.11	0.10	0.10	0.10	0.17	0.17	0.17	0.17	0.19	0.18	0.19	0.19	0.30	0.30	0.30	0.30
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.7 Regression results for Equation (6).

Economic output y_i are the interest burden relative to EBITDA (Panel (A)) and interest burden relative to revenue (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

	(A) Equity ratio								(B) Negative equity							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FS_{50}	-0.08				-0.19*				0.07				-0.02			
	(0.09)				(0.10)				(0.09)				(0.10)			
FS_{100}		-0.30**				-0.35***				0.05				0.00		
		(0.12)				(0.13)				(0.12)				(0.14)		
FS_{150}			-0.43***				-0.48***				0.02				-0.00	
			(0.14)				(0.16)				(0.14)				(0.16)	
FS_{200}				-0.51***				-0.56***				0.00				-0.01
				(0.15)				(0.17)				(0.15)				(0.18)
S^*_{50}	-0.09				-0.80***				0.35***				-0.19			
	(0.12)				(0.25)				(0.11)				(0.26)			
S^*_{100}		0.00				-0.65**				0.35***				-0.23		
		(0.11)				(0.26)				(0.11)				(0.27)		
S^*_{150}			0.03				-0.57**				0.35***				-0.23	
			(0.10)				(0.26)				(0.10)				(0.27)	
S^*_{200}				0.03				-0.53**				0.35***				-0.22
				(0.10)				(0.25)				(0.10)				(0.26)
ξ_1	-0.68	-1.26	-1.39	-1.42	0.52	0.28	0.18	0.13	-0.74	-0.94	-1.04	-1.09	-0.32	-0.17	-0.14	-0.14
	(1.98)	(1.96)	(1.94)	(1.92)	(1.82)	(1.83)	(1.82)	(1.82)	(1.91)	(1.90)	(1.89)	(1.89)	(1.88)	(1.89)	(1.89)	(1.89)
ξ_2	-2.44	-2.98*	-3.01*	-2.98*	-0.82	-0.96	-1.00	-1.02	-1.96	-2.22	-2.31	-2.34	-1.28	-1.14	-1.14	-1.15
	(1.85)	(1.80)	(1.76)	(1.75)	(1.70)	(1.69)	(1.68)	(1.67)	(1.79)	(1.75)	(1.73)	(1.72)	(1.77)	(1.75)	(1.74)	(1.74)
N	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213	213
$\bar{R}^2$	-0.01	0.01	0.03	0.04	0.18	0.19	0.19	0.19	0.07	0.07	0.07	0.08	0.12	0.12	0.12	0.12
R^2	0.01	0.03	0.05	0.06	0.22	0.23	0.23	0.23	0.09	0.09	0.09	0.09	0.17	0.17	0.17	0.17
FE	N	N	N	N	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y

Table 2.8 Regression results for Equation (6).

Economic output y_i are the equity ratio (Panel (A)) and negative equity (Panel (B)). Standard errors are displayed in parentheses. Columns (1)–(4) show results with no fixed effects; (5)–(8) with ITL1 fixed effects. Financial Services variables are calculated as shown in Equations (1) and (5), with bandwidth values $b \in \{50,100,150,200\}$ km. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

As we see in Table 2.6, when aggregated at the level of local authorities, neither the *Leverage* nor the *Trade Credit Reliance* of the firm appear to have any relationships with any of the spatial and distance variables. In contrast, however, in Table 2.7 we see that the interest burden relative to EBITDA[13] is independent of bandwidth distance, while it is negatively related to the degree of London exposure. For the interest burden relative to revenue, in seven out of the eight model specifications this is always negative with respect to bandwidth distance. At the same time, as with the interest burden relative to EBITDA, the interest burden relative to revenue is also negatively related to the degree of London exposure. This suggests that the both asset values and revenues are correlated with greater exposure to London, thereby reducing the interest burden for firms and localities relatively more exposed to London.

In Table 2,8, we see that firm equity ratios are negatively related to all bandwidth distances, with or without local fixed effects, while firm equity ratios are also negatively related the level of financial exposure to London, but only in the fixed effects specifications. As such, firms located in areas at a greater distance from financial centres tend to be financially structured in a more risky manner than those in closer proximity to financial centres. Finally, negative equity appears to be unrelated to bandwidth distance, and positively related to the level of London exposure, although this finding disappears with the fixed effects specification.

2.10. Conclusions

This analysis examines whether proximity to financial services centres within the UK is associated with better local economic outcomes across UK local authorities, and whether it

[13] Earnings before taxes, interest, taxes, depreciation and amortisation

matters whether that exposure flows through London or through regional hubs. To do so, we construct a gravity-based measure of financial services access for each of the 361 local authorities in the UK, decompose it into London and regional components, and estimate their association with GDP per head and GVA per hour worked.

The results point to four conclusions. First, proximity to financial centres is associated with higher local productivity, but this effect is geographically concentrated. The association between total financial exposure and economic outcomes is positive and significant only at short distances, and fades as the bandwidth widens. This is consistent with the notion of agglomeration effects that operate locally rather than diffusing broadly across space.

Second, the spatial distribution of financial exposure matters, not just its overall level. Even after controlling for total financial access, local authorities whose exposure is more strongly oriented towards London are associated with higher GDP per head and GVA per hour. This London premium is robust across specifications, outcome variables, and mass definitions, though it is concentrated at short distances and is largely absorbed by regional fixed effects at wider spatial scales.

Third, the within-region financial exposure gradient is a robust feature of the data. Once regional heterogeneity is held constant through ITL1 fixed effects, the association between financial access and economic outcomes is positive, stable, and precisely estimated across all bandwidth values and robustness checks. This suggests that the financial geography of a region, i.e., how financial activity is distributed across local authorities within it, has independent economic consequences that go beyond what broad regional characteristics can explain.

Fourth, the firm-level financial data tentatively suggests that financial vulnerability is also related to the geographic distance of the area from financial centres. Although this conclusion can only be tentative at this stage, as we will see in the next part of this research, there are other very strong grounds for supporting this conclusion.

Taken together, these findings are consistent with two of the FSS-growth channels identified earlier, namely the localised agglomeration effects (Channel A) and the persistent London premium (Channel C). The localised agglomeration effects (Channel A) suggests that financial centre proximity in the UK raises productivity through clustering and knowledge spillovers, but only for nearby areas. Meanwhile, the persistent London premium (Channel C) points to a connectivity advantage associated with the dominant hub that regional centres do not fully replicate. At the same time, the results do not resolve the question of causality. Financial activity and economic performance are jointly determined, and the cross-sectional design of this study cannot rule out that productive places attract financial services rather than the reverse.

For policy, the findings reinforce the case for examining the spatial distribution of financial services activity alongside its aggregate level. The evidence is consistent with the proposition that strengthening regional financial centres could deliver local productivity gains, particularly if doing so reduces the distance between local authorities and financially active clusters. Whether such gains would be additional to, or partially substituted for, London's contribution remains an open question that warrants further investigation. In order to discuss these issues we explore European-wide cross-country and multi-regional comparisons and insights from a broader set of alternative institutional and geographical set-ups. These are the

issues to which we now turn to in the following part of this analysis, drawing on European-wide evidence.

Appendix 2: Data and Variable Definitions and Classifications

The following table presents the Standard Industrial Classification (SIC) codes used in this study, along with their sector category, tier classification, and financial relevance score.

Table A2.1 SIC Code Classification by Tier and Financial Relevance

SIC	Description	Section	Tier	Score
Section K — Financial & Insurance				
64110	Central banking	K	Tier 1 – Core Financial Services	10
64191	Banks	K	Tier 1 – Core Financial Services	10
64192	Building societies	K	Tier 1 – Core Financial Services	10
64205	Activities of financial services holding companies	K	Tier 1 – Core Financial Services	9
64209	Activities of other holding companies n.e.c.	K	Tier 3 – Indirect Support	6
64301	Activities of investment trusts	K	Tier 1 – Core Financial Services	10

Continued on next page

Table 6 – *continued from previous page*

SIC	Description	Section	Tier	Score
64302	Activities of unit trusts	K	Tier 1 – Core Financial Services	10
64303	Activities of venture and development capital companies	K	Tier 1 – Core Financial Services	10
64304	Activities of open-ended investment companies	K	Tier 1 – Core Financial Services	10
64305	Activities of property unit trusts	K	Tier 1 – Core Financial Services	9
64306	Activities of real estate investment trusts	K	Tier 1 – Core Financial Services	9
64910	Financial leasing	K	Tier 1 – Core Financial Services	9
64921	Credit granting by non-deposit taking finance houses	K	Tier 1 – Core Financial Services	10
64922	Activities of mortgage finance companies	K	Tier 1 – Core Financial Services	10
64929	Other credit granting n.e.c.	K	Tier 1 – Core Financial Services	9
64991	Security dealing on own account	K	Tier 1 – Core Financial Services	10
64992	Factoring	K	Tier 1 – Core Financial Services	9
64999	Financial intermediation n.e.c.	K	Tier 1 – Core Financial Services	9
65110	Life insurance	K	Tier 1 – Core Financial Services	10
65120	Non-life insurance	K	Tier 1 – Core Financial Services	10
65201	Life reinsurance	K	Tier 1 – Core Financial Services	10
65202	Non-life reinsurance	K	Tier 1 – Core Financial Services	10
65300	Pension funding	K	Tier 1 – Core Financial Services	10
66110	Administration of financial markets	K	Tier 1 – Core Financial Services	10
66120	Security and commodity contracts dealing activities	K	Tier 1 – Core Financial Services	10
66190	Activities auxiliary to financial intermediation n.e.c.	K	Tier 2 – Direct Financial Support	8
66210	Risk and damage evaluation	K	Tier 2 – Direct Financial Support	8
66220	Activities of insurance agents and brokers	K	Tier 1 – Core Financial Services	9
66290	Other activities auxiliary to insurance and pension funding	K	Tier 2 – Direct Financial Support	8
66300	Fund management activities	K	Tier 1 – Core Financial Services	10
Section J — Information & Communication				
62012	Business and domestic software development	J	Tier 3 – Indirect Support	5
62020	Information technology consultancy activities	J	Tier 3 – Indirect Support	5
62090	Other information technology service activities	J	Tier 3 – Indirect Support	5
63110	Data processing, hosting and related activities	J	Tier 2 – Direct Financial Support	7
63120	Web portals	J	Tier 3 – Indirect Support	4
Section M — Professional Services				
69101	Barristers at law	M	Tier 3 – Indirect Support	6
69102	Solicitors	M	Tier 3 – Indirect Support	6

69109	Activities of patent and copyright agents; other legal activities n.e.c.	M	Tier 3 – Indirect Support	5
69201	Accounting and auditing activities	M	Tier 2 – Direct Financial Support	8
69202	Bookkeeping activities	M	Tier 3 – Indirect Support	5
69203	Tax consultancy	M	Tier 2 – Direct Financial Support	7
70100	Activities of head offices	M	Tier 2 – Direct Financial Support	7
70221	Financial management	M	Tier 2 – Direct Financial Support	8
Section L — Real Estate				
68100	Buying and selling of own real estate	L	Tier 3 – Indirect Support	5
68209	Other letting and operating of own or leased real estate	L	Tier 3 – Indirect Support	5
68320	Management of real estate on a fee or contract basis	L	Tier 3 – Indirect Support	6
Section N — Administrative Services				
82110	Combined office administrative service activities	N	Tier 3 – Indirect Support	4
82200	Activities of call centres	N	Tier 3 – Indirect Support	4
82990	Other business support service activities n.e.c.	N	Tier 3 – Indirect Support	4
Section S — Other Services				

Continued on next page

Table 6 – *continued from previous page*

SIC	Description	Section	Tier	Score
94110	Activities of business and employers membership organisations	S	Tier 3 – Indirect Support	5
Section C — Manufacturing				
26200	Manufacture of computers and peripheral equipment	C	Tier 3 – Indirect Support	3

Notes: The financial relevance score ranges from 1 (lowest) to 10 (highest). Tier 1 denotes core financial services; Tier 2 denotes activities providing direct financial support; Tier 3 denotes activities providing indirect support to the financial sector.

Table A2.2 Constructed Firm-Level and Local-Authority Financial Variables

Constructed variable	Raw source variable(s)	Raw definition(s) from source	Firm-level construction	Local-authority aggregation	Interpretation
Share of borrowing firms	`bank_charge_interest_paid`	Total value of money the business has paid in bank charges and interest	$1(\texttt{bank\_charge\_interest\_paid} > 0)$	Share	Proxy for active use of formal borrowing
Interest burden	`bank_charge_interest_paid`, `revenue`	Bank charges and interest paid; total value of revenue gained by the business	`bank_charge_interest_paid/revenue`	Median	Debt-servicing burden relative to scale
Capital expenditure intensity	`capex`, `total_assets`	Total value of funds used to acquire, upgrade, or maintain physical assets; total value of assets owned by the business	`capex/total_assets`	Median	Proxy for investment capacity and ability to finance asset growth
Share of negative-equity firms	`net_asset_position`	Amount that the business' assets exceed its liabilities by	$1(\texttt{net\_asset\_position} \leq 0)$	Share	Indicator of financial fragility and impaired borrowing capacity
Equity ratio	`net_asset_position`, `total_assets`	Net asset position; total assets	`net_asset_position/total_assets`	Median	Balance-sheet strength and internal financial resilience
Leverage	`total_liabilities`, `total_assets`	Sum of all obligations and debts owed by the business; total assets	`total_liabilities/total_assets`	Median	Reliance on liabilities relative to asset base; ambiguous alone
Trade-credit reliance	`trade_creditors`, `expenditure`	Amount owed by the business to suppliers; total expenditure spent by the business	`trade_creditors/expenditure`	Median	Reliance on supplier credit, potentially as a substitute for bank finance
Working-capital gap	`trade_debtors`, `trade_creditors`, `revenue`	Amount owed to the business by customers; amount owed to suppliers; total revenue	(`trade_debtors` − `trade_creditors`)/`revenue`	Median	Liquidity pressure arising from receivables relative to supplier financing

PART 3. A UK-Europe Comparison of the Relationships Between Financial Centres and Regional Growth

3.1 Introduction

In Part 1 of this analysis, the discussions outlining our four decades-long shifting understanding of what appear to be rather puzzling links between UK financial services activities and clusters and economic growth, also imply that we need to understand the extent to which the results reported in Part 2 of this analysis are typical or atypical of what is observed elsewhere. It is therefore important to compare and benchmark the UK experience in the light of the experience of other countries.

In order to do this, in the following sections we compare the UK with respect to European countries by exploiting a uniquely large and detailed dataset of over 90,000 large real estate transactions 2016-2026 in UK and European cities and regions. The Productivity Institute (TPI)[14] analyses confidential data provided by MSCI on large-scale commercial real estate investment transactions, in industrials, offices, retail, leisure and multi-family housing arenas across UK and European cities and regions. The TPI research team (Daams et al. 2024a,b; 2025a,b) has developed techniques which, using these datasets, allow us to construct indices of perceived investment risk - on the part of the investment community - for all cities and regions on a yearly basis. As well as the UK, our data also covers all of Europe. In the UK and the rest of Europe, the analysis can be conducted at the ITL1/OECD-TL2 scale, the ITL3/OECD-TL3 scale, and the OECD Metropolitan urban scales.

Building on the approaches already pioneered by Daams et al. (2024a,b; 2025a,b), we can identify the location-specific investment risk premia and yields ascribed by the investment community to major investments in particular places at particular times. Following these approaches, we begin by mapping out the geographical patterns of investment flows across the UK and Europe on the basis of 10km x 10km and 20 x 20 km patterns of grid cells, respectively.

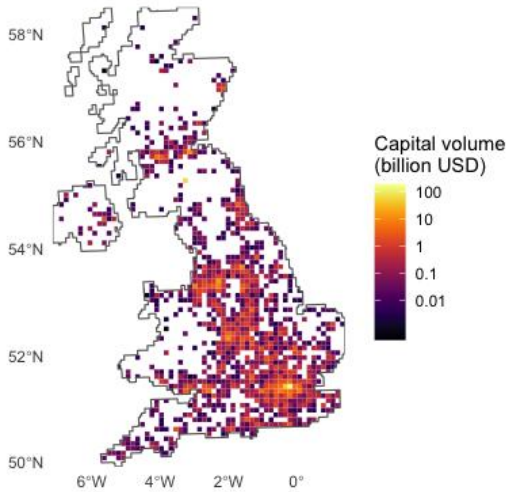


Fig 3.1. The UK Economic Geography of Investment Flows

[14] https://www.productivity.ac.uk/

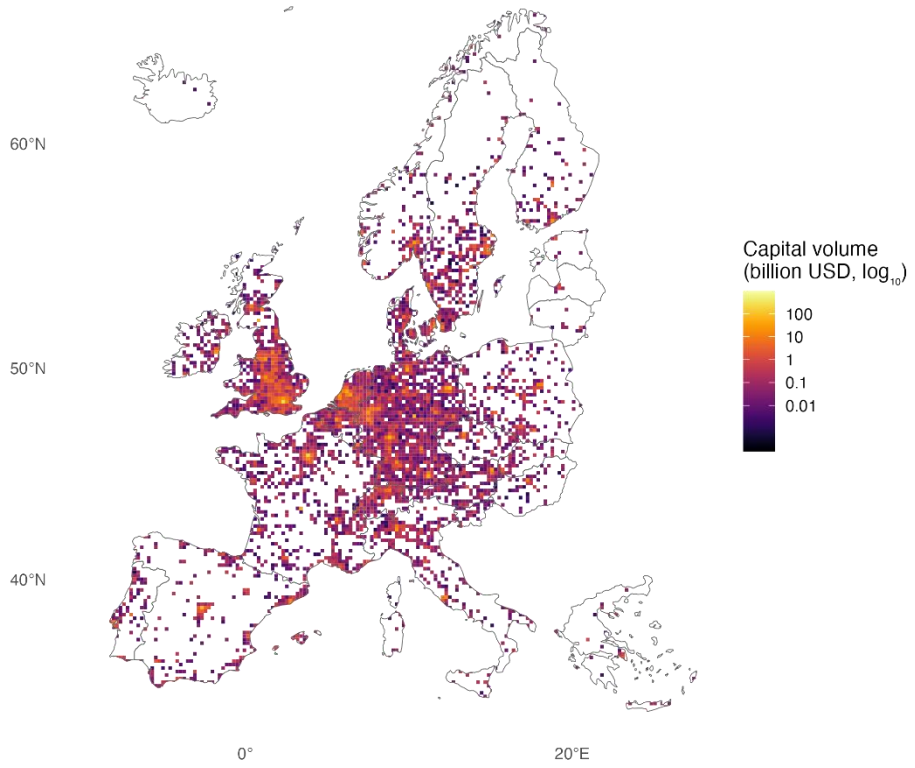


Fig. 3.2. The European Economic Geography of Investment Flows

In Fig.3.1 we see, not surprisingly, that the scale of capital inflows into UK cities and regions is dominated by flows to areas which collectively account for the major shares of the UK population and national economic output. Most notably, investments are seen to be heavily concentrated along an axis arcing north west from London and the South East up through the Midlands and up to England's Northern industrial regions, plus the Central Belt in Scotland. Other less densely populated areas of the South West and the East Coast of England, central Wales, the Borders, and the rural areas of Scotland and Northern Ireland, all display much lower overall investment flows.

Similarly, in Fig. 3.2, we see that the scale of capital inflows into European cities and regions is dominated by flows to areas which collectively account for the major shares of Europe's population and output. In particular, dense flows are clearly evident in the arc known as the 'blue banana' (Hospers 2003), ranging from the Netherlands, Belgium, Paris and North Eastern France, though to western and southern Germany, and on into south eastern France, Switzerland and northern Italy. Hotspots of investment flows are also evident in capital and global cities, including Madrid, Rome, Stockholm, Copenhagen-Malmo, Gothenburg, Oslo, Helsinki, Vienna, Warsaw, Krakow, Barcelona, Bilbao, Porto, and Prague. As such, the economic geography of investment flows across Europe largely mirrors the logic of the spatial investment patterns observed in the UK.

Where things begin to differ between the UK and parts of Europe is in terms of the economic geography of the cost-of-capital. Again, using our transactions-level data, as aggregated here across a 10km x 10km pattern of grid cells we can plot the economic geography of the cost-of-capital across the UK and Europe. This is done on the basis of both investment risk premia over and above the pricing of sovereign bonds, as well as investment yields, which here measure the returns that investors require on their relatively long-term investments into particular places.

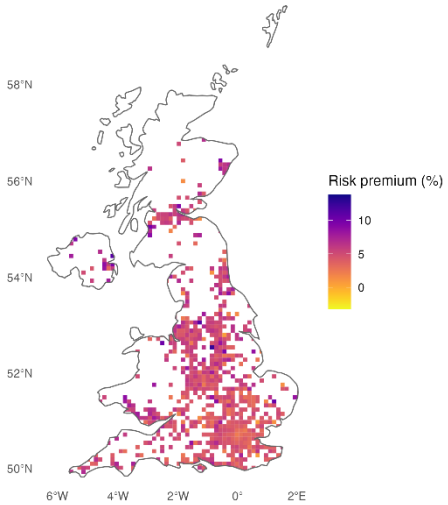


Fig 3.3 The UK Economic Geography of Investment Risk Premia

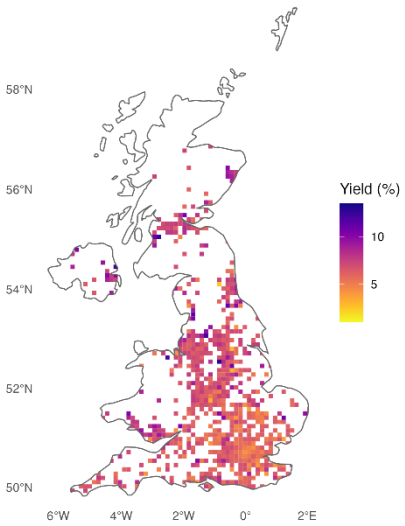


Fig 3.4. The UK Economic Geography of Investment Yields

Figs. 3.3 and 3.4, map out the UK economic geography cost surface for investment capital on the basis respectively of investment risk premia (Fig.3.3) and investment yields (Fig.3.4). What is immediately apparent from both measures is that there is strong core-periphery structure to the costs-of-capital, whereby in economic geography terms, London and its immediate hinterland are regarded as the 'core' while the rest of the country is characterised as the 'periphery'. As demonstrated in Daams (2024b, 2025), the UK's interregional and interurban differences in investment risk premia and investment yields between the core and the periphery are typically of the order of 200-300 basis points.

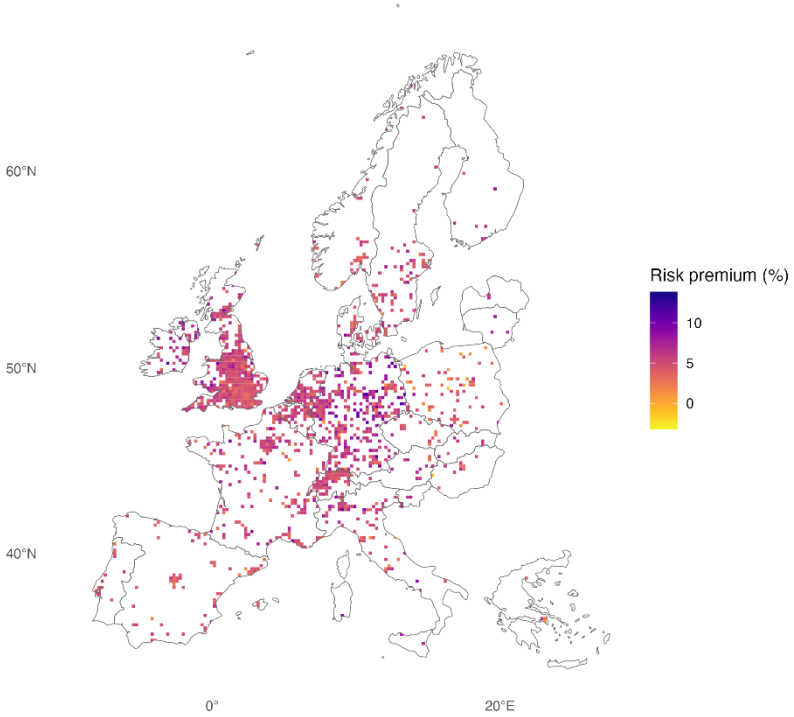


Fig 3.5. The European Economic Geography of Investment Risk Premia

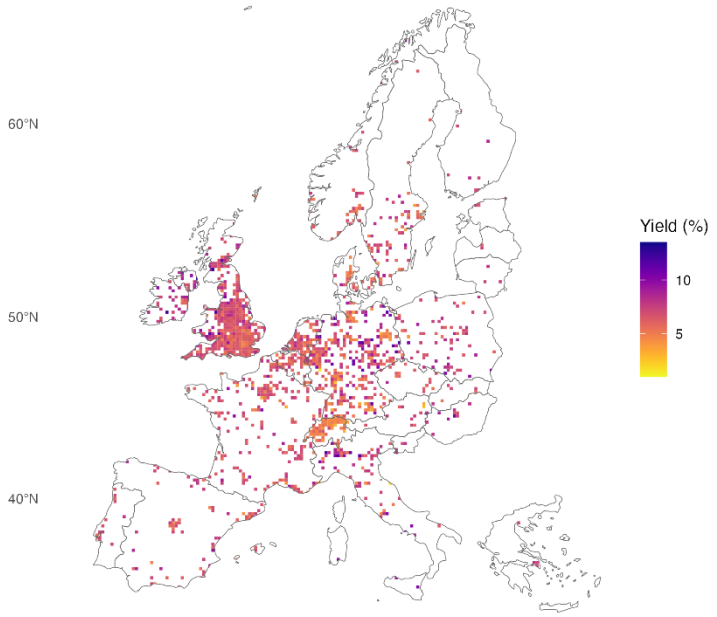


Fig 3.6. The European Economic Geography of Investment Yields

If we now turn to Europe, while the observed patterns bear some similarities to the UK, they are also display some important differences. We see that the more densely populated areas in the parts of the 'Blue Banana' (Hospers 2003) including parts of the Low Countries, parts of north western and south western Germany, along with much of Switzerland, exhibit low values for investment risk premia and investment yields. However, many parts of the 'Blue Banana' (Hospers 2003) do not exhibit such low cost-of-capital values, while many other parts of Europe, most notably capital city regions, tend to display relatively low costs-of-capital.

In general, however, the cost-of-capital surface for Europe is much more varied and with much less of a core-periphery structure than is the case for the UK. In particular, many widely dispersed parts of Germany, Switzerland, Poland, Scandinavia and the Nordic countries, display low investment risk premia and low investment yield values, even though they are characterised neither by large nor capital cities. Across much of Europe, there is far less of a core-periphery structure to the economic geography of the cost-of-capital than is the case for the UK, with different patterns evident in different parts of Europe. Germany has a widely distributed landscape of localised hotspots of low capital costs, as does Poland. Almost all of Switzerland is characterised by low costs-of-capital.

3.2 The Relationships Between the Cost-of-Capital and Distance to Financial Centres

These patterns mapped out above imply that the relationships between the costs-of-capital, location and distance from key financial centres differ between European countries. In order to assess this, we take the largest financial centre in each country and plot how the costs-of-capital relate to the distance of each individual investment from the largest domestic financial centre. We do this for both investment risk premia and investment yields and we also do this by including, and then excluding, those investments located in the same OECD-delineated functional urban region as the principal financial centre. The detailed country-specific relationships are reported in Appendices 3.1-3.2.

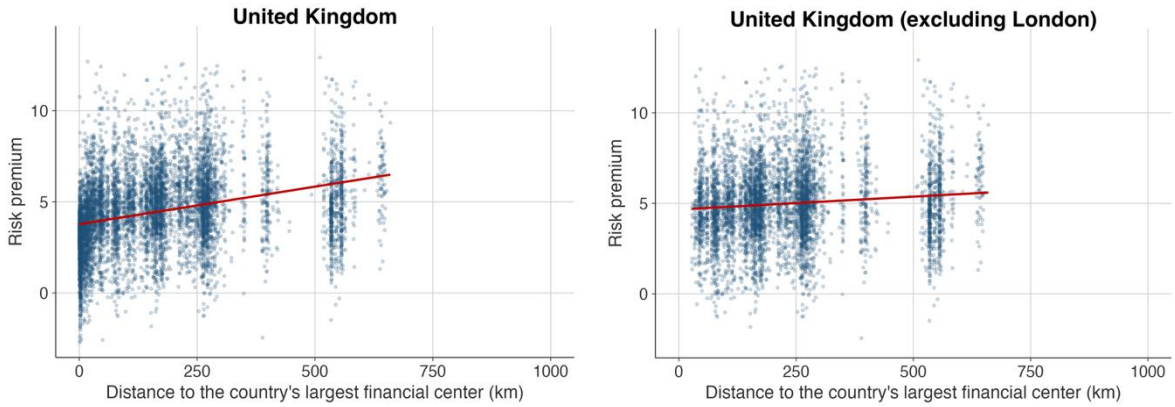


Fig 3.7a. The UK Distance from the Largest Financial Centre and Investment Risk Premia

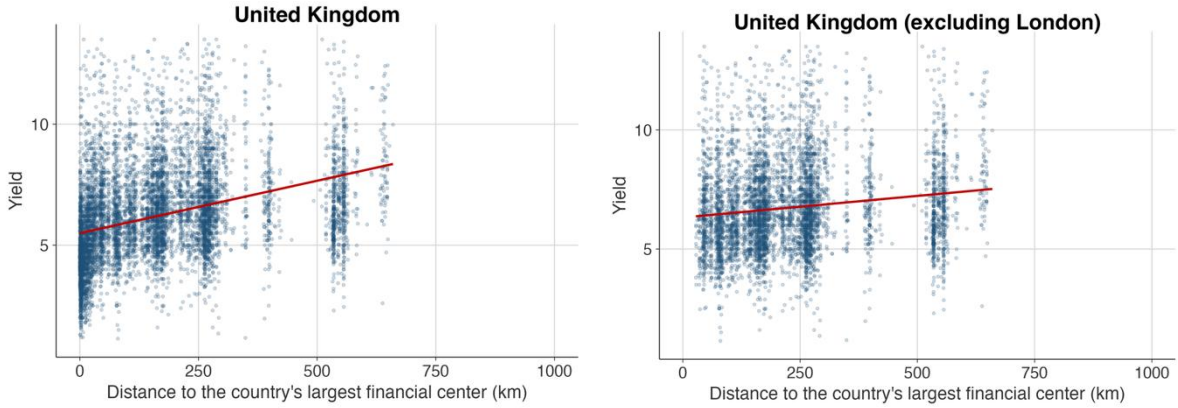
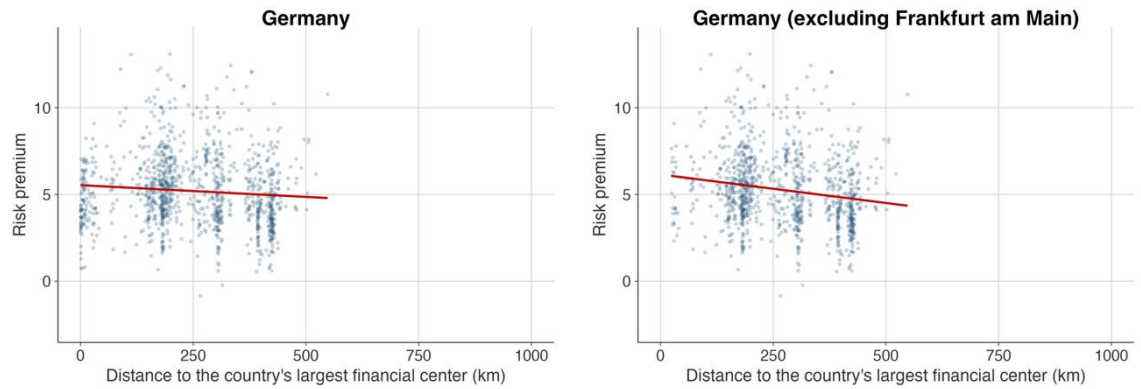


Fig 3.7b. The UK Distance from the Largest Financial Centre and Investment Yield

As we see in Figs.3.7a and 3.7b, in the case of the UK, the relationship between the location of the investment and the distance from London is markedly upward-sloping for both investment risk premia (Fig.3.7a) and investment yields (Fig.3.7b), irrespective of whether London-based investments are also included or excluded in the scatterplot. As such, the UK's strong core-periphery structure to the cost-of-capital (Daams et al. 2024a,b; 2025a,b) is clearly evident. However, if we consider Fig.3.8a and 3.8b, which plot the relationships between distance from the largest domestic financial centre and the localised risk premia (Fig.3.8a) and investment yields (Fig 3.8b) for the other large European economies, namely Germany, France, Italy, Spain and Poland, we see rather different pictures.

If we include the principal financial centres in the scatterplots, then France, Italy, Spain and Poland all show an upward sloping distance-risk premia trajectory (Fig.3.8a), and this is also the case for investment yields (Fig.3.8b). However, in none of these cases is the upward sloping relationship between distance from the principal financial centre and the local cost-of-capital nearly as steep as is the case for the UK. Indeed, in the case of Germany, the relationship is actually downward sloping. Moreover, if we remove those investments located in the same functional urban regions as the principal financial centre, then the distance slopes of risk premia become flatter for Italy, flat for both France and Poland, negative for Spain, and even more negative for Germany.

For investment yields, the pattern of slopes is largely the same as for the investment risk premia, but after removing the principal financial centres from the scatterplots, the slopes for Germany, France, and Spain all become negative, while those for Italy and Poland remain only slightly positive. In other words, the strongly upward-sloping relationships in the UK between distance from the principal financial centre (London) and the local costs-of-capital are not typical in other European countries. Indeed, this is confirmed in the Appendices 3.1-3.2, in which even many smaller countries do not conform to the UK's patterns, with the next largest European economies of The Netherlands and Sweden both mirroring the patterns in Spain and France.



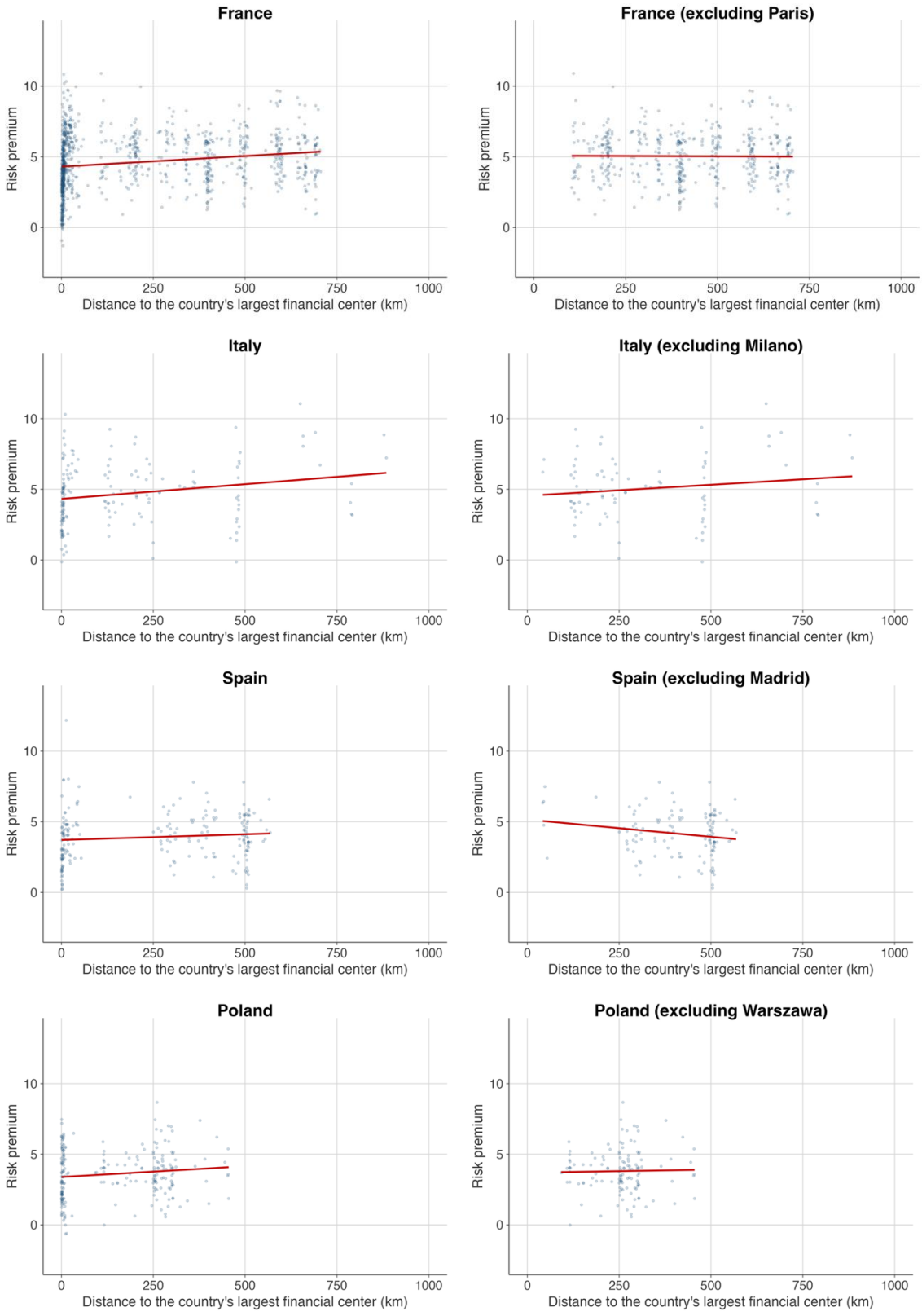
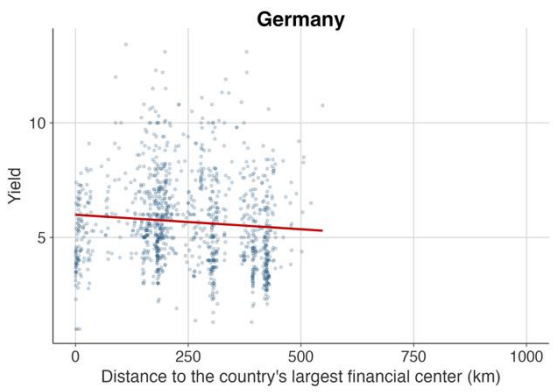
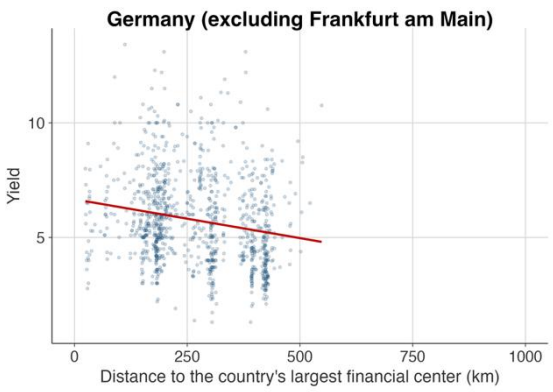
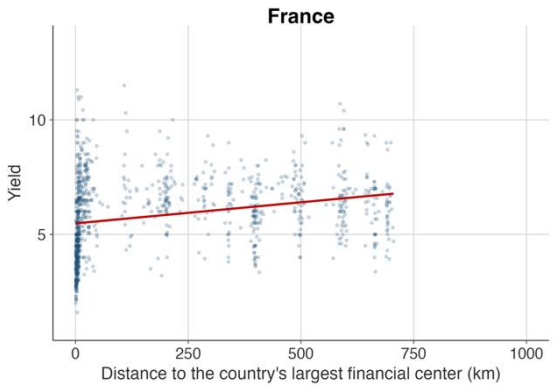
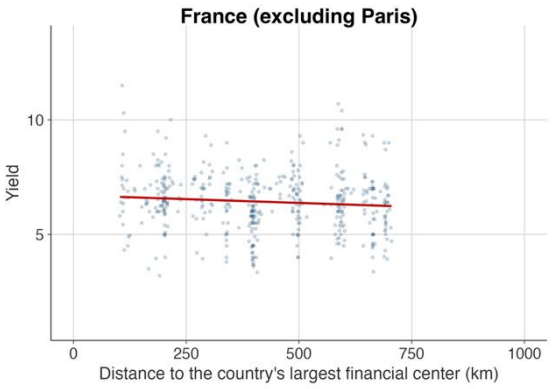


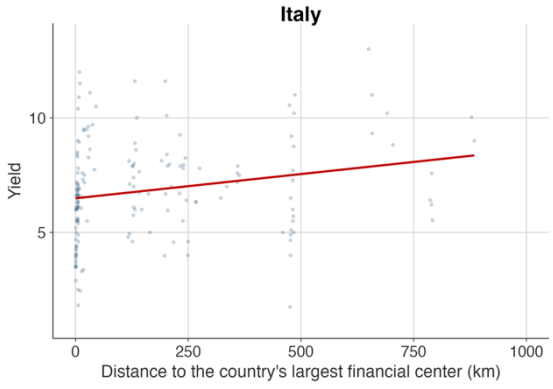
Fig 3.8a. The Distance from the Largest Financial Centre and Investment Risk Premia in Large European Countries

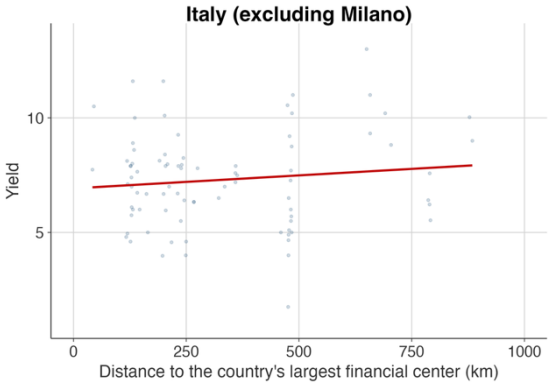

Germany
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

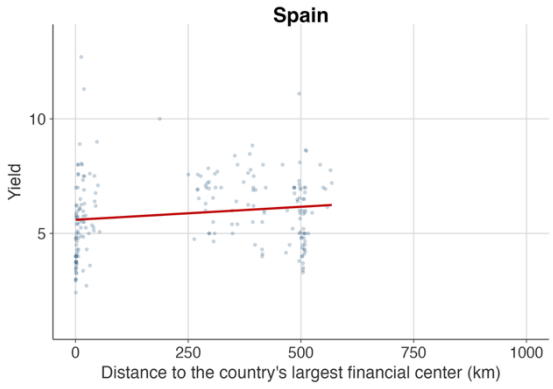

Germany (excluding Frankfurt am Main)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

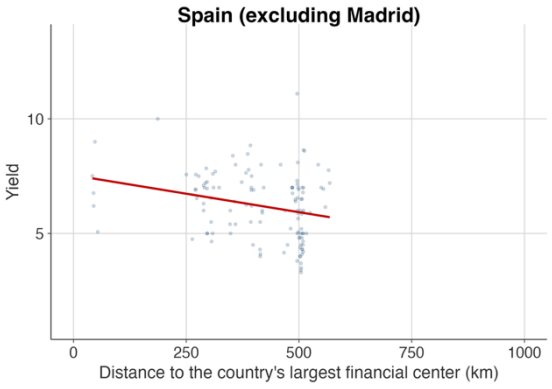

France
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


France (excluding Paris)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Italy
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Italy (excluding Milano)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Spain
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Spain (excluding Madrid)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

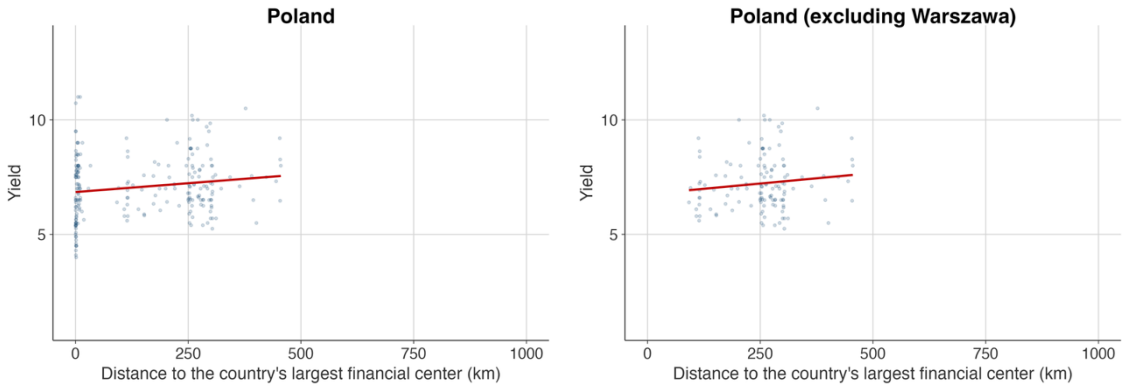


Fig 3.8b. The Distance from the Largest Financial Centre and Investment Yields in Large European Countries

Comparing Figs 3.7a and 3.7b with Figs 3.8a and 3.8b, respectively, it becomes readily apparent that the UK does not look similar to the other major European economies in terms of the relationships between distance from the principal financial centre and the local costs-of-capital. The country which is most similar to the UK is Italy, although even in the case of Italy the relationships are much weaker than is the case with the UK.

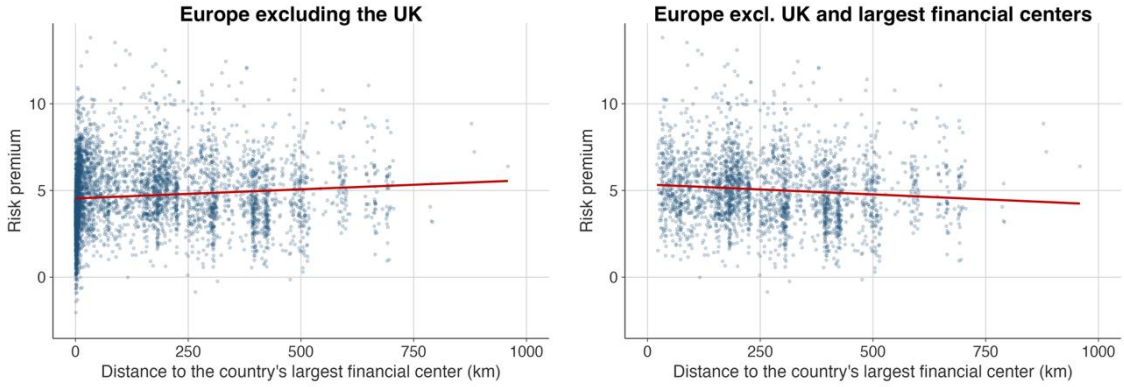


Fig 3.9a. The Relationship Between the Distance from the Largest Financial Centre and Individual Investment Risk Premia Across All European Countries (Except the UK)

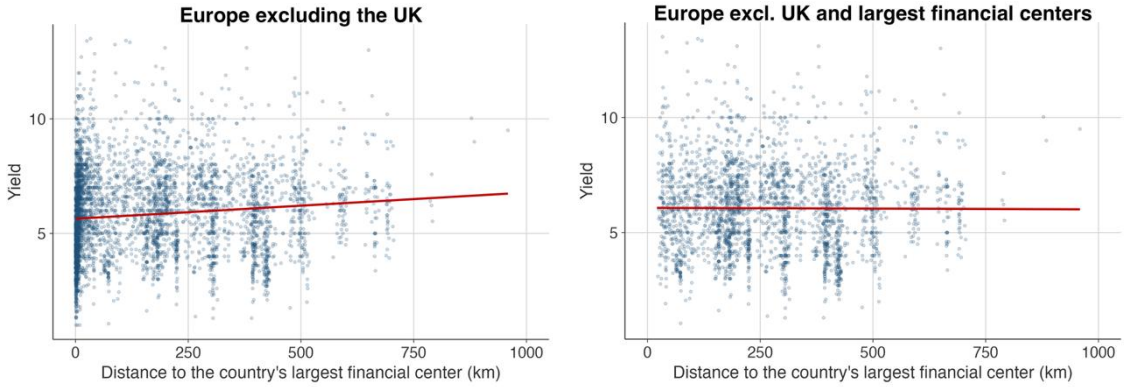


Fig 3.9b. The Relationship Between the Distance from the Largest Financial Centre and Individual Investment Yields Across All European Countries (except the UK)

When we consider Europe as a whole, the UK appears as something of an outlier. Indeed, if we aggregate across all of Europe, we see from Figs. 3.9a and 3.9b that the relationship between the distance from the principal financial centre and the localised investment risk premia (Fig.3.9a) and investment yields (Fig.3.9b) displays a very shallow upward-sloping function, which becomes flat for investment yields and downward sloping for risk premia, once the investments in the vicinity of the principal financial centre have been removed. While the UK's upward-sloping relationships between the local costs-of-capital and distance from the largest financial centre, as depicted in Figs.3.7a and 3.7b, become slightly flatter after the exclusion of investments in and around London, these relationships still remain more steeply upward-sloping than all of those evident in the rest of Europe. The distance-deterrence effect of risk pricing in the UK is much more marked than elsewhere.

Whereas Figs.3.7-3.9 are constructed on the basis of the individual investments, if we now aggregate these according to the OECD functional urban regions of the UK and Europe, then the picture becomes even clearer. As we see in Fig.3.10, the upward slope of the relationship between the distance from the largest domestic financial centre and the local costs of capital is much steeper for the UK than for Europe as a whole.

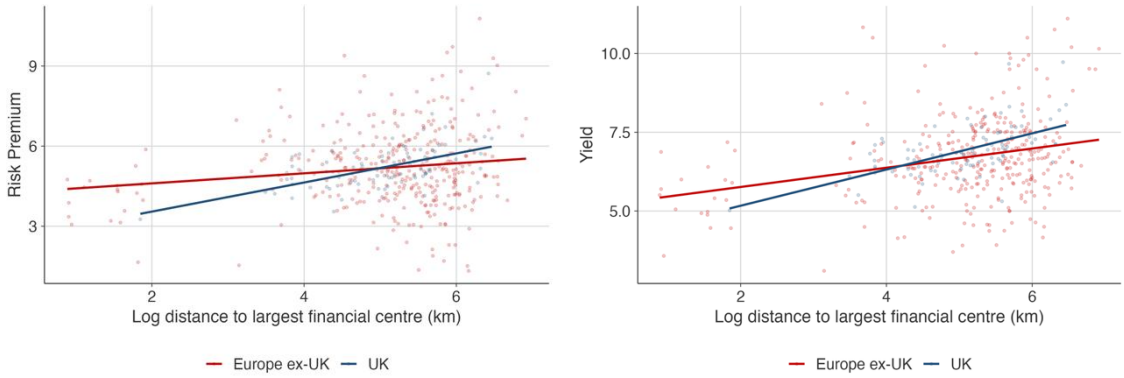


Fig.3.10 The Relationship Between the Distance from the Largest Domestic Financial Centre and the Local Costs of Capital for UK and European Countries

However, when considering economic geography, there are other consideration which may also shape these relationships, beyond simply geographical distance. From urban economics, a major issue that may be important concerns the urban system-of-cities, in terms of how the economy is structured and the level of economic dominance that particular cities may impose regarding how the domestic economy as a whole operates. There are two key aspects to this argument; firstly, the role which the dominant city plays, and secondly the relationships between the rest of the cities.

With regard to the first point, we can consider the potential role that the scale and depth of the major domestic financial centres play in shaping the distance-costs-of-capital relationships. Building on the GNC (Global Network Connectivity) index values of European financial-centre cities (Derudder and Taylor 2018; Derudder et al. 2024), in Fig.3.10 we plot the relationship between capital depth in Europe's major financial centres and the local costs-of-capital in these centres. In order to do this, we employ the absolute GNC index values for each of Europe's globally-ranked financial centres, and then we compute the relative financial-centre values in comparison to Europe's principal global financial centre, namely London.

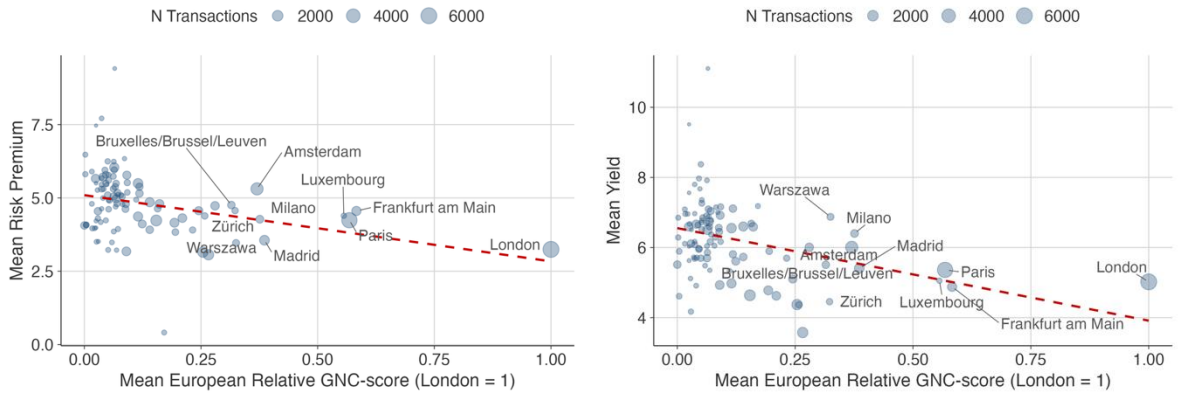


Fig.3.11a. The Relationships between Costs-of-Capital and Global Financial Centre Status

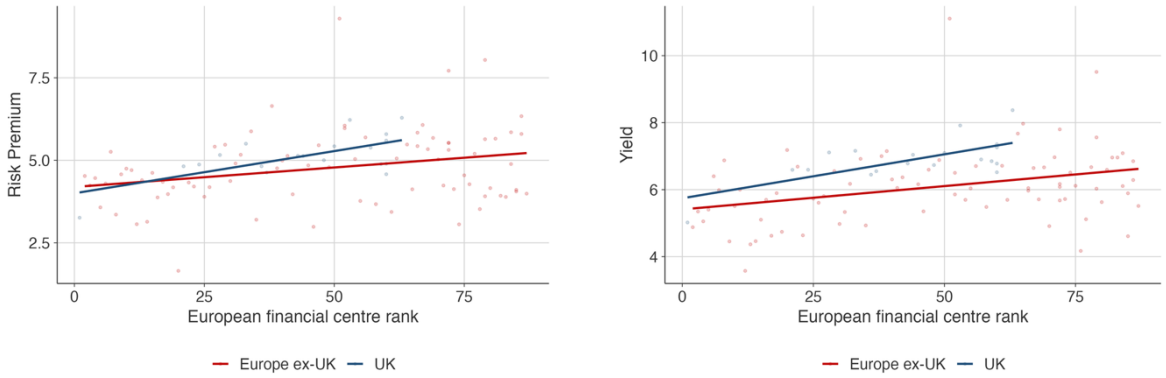


Fig.3.11b. The Relationships between Costs-of-Capital and Global Financial Centre Rank

Fig.3.11a relates the local costs of capital with respect to the relative scale of the GNC global financial centre, weighted by number of transactions, while Fig.3.11b plots these relationships based on the European rank-ordering of the global financial centre/ constructs. As we see in both Fig.3.11a and Fig.3.11b, it is clear that when we consider the pan-European financial landscape, the scale and depth of the major global banking centres and capital markets across Europe are inversely related to the local costs-of-capital in those same cities. As such, the global network connectivity (GNC) ranking of the major domestic financial centre is likely to play an important role in determining the distribution of costs-of-capital within the country. Again, we can plot this for the UK and Europe as a whole by constructing the Reilly gravity-index of accessibility as a weighted-sum of the distance to all global financial centres, weighted according to the GNC values of each financial centre and the respective distances (Derudder and Taylor 2018; Derudder et al. 2024).

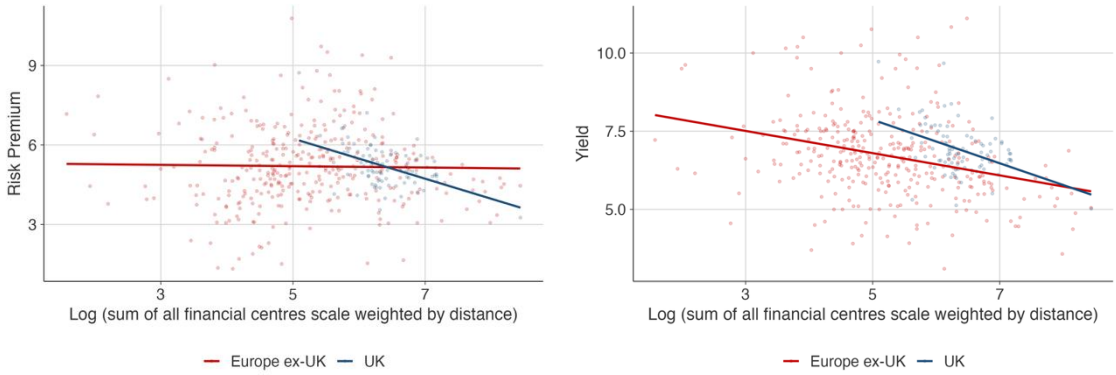


Fig.3.12. The UK and European Relationships between Costs-of-Capital and the Reilly Gravity-Index of Accessibility to Financial Centres

Again, as we see in Fig.3.12, the local costs-of-capital penalty for UK locations at a given weighted distance from multiple centres of finance and banking is greater than what is typically observed across Europe. More financially remote locations in the UK face significant cost-of-capital penalties. In contrast, for UK locations with a more ready access to a greater number of financial centres, in the UK this results in a larger fall in the local cost-of-capital than is the case for the rest of Europe. Moreover, this effect is overwhelmingly dominated by location with respect to London, given the fact that London has a GNC weighting which almost as large as the rest of the UK combined.

3.3 The Relationships Between the Cost-of-Capital and the Size or Rank of Cities

These observed UK-European differences in the relationships between economic geography and the local costs-of-capital, however, also raise the question as to whether what we are observing is simply a result of different economic geography structures or city-scale patterns between the UK's internal system-of-cities and those which are observed across the rest of Europe. Therefore, in order to examine this, we can extend this logic in Fig.3.13 by plotting the localised costs-of-capital with respect to the (natural log of) population of the city.

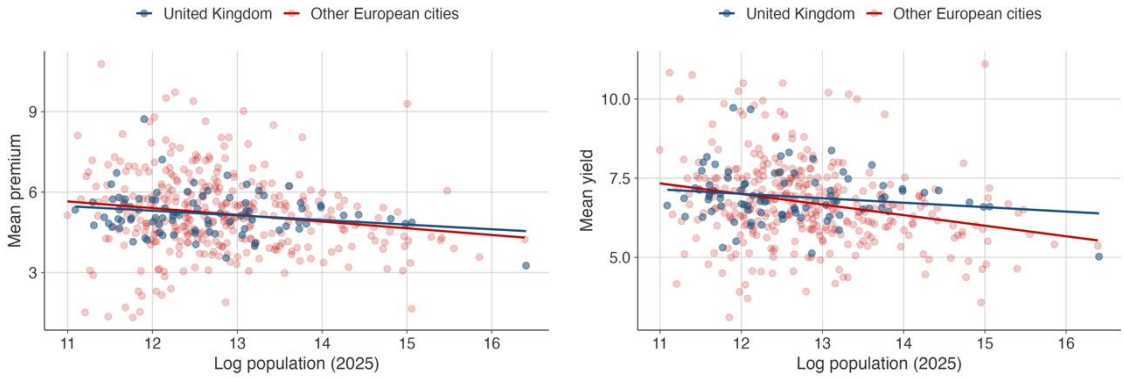


Fig.3.13. The UK and European Relationships between Costs-of-Capital and the City Size

As we see in Fig.3.13, in terms of investment risk premia the overall trend line relationship for the UK is very close to the overall European patterns, while for investment yields the UK is flatter than the European line. Urban economic arguments would typically expect that the costs-

of-capital fall will with city size due to the presence of agglomeration economies and the local diversity of activities all acting in concert to de-risk local investments (Daams et al. 2024a). However, the investment yield trend-comparisons depicted here imply that increasing city size in the UK is not as favourably priced-in by investors as it is across Europe, due primarily to higher sovereign risks. However, closer inspection of Fig.3.13 also points out that the situation for the UK's large second-tier and third-tier cities appears to be very different from the overall trends. After London, for the seven next largest UK second and third-tier cities ranging in populations between 1.3m and just over 3m people, which are situated between natural log values of 14 and 15, all of these cities sit above both the UK and European trend lines for both investment risk premia and investment yields. As such, in terms of the local costs of capital that they face, in comparison to similar-sized cities elsewhere in Europe, they are all priced less favourably than one might have expected. The additional costs-of-capital that they face when compared with most other European cities of similar sizes are of the order of some 250-300 basis points (Daams et al. 2025a).

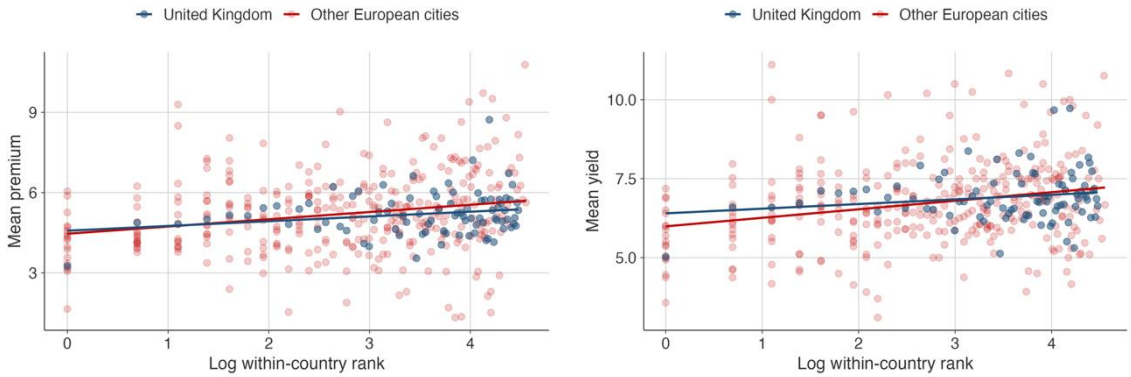


Fig.3.14. The Relationships between the Costs-of-Capital and the Domestic Rank Order of the City for the UK and European (EU15) Countries

We can also repeat this exercise using the population rank rather than pure size. This approach allows for the fact that European countries vary enormously in terms of both national and city-size population, and this method focuses attention on the relative role played by each city in the national economy. In Fig.3.14 we plot the costs-of-capital with respect to the (natural log of the) rank of the city within each national domestic urban hierarchy, with the largest city in each country assigned as rank 0 at the left-hand side origin point in the scatterplots. This allows us to examine the costs of capital with respect to the notion of city size, not in absolute terms, but in terms of the relative importance of the city within the domestic economy.

As we see in Figs.3.13 and 3.14, the respective UK slopes are all flatter than for Europe. As such, these trend comparisons again confirm that increasing city size in the UK is not as favourably priced-in by investors as it is across Europe. Moreover, it is important to remember that UK cities on average are large by European standards, so this implies that UK cities placed in the same relative rank position as many much smaller cities across Europe are also at a cost-of-capital disadvantage. The results on a country-by-country basis are reported in Appendix 3.3.

This is an important observation which has not been seen before and raises profound urban economic questions regarding the financing of economic activities within the UK urban system. For cities of the same of the same size, or for cities of the same within-country rank-order, UK cities are relatively large by European standards, and also they are very closely located with

respect to each other in comparison to most cities across Europe. From the perspective of urban economics, both of these features would be expected to reduce the costs-of-capital faced by businesses in UK cities in comparison to other European countries, where cities of the same rank-order are on average smaller and more sparsely located. Yet the fact that the within-country relationships between the risk premia and the city size and rank order are almost identical between the UK and Europe, while for investment yields they are worse, along with the fact that both are markedly worse for the UK's largest second-tier and third-tier cities, suggests that urban scale does not reduce the cost-of-capital in UK cities in a manner that urban economists might expect. As such, other factors may be operating.

3.4 The Relationships Between the Cost-of-Capital and the Location of Investments

One possible candidate explanation for the observed UK-European differences in the local cost-of-capital relationships with distance to the major financial centres and absolute scale or relative rank of the city, might be related to the overall urban economy. In comparison to other European and OECD countries, the UK is relatively both a highly densely populated country and also a very highly urbanised society (McCann 2016). Yet, give these features, it is often argued that the UK displays such highly skewed regional distributions of major commercial investments, in which major investments in the principal financial centre of London overly influence the observed UK national patterns of the local costs-of-capital. However, on closer examination from our dataset, at least as far as major location-specific commercial investments go, this is seen not to be the case.

On the basis of our dataset, for each European country, Fig.3.15 plots the Hirschmann-Herfindahl index (HHI) of city-region investment distributions across the whole country, along with the share of investments by both number and overall aggregate value which are in the principal financial centre of each country. In all cases, the UK is seen to display relatively low levels of geographical skewness of investments, albeit with very high interregional differences in the costs-of-capital, as we have seen above and in Daams et al. (2025a).

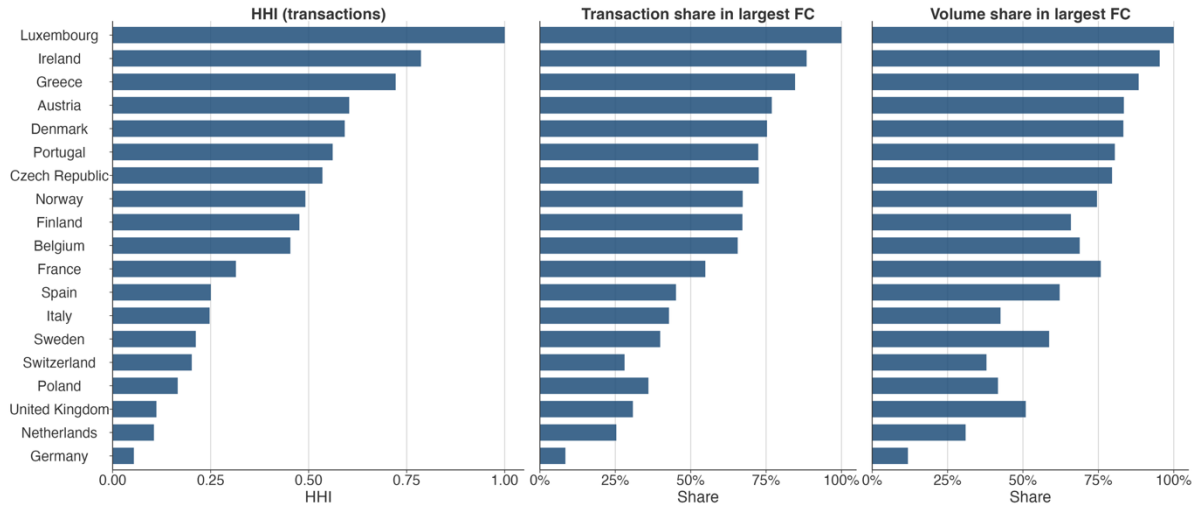


Fig.3.15 Shares of Investments Across Regions and the Major Financial Centres by Country

As we see in Fig.3.15, the Hirschmann-Herfindahl index of UK city-region investment distributions takes a value of just 0.112, the third lowest in Europe. However, this is partly due to the UK having a larger number of large metropolitan areas than most other European countries. Having said that, this cannot be the whole explanation because while the UK HHI

value is larger than for Germany, it is also lower than for other large population economies including France, Italy, Spain and Poland, primarily because the UK has a higher share of its population living in larger cities than these other countries. London is observed to account for some 31% of large UK location-specific commercial investments which in total amount to some 51% of the national value of such investments. For comparison purposes, the OECD Metropolitan Urban Region definition of London accounts for approximately 17% of the UK population and some 28% of its GDP (McCann 2016). As such, its observed investment share by value is three times its population share and almost twice its output share. Comparing with Zipf's Law types of distributions across other large comparable OECD economies, when we consider output rather than population, London is already seen to be outsized in terms of its relative output share, even for a unitary state (McCann 2016), and these investment shares we observe in our data confirm these patterns.

Even so, when compared against other European economies, the more upward-sloping UK relationships between the local costs-of-capital and the distance of the locality from London (Fig.3.7) or all financial centres (Fig.3.12), allied with a flatter slopes with regard to the local costs-of-capital and urban scale (Figs.3.13 and 3.14), imply that outside of London, other more fundamental forces are likely to be at work leading to a systemically less favourable risk pricing penalty for UK cities and regions in comparison to other European countries, and especially for the UK's second-tier and third-tier cities.

Following the insights of Daams et al. (2024a,b; 2025a,b), clues at why this is the case might be found by a closer examination of the costs-of-capital faced by different types of places in different countries at a more detailed geographical level. Fig.3.16 plots the relationship between the cost-of-capital – the investment risk premia and investment yields values – for London, for the UK, and for the rest of the UK except London. London faces very low investment risk premia and yield values, whereas as with Daams et al. (2025a), we see that the rest of UK typically faces additional risk premia and yields values of the order of 200-250 basis points over London. As such, the rest of the UK faces a consistently high combination of both investment risk premia and investment yield values by European standards.

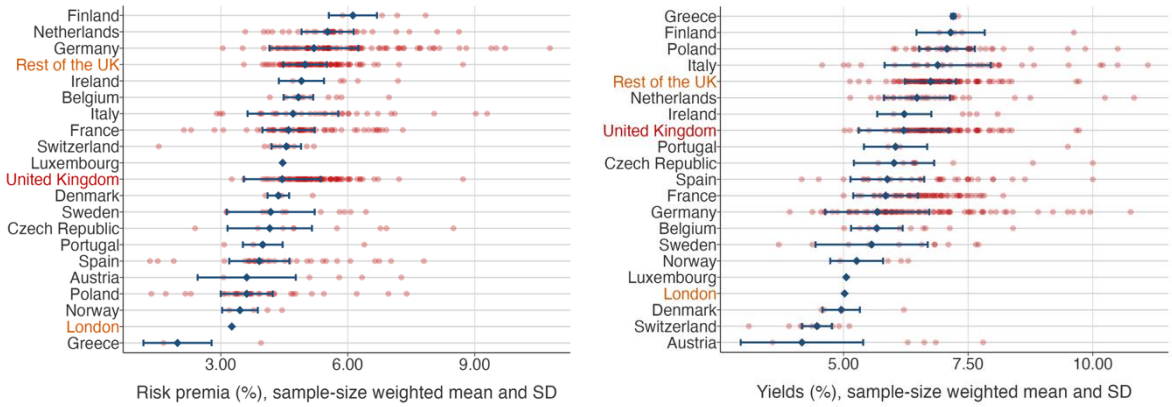


Fig.3.16 UK Costs-of-Capital for London, as well as cities across the UK and the Rest of the UK Compared with Europe

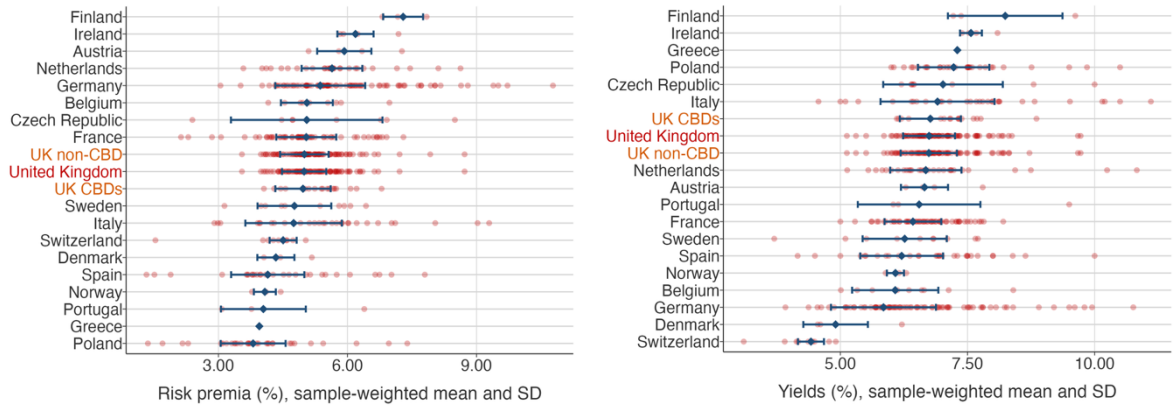


Fig.3.17 UK Costs-of-Capital for city-by-city UK Central Business Districts (CBDs) and Non-CBD Areas Compared with European Countries, After Excluding Capital Cities

Fig.3.17 compares the UK local costs-of-capital in both CBDs and non-CBD locations outside of London with respect to other European countries, after also excluding investments in the capital city regions of each comparator country. Again, we observe that by European standards, the rest of the UK cities display combinations of relatively high investment risk premia and investment yield values, and that this is the case both for investments in the central business districts (CBDs) of these cities and also in non-CBD locations outside of city centres or in smaller urban areas. Urban economic arguments would typically assume that the central business districts (CBDs) of cities are the main knowledge-intensive commercial centres enjoying the most significant agglomeration economies, and as such, ought to enjoy lower risks, and therefore lower costs-of-capital, in comparison to other places (Daams et al. 2024a). However, as we see in Fig.3.17, in the UK, the potentially favourable differences in the local costs-of-capital between CBD and non-CBD locations outside of London are tiny for risk premia, or even negative for investment yields (Daams et al. 2025a). This is important, because it reflects a longstanding major failure on the part of the economies of the central business districts (CBDs) of UK city centres, which are insufficiently large (Breach and Swinney 2024) or productive (Swinney and Enenkel 2020) in comparison to what would be expected given the overall population size of the city.

Across other European countries, as we see in Appendix 3.4, it is a very differ story. In all other parts of Europe outside of capital cities, the costs-of-capital advantages of CBDs over non-CBD locations are always positive and much larger than in the UK. Outside of capital cities, the favourable costs-of-capital advantages of CBDs over non-CBD locations are of the order of 30 basis points in The Netherlands; 100 basis points in France; 150 basis points in Germany; 100 and 200 basis points for risk premia and yields, respectively, in Sweden and Spain; and some 300 basis points in Italy.

3.5 Regression Results for Intra-Border Accessibility to Financial Centres

We now proceed to estimate various models of economic growth and productivity at the level of the OECD FUA Functional Urban Areas across European between 2010 and 2019. In particular, we estimate urban and regional growth via a series of gravity models with different specifications regarding access to financial services and banking centres. These models include both intra-country models in which the effects of access to the dominant domestic financial centres are estimated, and also cross-border models, which allow for the potential influence of major financial centres located in neighbouring countries. In order to develop these models, we construct a Reilly gravity-index of accessibility, in which the scale of all of the other lesser

domestic and cross-border financial centres in terms of their (GNC) centrality within the global financial system is captured in the models, which is then weighted according to their distance from the FUA.

Table 3.1 reports a series of econometric models estimated across all UK and European functional urban regions (FURs) which relate the local city-region GDP per capita to the overall Reilly gravity-based measure of accessibility to financial centres, to the distance to the largest domestic financial centre, while also controlling for the banking asset-concentration ratios (World Bank) and also the spatial concentration of domestic banking headquarters (Flögel and Hejnová 2024). These estimations are first undertaken for all cities, and then also after excluding the largest financial centre within each country.

What we observe from Table 3.1 is that accessibility to financial centres is always positively related to local productivity and prosperity, as measured in terms of (the log of) GDP per capita. City size associations disappear once we add controls. Banking concentration is also positively related to GDP per capita, but the spatial concentration of headquarter functions is not significant. These results also hold also after excluding the principal domestic financial centre from each country. In Table 3.2, we repeat exactly the same exercises after removing the UK from the sample, and the results do not change, except for the fact that while overall access to financial centres remains important, the distance to the largest domestic banking centre is no longer significant. This implies that this is primarily a UK-only phenomenon.

Tables 3.3 and 3.4 repeat the same exercises as in Tables 3.1 and 3.2, respectively, but now the dependent variable is the city-region growth in GDP per capita 2009-2019.

As we see in Table 3.3, when we consider the decade-long growth of the city-region, the only variables which display any explanatory power are the levels of banking asset-concentration and the spatial concentration of banking headquarter functions, both of which are negatively associated with local economic growth, at the 10% significance level. In Table 3.4, after removing the UK from the sample, the results for the rest of Europe show that only the spatial concentration of banking headquarter functions is negatively associated with local economic growth, at the 10% significance level.[15]

Tables 3.5A and 3.5B report more detailed estimates of city-region GDP per capita from the UK constructed using a broader range of access to finance measures decomposed into a Reilly gravity-index for total accessibility to financial centres, a gravity-index for the principal financial centre of London, and logit transformation weighting of the London gravity-index, a gravity index with respect to other non-London financial centres, and also the geographical distance (in Table 3.5B) to London. As we see, all measures of access to banking centres are positively and statistically significant, and after removal of the London-specific data, all GDP per capita effects are dominated by national and London-specific accessibility, with accessibility to other financial centres being only weakly positive. Urban scale is always weakly negative, as already discussed elsewhere (McCann and Yuan 2022).

Tables 3.6A and 3.6B repeat exactly the same exercises as reported in Tables 3.5A and 3.5B, but now for local city-region growth 2009-2019. As we see in Table 3.6A, in the UK context,

[15] In the regressions a squared term for the Flögel-Hejnová (2024) measure was also included to account for non-linearity, which did not meaningfully change the results for GDP per capita levels, but in the case of growth the negative association appears to slow or partially reverse with relatively high degrees of banking concentration.

accessibility to London, as measured by both the London-access gravity-index and also the logit-transformed London gravity-index, is both strongly statistically significant, both prior to, and after, the removal of the London-specific observations. If the distance to London is now included, as in Table 3.6B, this is typically negatively related to growth, and dominates the other spatial gravity indices.

Table 3.7A and 3.7B report the results of estimations which replicate those reported in Tables 3.5A and 3.5b, respectively, but now only for the rest of Europe after excluding the UK. As we see when comparing Tables 3.7A and 3.7B with Tables 3.5A and 3.5B, respectively, in the case of the rest of Europe the relationships between GDP per capita levels and accessibility to financial centres differs markedly from what we observe within the UK. In particular, the role of accessibility to the principal domestic financial centre plays a much lesser role, if any, whereas accessibility to other financial centres is always strongly and positively significant. In other words, whereas within the UK accessibility to London heavily shapes the patterns of regional productivity and prosperity, across the rest of Europe it is accessibility to other financial centres which appears to be more important than access to the principal financial centre.

In terms of GDP per capita growth 2009-2019, as we see in Table 3.8A, total gravity-weighted accessibility to financial centres is significant, but once the observations from the principal financial centres are removed, then it is accessibility to the other domestic financial centres which is strongly and positively related to growth. In Table 3.8B, once the distance to the main financial centre is also included in the models, then accessibility to other financial centres remains strongly and positively associated, irrespective of whether or not the main financial centre is included in the estimations.

Of course, one might argue that in such a densely populated and urbanised country as the UK, investors do not need to travel far away in order to satiate their supplies of investor capital, and this could provide a rationale as to why distance and perceived investment risk are so steeply related in the UK both with London-specific investments included or excluded. In economic geography this argument is known as the ‘intervening opportunities’ hypothesis, and serves as something of a counterpoint to the distance-deterrence hypothesis. However, the countries with similar or even higher population densities to the UK, namely The Netherlands, Belgium and Germany, display very different distance-risk perceptions relationships to the UK. Similarly, the countries with similar, albeit flatter slopes distance-risk slops to the UK, are Italy, Poland, or much smaller countries dominated by just one or two major cities such as Portugal, Norway or Finland. Each of these countries has a population density and urbanisation levels which are far below that of the UK. These various comparative observations therefore largely obviate this potential density-related explanation of the UK’s observed very steep distance-risk perceptions gradient.

Table 3.1: Banking Variable and Financial Centre Gravity Regressions, GDP P.C. 2019 levels, UK and Other European Cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.104***	-0.014	-0.016	-0.044	0.052	-0.046	-0.002	-0.045
	(0.029)	(0.048)	(0.041)	(0.037)	(0.034)	(0.034)	(0.033)	(0.034)
Total FinCentre Gravity (log)		0.079**	0.054	0.081***		0.069*	0.049	0.081***
		(0.032)	(0.035)	(0.026)		(0.033)	(0.034)	(0.027)
Distance to Largest FinCentre (log)			-0.084***	-0.061**			-0.095***	-0.064*
			(0.026)	(0.024)			(0.028)	(0.031)
Country's Top-3 Bank Asset (%)				0.008***				0.009***
				(0.002)				(0.003)
Flögel-Hejnova Concentration				-0.001				-0.001
				(0.001)				(0.001)
Observations	242	242	242	238	225	225	225	222
R^2-Adjusted	0.077	0.165	0.239	0.368	0.011	0.087	0.137	0.314

Note: The dependent variable in the 'levels' models is the log of 2019 GDP per capita, measured at the level of individual OECD-delineated metropolitan areas or 'functional urban areas.' Standard errors in models covering more than one country are clustered at the country level. Standard errors are reported in parentheses. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table 3.2: Banking Variable and Financial Centre Gravity Regressions, GDP P.C. 2019 levels, only Continental European cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.119***	-0.044	-0.042	-0.030	0.074**	-0.062	-0.020	-0.017
	(0.033)	(0.055)	(0.049)	(0.053)	(0.033)	(0.046)	(0.044)	(0.043)
Total FinCentre Gravity (log)		0.101***	0.078**	0.077**		0.092**	0.072*	0.069**
		(0.030)	(0.035)	(0.031)		(0.033)	(0.036)	(0.030)
Distance to Largest FinCentre (log)			-0.066**	-0.053*			-0.085**	-0.055
			(0.027)	(0.026)			(0.035)	(0.037)
Country's Top-3 Bank Asset (%)				0.009**				0.011***
				(0.003)				(0.003)
Flögel-Hejnova Concentration				-0.001				-0.002
				(0.001)				(0.001)
Observations	199	199	199	195	183	183	183	180
R^2-Adjusted	0.096	0.231	0.275	0.376	0.024	0.147	0.183	0.334

Table 3.3: Banking Variable and Financial Centre Gravity Regressions, % Growth in Per Capita GDP 2009-19, UK and Other European cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.400	-0.534	-0.549	0.047	-0.634	-0.615	0.185	0.940
	(1.235)	(2.959)	(2.905)	(2.537)	(1.384)	(2.885)	(3.380)	(3.028)
Total FinCentre Gravity (log)		0.090	-0.182	-1.127		-0.013	-0.371	-1.340
		(1.635)	(1.893)	(1.929)		(1.799)	(1.980)	(2.003)
Distance to Largest FinCentre (log)			-0.925	-2.477			-1.719	-3.428
			(1.447)	(1.527)			(2.192)	(2.002)
Country's Top-3 Bank Asset (%)				-0.357*				-0.356*
				(0.191)				(0.183)
Flögel-Hejnova Concentration				-0.152				-0.171*
				(0.089)				(0.081)
Observations	242	242	242	238	225	225	225	222
R^2-Adjusted	-0.004	-0.008	-0.008	0.110	-0.004	-0.008	-0.007	0.124

Note: The dependent variable in the 'growth' models is the percentage of 2009-2019 GDP per capita growth, measured at the level of individual OECD-delineated metropolitan areas or 'functional urban areas.

Table 3.4: Banking Variable and Financial Centre Gravity Regressions, % Growth in Per Capita GDP 2009-19, only Other European cities.

	All Cities				Excluding Each Country's Largest Financial Center			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.304	-0.629	-0.618	-0.660	-0.355	-0.490	0.136	0.646
	(1.530)	(3.643)	(3.636)	(2.412)	(1.705)	(3.567)	(4.353)	(3.123)
Total FinCentre Gravity (log)		0.202	0.015	-0.590		0.090	-0.202	-1.018
		(1.743)	(2.158)	(1.549)		(1.980)	(2.320)	(1.712)
Distance to Largest FinCentre (log)			-0.544	-2.239			-1.250	-3.425
			(1.741)	(1.640)			(2.704)	(2.513)
Country's Top-3 Bank Asset (%)				-0.435				-0.419
				(0.268)				(0.269)
Flögel-Hejnova Concentration				-0.129				-0.154*
				(0.094)				(0.083)
Observations	199	199	199	195	183	183	183	180
R^2-Adjusted	-0.005	-0.010	-0.014	0.109	-0.005	-0.011	-0.014	0.119

Table 3.5A: UK Metropolitan GDP per Capita 2019 Levels Regressions.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.032	-0.115	-0.135	-0.080	-0.037	-0.167*	-0.122	-0.111
	(0.058)	(0.088)	(0.080)	(0.064)	(0.045)	(0.086)	(0.074)	(0.073)
Total FinCentre Gravity (log)		0.142**	0.184***			0.130**	0.197**	
		(0.059)	(0.061)			(0.059)	(0.076)	
Main FinCentre Logit-Share			0.057***				0.069	
			(0.017)				(0.042)	
Main FinCentre Gravity (log)				0.155***				0.139**
				(0.047)				(0.061)
Other FinCentres Gravity (log)				0.070*				0.083*
				(0.038)				(0.044)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	-0.011	0.069	0.249	0.211	-0.011	0.064	0.144	0.104

Table 3.5B: UK Metropolitan GDP Per Capita 2019 Levels Regressions, Including Distance to the Country's Main Financial Centre.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.018	-0.105	-0.128	-0.108	-0.008	-0.129	-0.118	-0.098
	(0.037)	(0.077)	(0.080)	(0.073)	(0.037)	(0.078)	(0.071)	(0.071)
Distance to Largest FinCentre (log)	-0.132**	-0.123**	-0.029	0.094	-0.108	-0.099	0.077	-2.753
	(0.052)	(0.049)	(0.090)	(0.153)	(0.064)	(0.060)	(0.283)	(3.259)
Total FinCentre Gravity (log)		0.119**	0.170**			0.119**	0.254	
		(0.057)	(0.069)			(0.057)	(0.256)	
Main FinCentre Logit-Share			0.046*				0.120	
			(0.027)				(0.204)	
Main FinCentre Gravity (log)				0.234**				-2.609
				(0.114)				(3.238)
Other FinCentres Gravity (log)				0.081*				0.078*
				(0.044)				(0.044)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	0.176	0.230	0.231	0.197	0.073	0.134	0.123	0.105

Table 3.6A: UK Metropolitan GDP Per Capita 2009-2019, Growth Regressions.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.848	-1.285	-1.706	-2.316	-1.723	-1.983	-0.382	-0.583
	(0.904)	(2.268)	(2.065)	(1.472)	(1.025)	(2.329)	(2.124)	(1.951)
Total FinCentre Gravity (log)		0.423	1.320			0.261	2.608	
		(1.841)	(1.667)			(1.830)	(1.605)	
Main FinCentre Logit-Share			1.241***				2.462***	
			(0.415)				(0.840)	
Main FinCentre Gravity (log)				2.777**				3.705***
				(1.037)				(1.316)
Other FinCentres Gravity (log)				0.570				-0.125
				(1.034)				(1.204)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	-0.005	-0.028	0.142	0.185	0.030	0.006	0.218	0.228

Table 3.6B: UK Metropolitan GDP per capita 2009-2019, Growth Regressions, Including Distance to the Main Financial Centre

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-1.204*	-1.001	-0.631	-0.565	-0.728	-0.541	-0.553	-0.594
	(0.708)	(1.911)	(2.084)	(1.980)	(0.946)	(2.076)	(2.026)	(1.991)
Distance to Largest FinCentre (log)	-3.307***	-3.323***	-4.803*	-5.933	-3.759***	-3.773***	-3.981	2.449
	(0.954)	(1.000)	(2.581)	(3.955)	(1.294)	(1.338)	(5.680)	(47.967)
Total FinCentre Gravity (log)		-0.198	-0.995			-0.184	-0.343	
		(1.623)	(2.123)			(1.592)	(4.551)	
Main FinCentre Logit-Share			-0.719				-0.142	
			(0.856)				(3.310)	
Main FinCentre Gravity (log)				-2.223				6.149
				(3.212)				(47.338)
Other FinCentres Gravity (log)				-0.130				-0.120
				(1.220)				(1.225)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	0.244	0.225	0.215	0.216	0.248	0.228	0.207	0.208

Table 3.7A: European (excl. UK) Metropolitan GDP Per Capita 2019, Levels Regressions.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.136***	0.028	0.022	0.035	0.091**	0.012	0.016	0.037
	(0.034)	(0.055)	(0.052)	(0.046)	(0.035)	(0.056)	(0.040)	(0.034)
Total FinCentre Gravity (log)		0.065**	0.066**			0.057**	0.089*	
		(0.023)	(0.025)			(0.026)	(0.043)	
Main FinCentre Logit-Share			0.013*				0.028	
			(0.006)				(0.026)	
Main FinCentre Gravity (log)				0.069**				0.075
				(0.023)				(0.047)
Other FinCentres Gravity (log)				0.036**				0.034**
				(0.015)				(0.015)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	187	187	183	183	175	175
R^2-Adjusted	0.506	0.543	0.538	0.552	0.475	0.499	0.510	0.517

Table 3.7B: European Metropolitan (excl. UK) GDP Per Capita 2019, Levels Regressions, Including Distance to the Main Financial Centre.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.099**	0.045	0.045	0.036	0.104***	0.043	0.032	0.039
	(0.037)	(0.044)	(0.040)	(0.033)	(0.032)	(0.043)	(0.040)	(0.035)
Distance to Largest FinCentre (log)	-0.071**	-0.052**	-0.084	-0.006	-0.083	-0.062	-0.091	-3.770*
	(0.025)	(0.023)	(0.064)	(0.093)	(0.051)	(0.048)	(0.087)	(1.769)
Total FinCentre Gravity (log)		0.038**	0.026			0.041*	0.018	
		(0.017)	(0.027)			(0.021)	(0.064)	
Main FinCentre Logit-Share			-0.013				-0.022	
			(0.016)				(0.044)	
Main FinCentre Gravity (log)				0.065				-3.682*
				(0.053)				(1.730)
Other FinCentres Gravity (log)				0.036**				0.036**
				(0.012)				(0.014)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	187	187	183	183	175	175

R^2-Adjusted	0.551	0.560	0.546	0.550	0.500	0.509	0.514	0.521

Table 3.8A: European (excl. UK) Metropolitan GDP Per Capita 2009-2019 Growth Regressions.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.246	-0.240	-1.509	-0.406	0.097	-0.750	-3.130*	-3.112*
	(1.128)	(1.942)	(1.387)	(1.133)	(1.398)	(1.989)	(1.545)	(1.532)
Total FinCentre Gravity (log)		0.293	1.040**			0.609	-0.393	
		(0.887)	(0.472)			(0.882)	(0.982)	
Main FinCentre Logit-Share			-0.184				-1.690*	
			(0.194)				(0.838)	
Main FinCentre Gravity (log)				0.129				-2.331
				(0.534)				(1.451)
Other FinCentres Gravity (log)				0.486				1.318**
				(0.479)				(0.544)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	187	187	183	183	175	175
R^2-Adjusted	0.602	0.600	0.585	0.581	0.590	0.589	0.598	0.599

Table 3.8B: European Metropolitan (excl. UK) GDP Per Capita 2009-2019 Growth Regressions, including Distance to the Main Financial Centre.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.679	-0.664	-2.519	-2.160	-0.250	-2.206	-3.579*	-3.037*
	(1.234)	(2.207)	(1.941)	(1.425)	(1.482)	(2.475)	(1.795)	(1.541)
Distance to Largest FinCentre (log)	0.840	1.318*	3.616	7.869*	2.161	2.855*	2.651	-153.566**
	(0.698)	(0.748)	(2.624)	(3.770)	(1.465)	(1.561)	(2.922)	(59.689)
Total FinCentre Gravity (log)		0.959	2.773*			1.327	1.649	
		(0.979)	(1.365)			(1.013)	(1.862)	
Main FinCentre Logit-Share			0.911				-0.239	
			(0.776)				(1.312)	
Main FinCentre Gravity (log)				5.912**				-155.374**
				(2.479)				(58.489)
Other FinCentres Gravity (log)				1.055**				1.383**
				(0.469)				(0.530)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	187	187	183	183	175	175

R^2-Adjusted	0.602	0.602	0.593	0.593	0.594	0.595	0.598	0.602

3.6 Comparing the Regression Results for Cross-Border and Intra-Border Accessibility to Financial Centres

In addition, we undertake a series of estimations which, as well as access to domestic financial centres, also allow for cross-border interactions between localities and financial services centres in neighbouring countries to potentially play a role in shaping local city-regional productivity and prosperity. For example, access to financial services in Dublin may be important for businesses located in Northern Ireland, in the same way that Belgian businesses may seek capital from financial services located in either Amsterdam or Luxembourg; Dutch firms may seek business financing via Frankfurt; northern Italian and French firms may enter into financing negotiations with Swiss banking houses; or firms from across Europe may try to access capital via the London financial markets. The detailed results are all reported in Tables A3.1-A3.8B in Appendix 3.5. However, here we are able to give a succinct overview of how these cross-country results differ from the intra-country results.

Comparing Table 3.1 and 3.2, with Tables A3.1 and A3.2, we see that when combining UK and Europe data including cross-border linkages, all the results remain unchanged except that the spatial concentration of banking headquarter functions now becomes negatively related to city-region productivity and prosperity after removal of the UK from the sample.

Comparing the Tables A3.3 and A3.4 with Tables 3.3 and 3.4, we see that the result with both UK and European data remain largely unchanged, except for the fact that with the UK included, both the distance to the principal financial centre and the spatial banking concentration are weakly negatively significant. Once the UK is removed from the analysis, these results also disappear.

Comparing the UK-only data in Tables A3.5A and A3.5B with Tables 3.5A and 3.5B, we see that again, most measures of accessibility to financial centres are positively related to productivity and prosperity, and after London is removed from the sample, only total accessibility to financial services centres is weakly positively related to local city-region productivity and prosperity.

Comparing the UK-only data in Tables A3.6A and A3.6B with Tables 3.6A and 3.6B, we that the local city-region growth 2009-2019 results are unchanged. Accessibility to London, as measured by both the London-access gravity-index and also the logit-transformed London gravity-index, are both strongly related to city-region growth, both prior to, and after, the removal of the London-specific observations. If the distance to London is then included, this is typically negatively related to the growth in GDP per capita, and dominates the other spatial gravity indices.

Analysing the European data after removal of the UK from the sample, when we compare Tables A3.7A and A3.7B with Tables 3.7A and 3.7B, we see that the role of other financial centres in positively influencing local city-region productivity and prosperity becomes even more important when we also control for cross-border engagements, as does the distance to the largest financial centre.

Finally, examining the Continental European data, when we compare Tables A3.8A and A3.8B with Tables 3.8A and 3.8B, we see that while the importance of access to other financial centres is no longer significant, accessibility dependency on the main financial centre is negatively associated with growth. Once the distance to the main financial centre is also included, none of the variables display any significance.

3.7 Banking System Structure and Centralisation

One final issue worth noting is the question of the role played by the structure and degree of spatial centralisation or decentralisation of the national banking system in fostering regional growth and productivity. As we have already seen in the various models estimated for both intra-border and cross-border banking and financial services linkages, there is some evidence that a higher degree of spatial concentration of the national banking system tend to lead to reduced levels of GDP per capita (Table A3.2 and A3.3) and reduced levels of growth (Tables 3.3 and 3.4), as depicted by the dashed line in Fig.3.18. These models use the Flögel and Hejnová (2024) index of banking centralisation which is constructed on the basis of the headquarter locations of domestic banks, but does not include any weighting for bank assets by location or other measures of devolved decision-making by the banks. For example, while the headquarters of Sweden's second largest bank, Handelsbanken, is located in Stockholm on the same street as the headquarters of Sweden's largest bank, SEB, in terms of decision-making, Handelsbanken is one of the most decentralised banks in the world, with almost all financial and investment decision made by the local branch on the basis of local knowledge (Mayer et al. 2021). As such, while the Swedish regions are located on the *x*-axis of Fig.3.18 at $x = 66.2$ – between the French regions (bookended by Paris and Caen) and the Spanish regions of Cordóba and Gijón – in reality the Swedish banking system is far more regionally decentralised than the location of headquarters suggests. As such, our results on this front are somewhat indicative and must be interpreted with caution. Even so, examining the Flögel-Hejnová index in detail also uncovers some potentially interesting and important further insights.

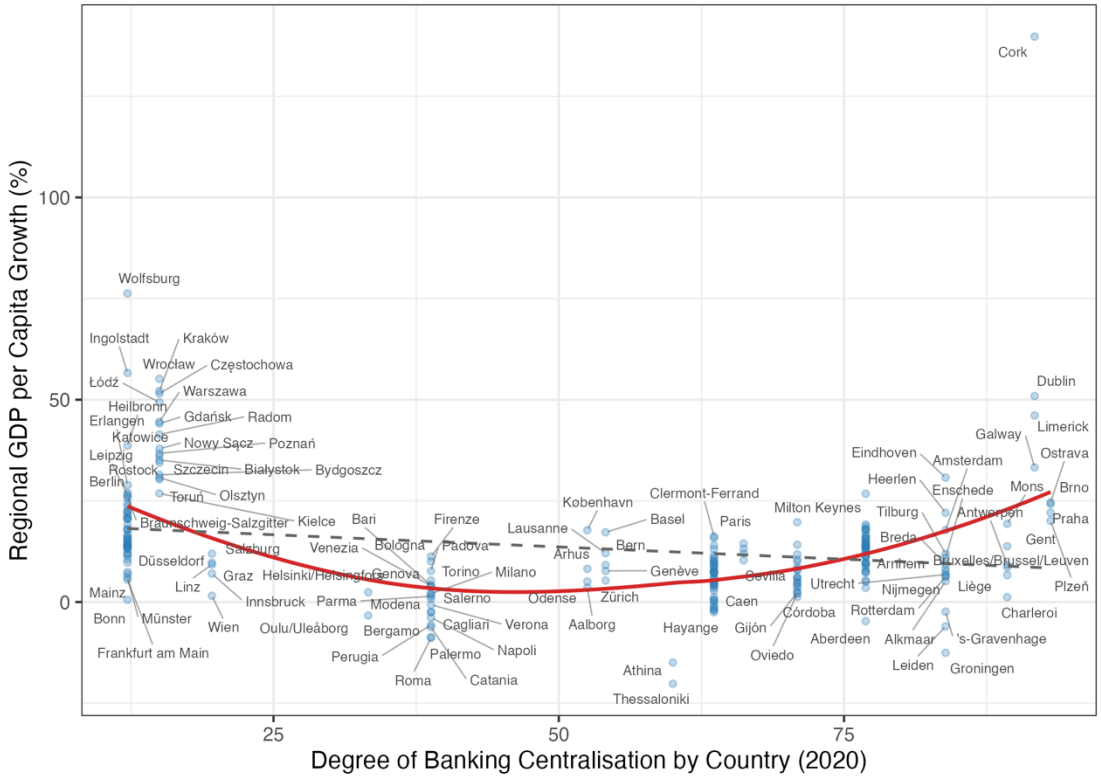


Fig.3.18 Banking Centralisation and Regional Growth

Fig.3.18 provides a linearity check on the links between Flögel-Hejnová indices of banking centralisation and regional growth. As we see, the pattern is U-shaped, with the UK regions all sitting just above $x = 75$ on the x-axis. This U-shape shows only in GDP per capita (2009-2019)

growth data, and not in the 2019 levels data. Obviously regional growth is shaped by many different influences, but there are potentially some important links here to the wider institutional and governance influences on regional growth. As documented by Carrascal-Incera et al. (2020), countries with either very highly centralised top-down governance systems or those with very highly decentralised and fragmented governance systems, typically tend to grow at a slower rate than countries with intermediate levels of devolution in their governance systems. The observations reported in Fig.3.18 suggests that more research needs to be undertaken on the linkages between national and regional growth and the centralisation-decentralisation features of both the national banking system and the national governance and institutional systems.

3.8 Conclusions

This part of our research agenda has underscored the extent to which the UK relationships between banking, financial services clusters and city and regional growth, as detailed in Part 2 of this research, are in many regards atypical when compared to other European economies. In particular, UK second-tier and third-tier cities are not perceived by the investment community in a manner akin to similar-sized cities across the rest of Europe. The most obvious manifestation of this is the role played geographic distance in adversely shaping perceptions. The role played by the influence of London on the levels and growth rates of regional productivity and prosperity appears to be markedly different to the role played by the principal financial centres in other European countries. In other European countries, the economic fortunes of city-regions appear to be far more influenced by access to regional banking and financial centres than is the case in the UK. As we saw in Part 2 of this research, the influence of local and regional financial services (FSS) clusters dissipates after short distances, except for the influence of London which extends much further to a national scale. Across the rest of Europe, access to local banking and financial services clusters appears to play a more prominent and widespread role in both the levels and growth rates of regional productivity and prosperity.

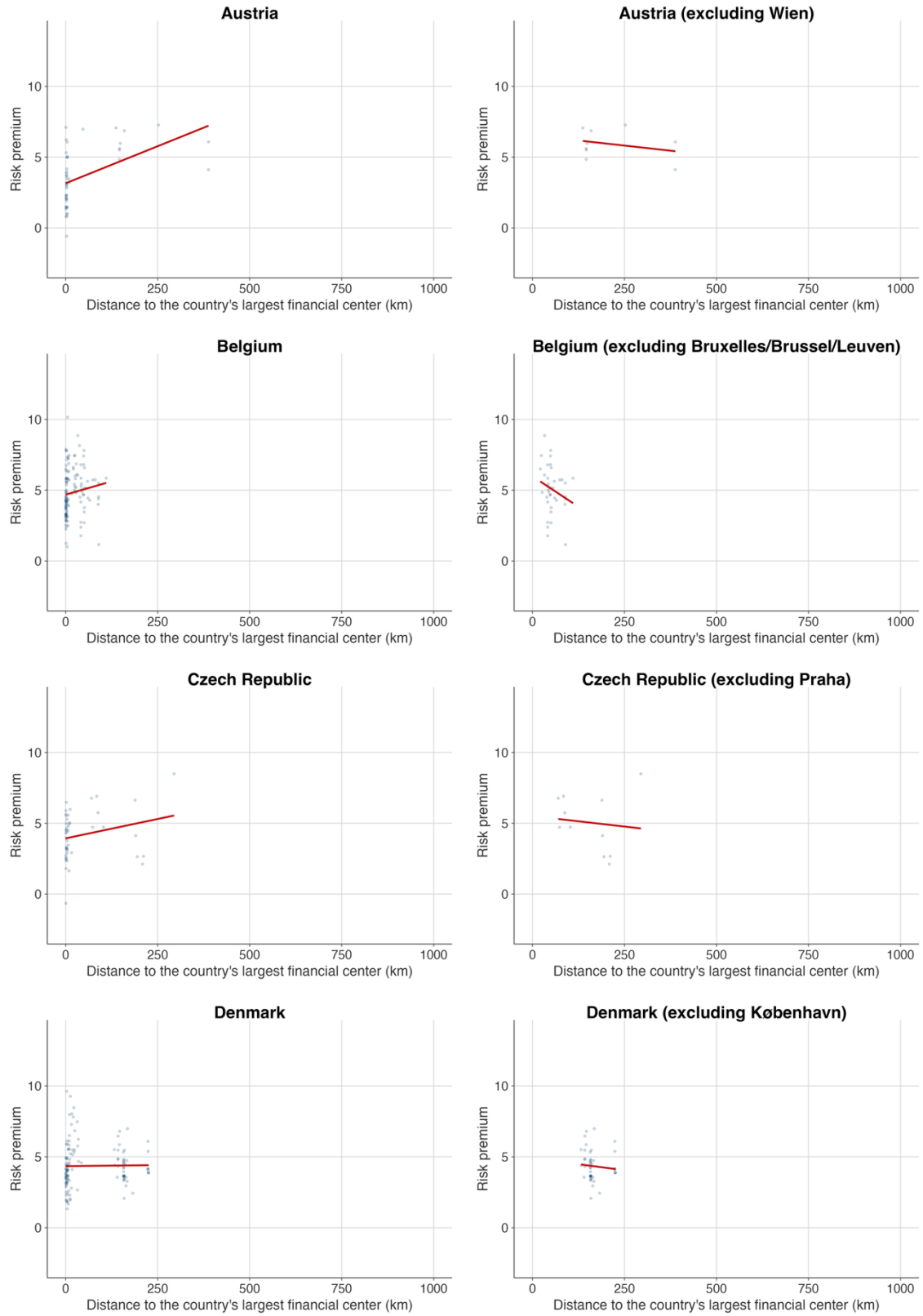
Appendix 3.1 The Spatial Data Assembly and Calculation Methods

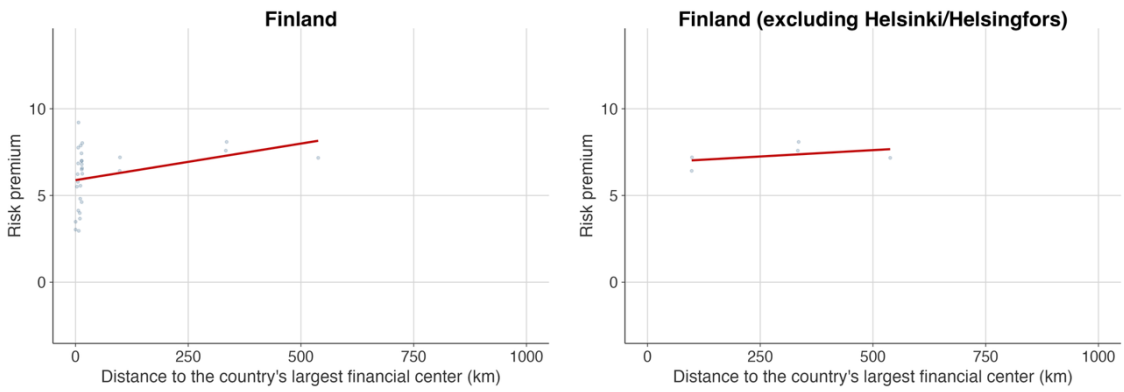
We follow the list of largest financial centers (FUAs) by European country as determined by the Global Network Connectivity financial index developed by Derudder and Taylor (2018); Derudder et al. (2024). The cities are: London, Paris, Frankfurt, Luxembourg; Madrid, Amsterdam, Brussels, Dublin, Milan, Vienna, Stockholm, Lisbon, Athens, Copenhagen, Helsinki, Zürich, Oslo, Warsaw and Prague, and we make the following steps to produce the graphs below.

For individual investments, in order to measure the distance for each investment to the largest financial center in the same country, the GNC Financial Centers dataset is first linked to the OECD's definition of metropolitan areas, also referred to as Functional Urban Areas (FUAs). Some FUAs (e.g., the Ruhrgebiet) include multiple GNC centers, and therefore have different financial ranking scores. .In these cases, the highest score is assigned to the overarching metropolitan area (FUA), meaning that a FUA enclosing multiple cities is ranked based on its strongest financial center's score. Furthermore, for each of these financial center FUAs, a centroid is obtained. This centroid reflects the mean coordinates of transaction coordinates, in CBDs where those exist or otherwise across the FUA's city. For each investment, the Euclidean distance to the nearest center is measured, within the observed country unless cross-border distance relationships are allowed explicitly. The resultant distance measures can then be plotted against risk-pricing measures, or information from the OECD Metropolitan database after averaging these to the city-level.

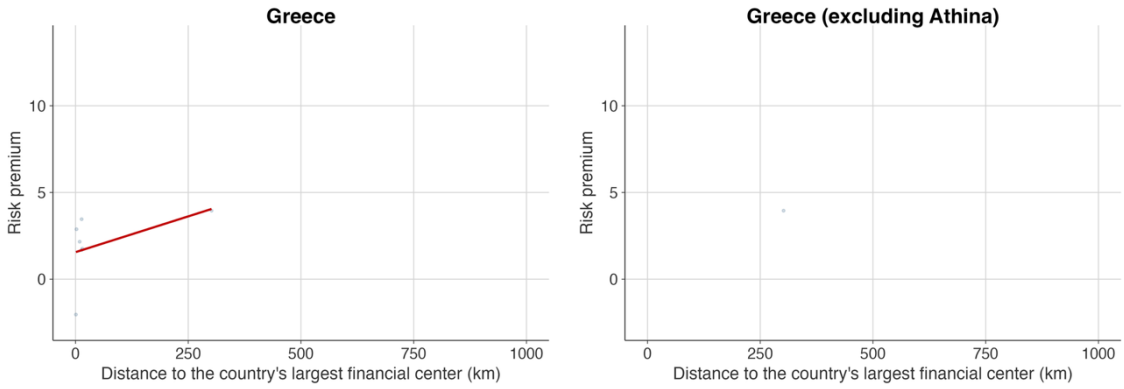
In turn, city-level access to financial centers is constructed by summing across all financial centres *j* the ratio of each *j*th centre's GNC score to its centroid's distance, in kilometers, from the *i*th city. The gravity measure is additionally decomposed into the 'pull' from the largest financial centre in the observed country, or, in the case of the cross-border version of the measure, the financial centre that adds the most weight to the *i*th city's gravity measure, and the residual pull from all other centres. The proportion of total financial centre gravity attributable to the dominant financial centre is additionally expressed as a logit transformation, $\log(s / (1 - s))$, which maps the share onto an unbounded scale that is particularly suitable for linear regression.

Appendix 3.2. The Relationships between the Costs-of-Capital and Distance to the Principal Domestic Financial Centre by Country

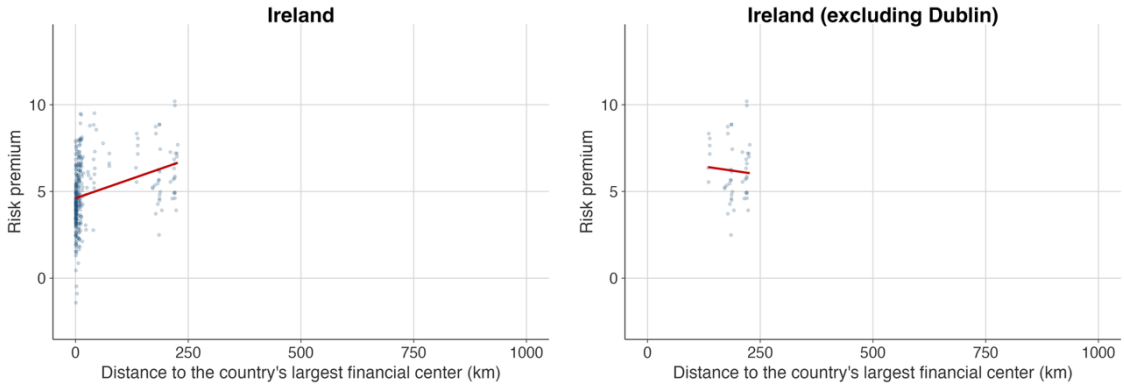



Finland
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)

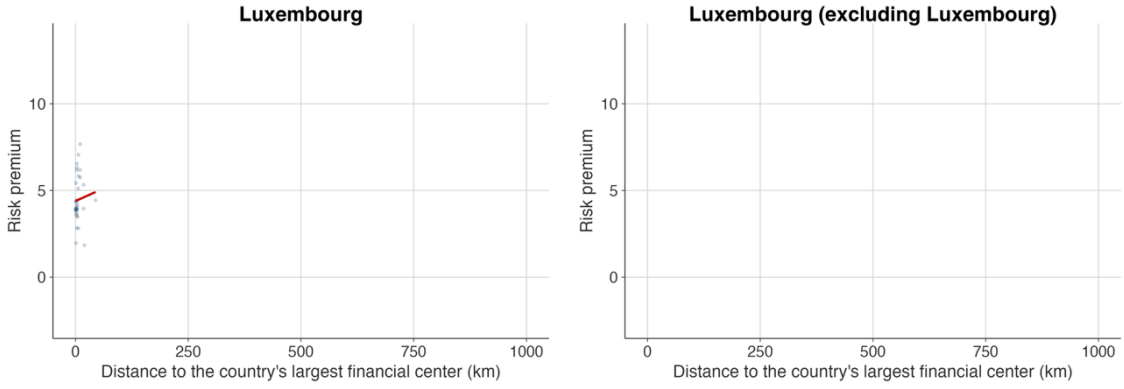
Finland (excluding Helsinki/Helsingfors)
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)


Greece
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)

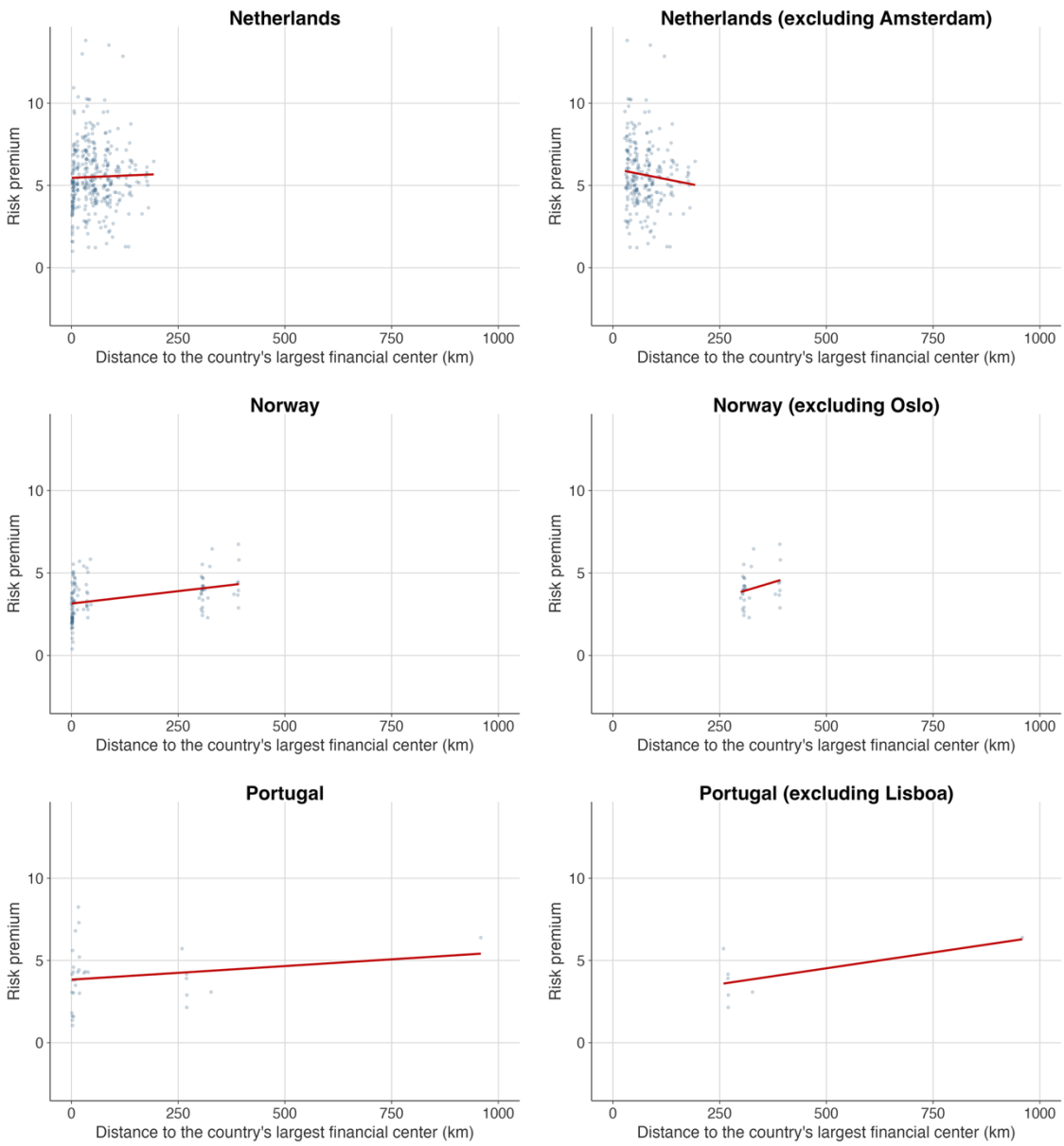
Greece (excluding Athina)
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)


Ireland
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)

Ireland (excluding Dublin)
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)


Luxembourg
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)

Luxembourg (excluding Luxembourg)
Risk premium
10
5
0
0
250
500
750
1000
Distance to the country's largest financial center (km)


Netherlands
Netherlands (excluding Amsterdam)
Norway
Norway (excluding Oslo)
Portugal
Portugal (excluding Lisboa)
Risk premium
Distance to the country's largest financial center (km)
0
5
10
0
250
500
750
1000

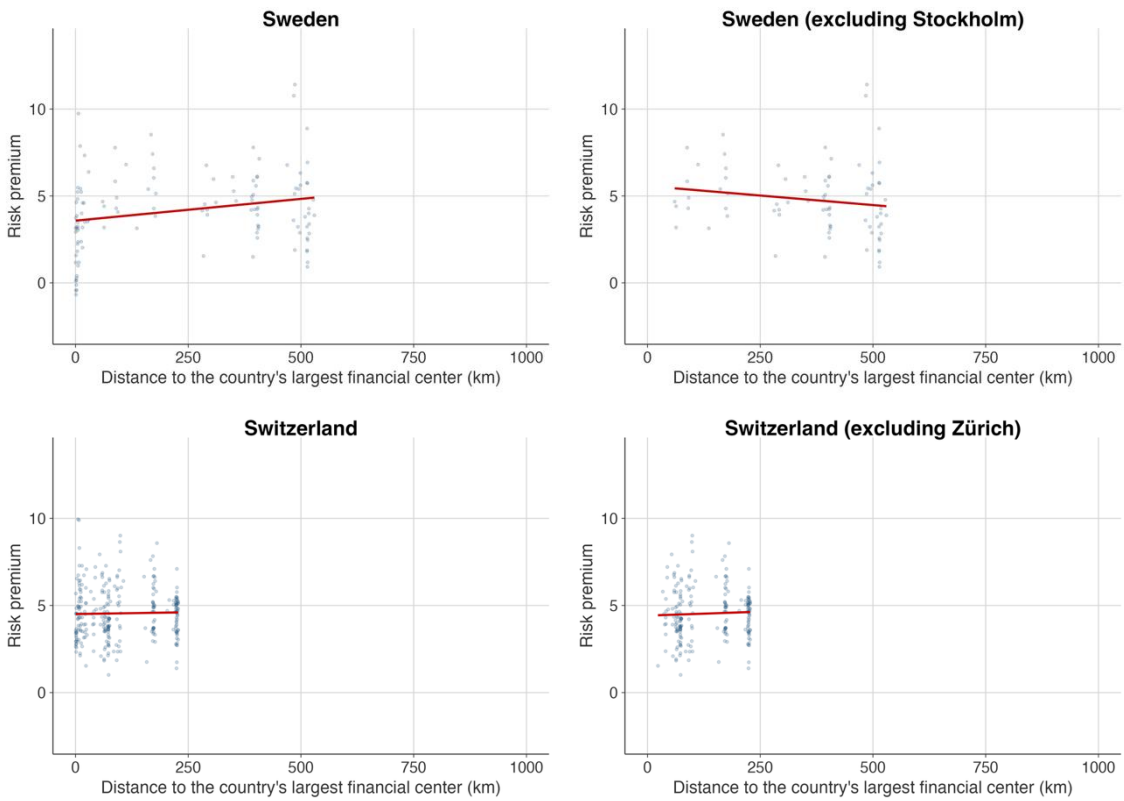
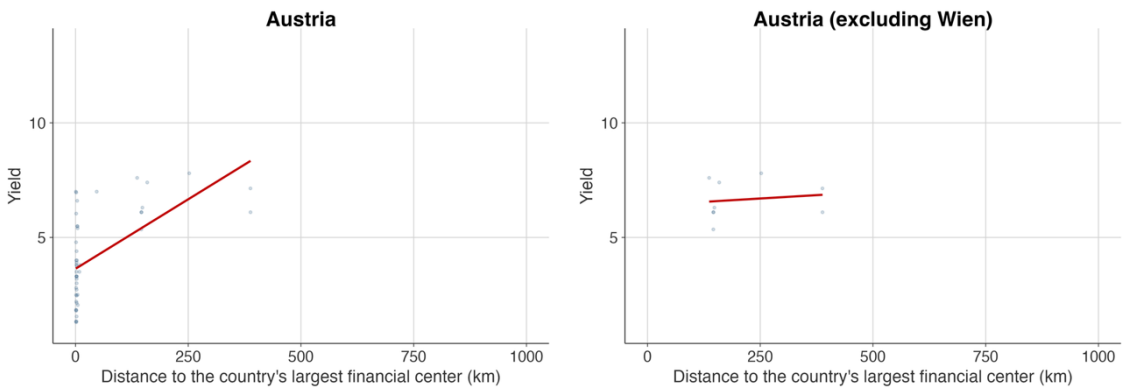
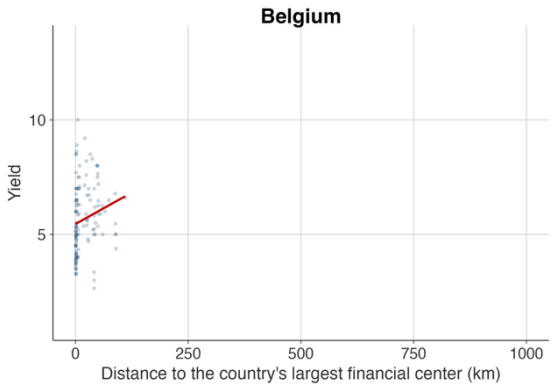
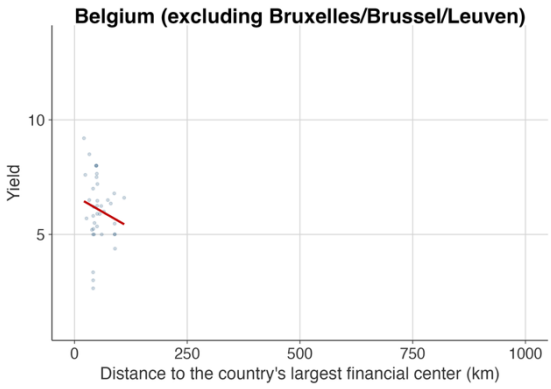


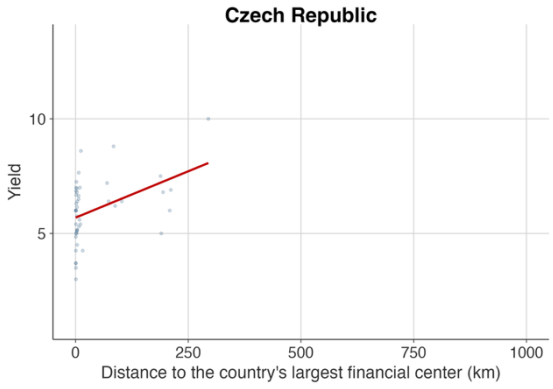
Figure A3.1 Relationships Between Costs of Capital and Distance to the Principal Domestic Financial Centre by Country, Based on City-Level Risk Premia.

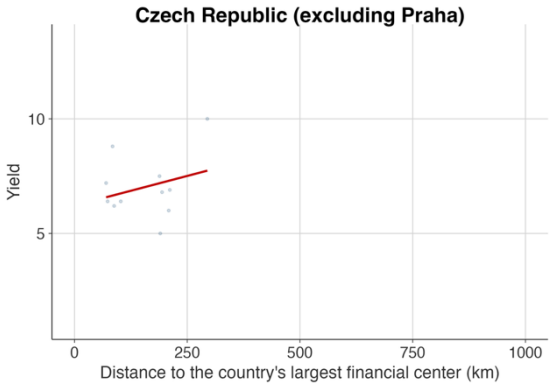

Austria
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

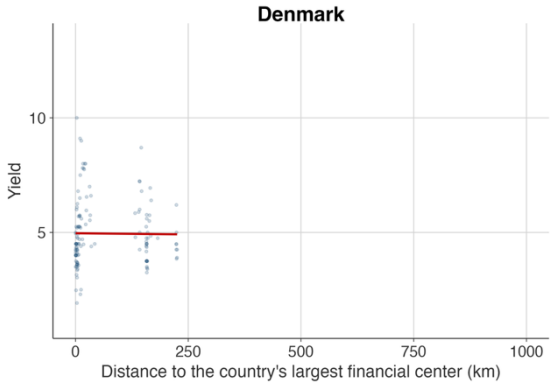
Austria (excluding Wien)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

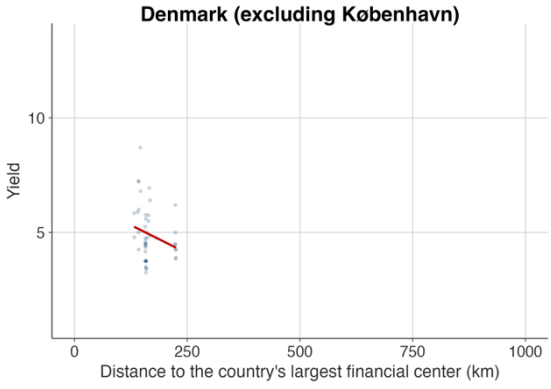

Belgium
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

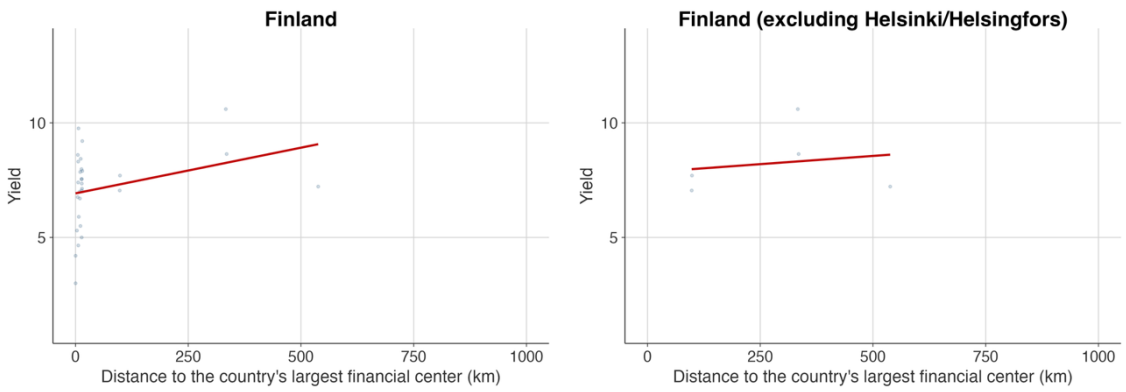

Belgium (excluding Bruxelles/Brussel/Leuven)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Czech Republic
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

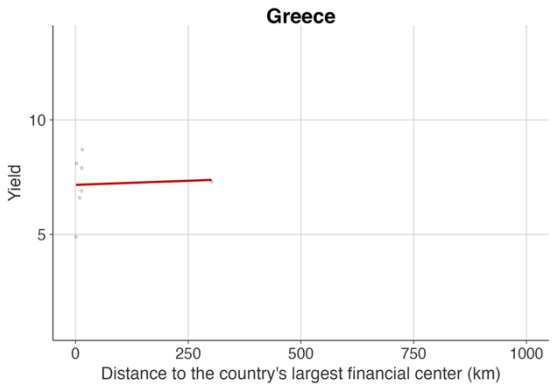

Czech Republic (excluding Praha)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Denmark
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Denmark (excluding København)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Finland
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

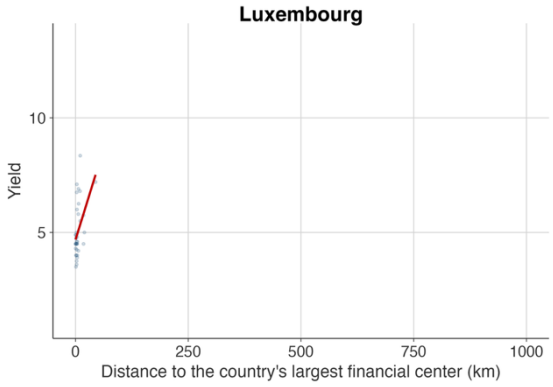
Finland (excluding Helsinki/Helsingfors)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

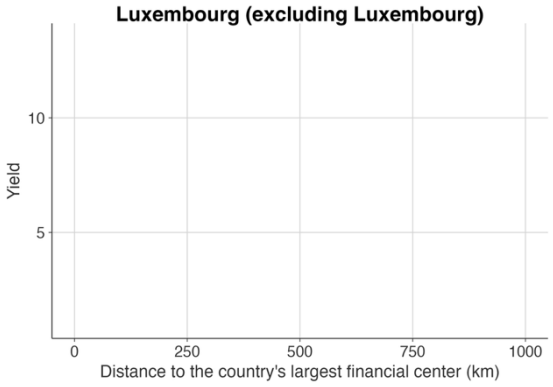

Greece
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

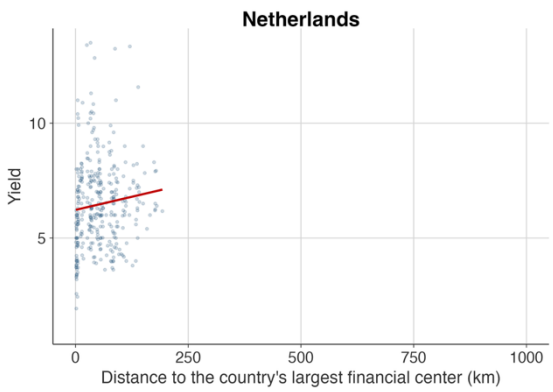

Greece (excluding Athina)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

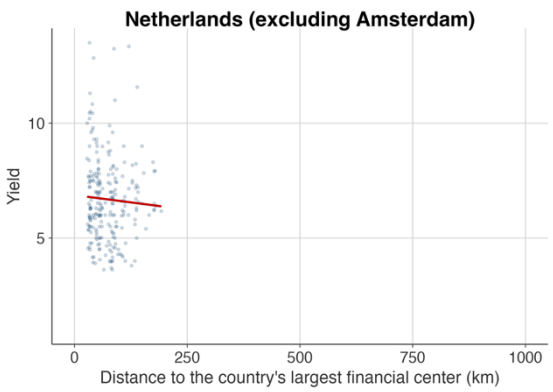

Ireland
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

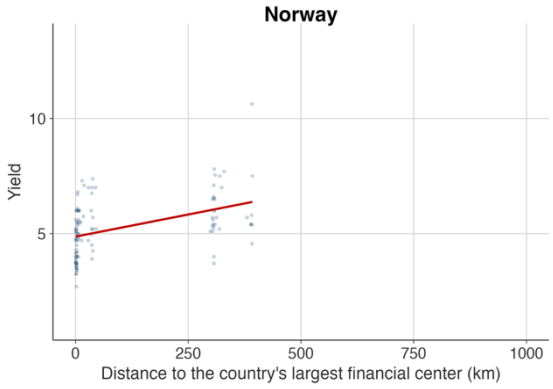

Ireland (excluding Dublin)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

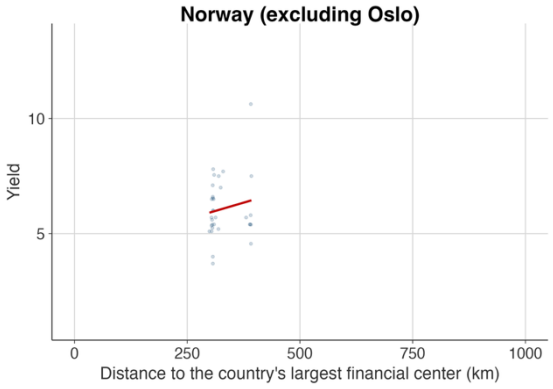

Luxembourg
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

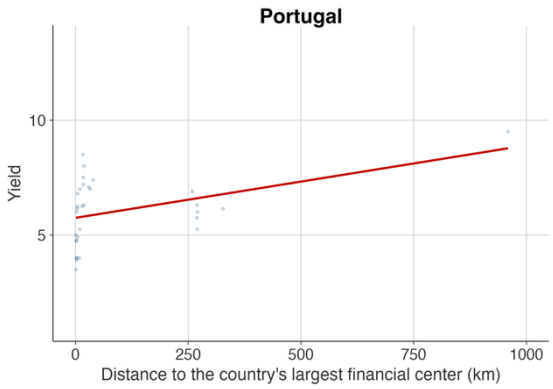

Luxembourg (excluding Luxembourg)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

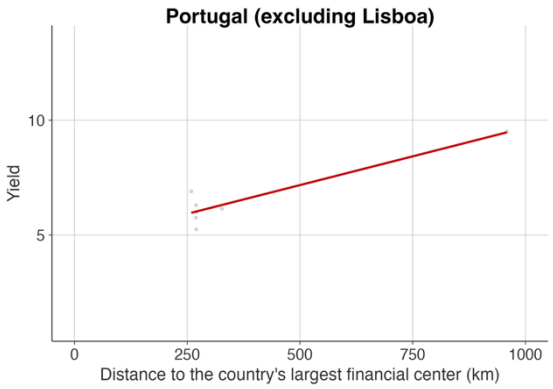

Netherlands
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Netherlands (excluding Amsterdam)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Norway
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Norway (excluding Oslo)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Portugal
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)


Portugal (excluding Lisboa)
Yield
10
5
0
250
500
750
1000
Distance to the country's largest financial center (km)

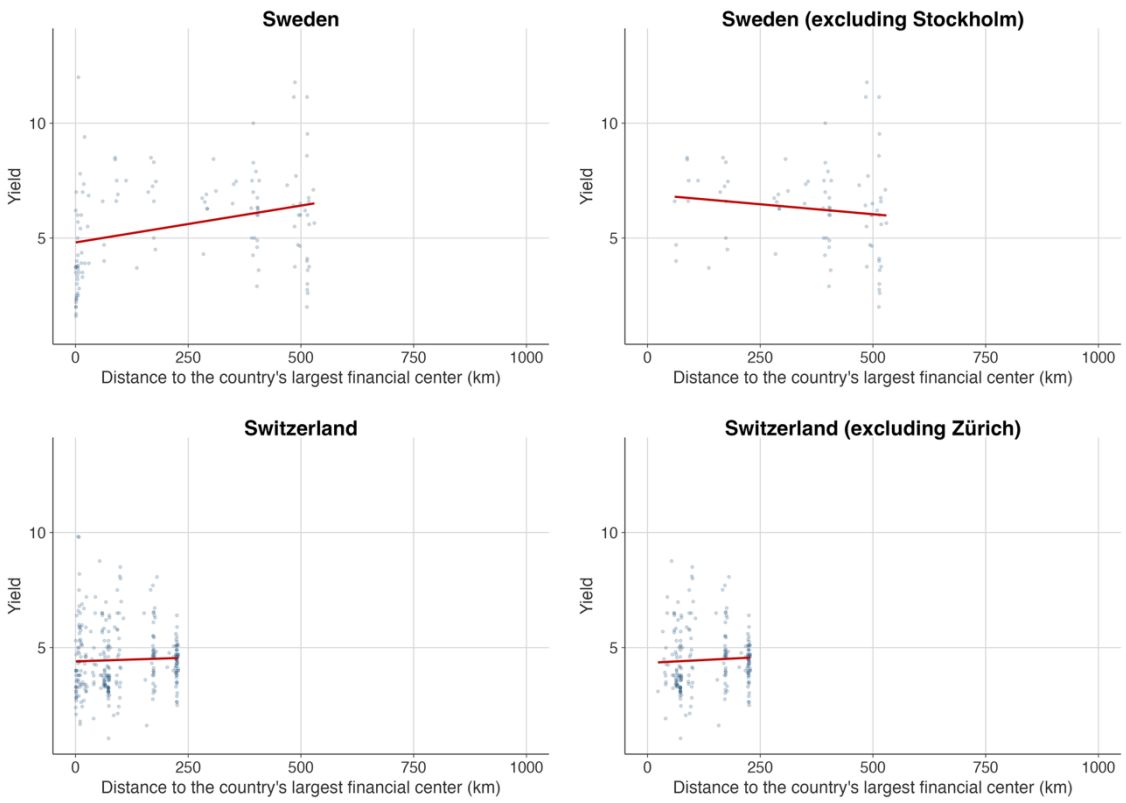
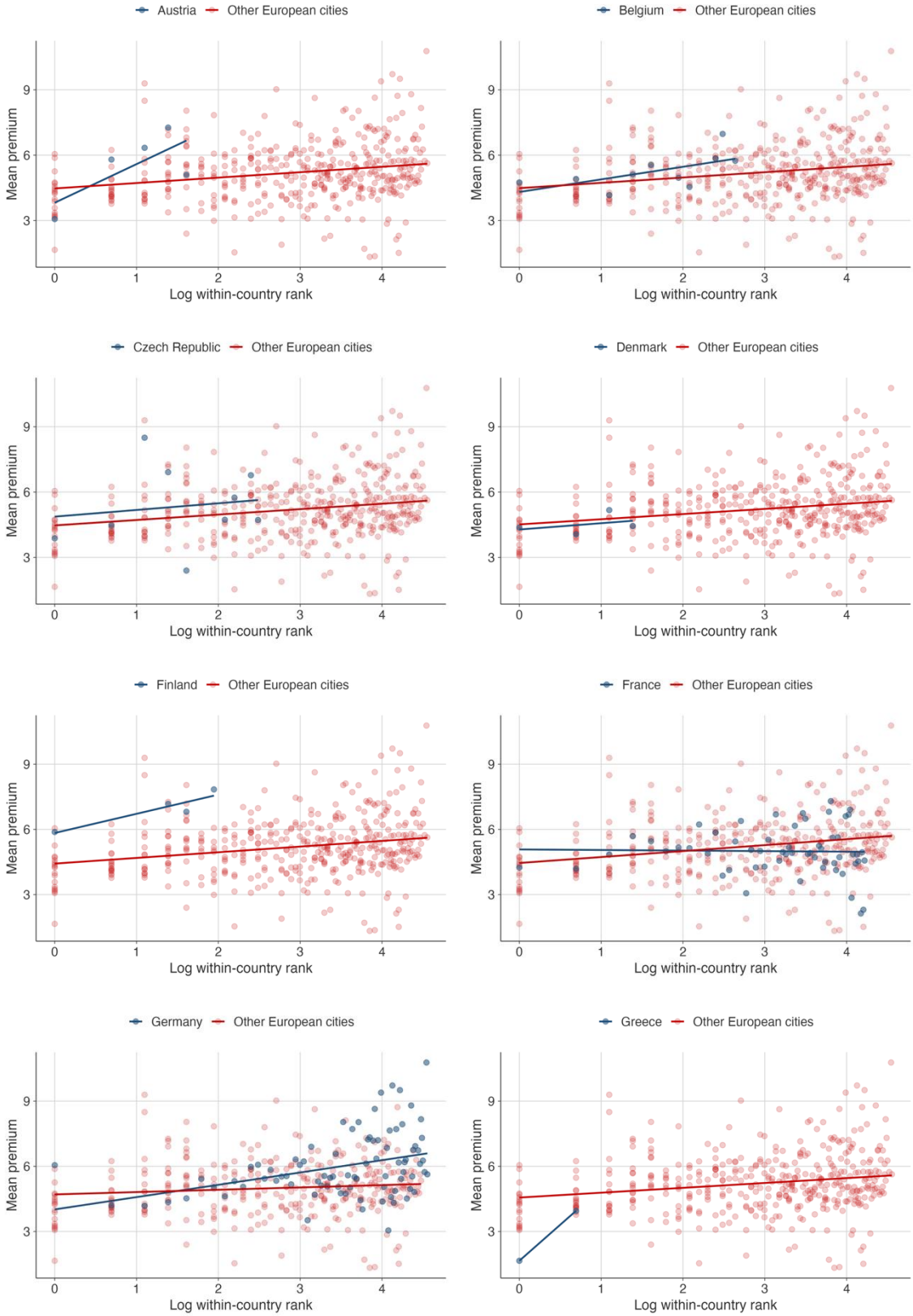


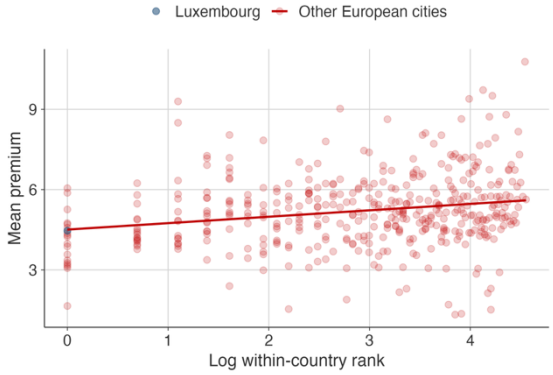
Figure A3.2 Relationships Between Costs of Capital and Distance to the Principal Domestic Financial Centre by Country, Based on City-Level Yields.

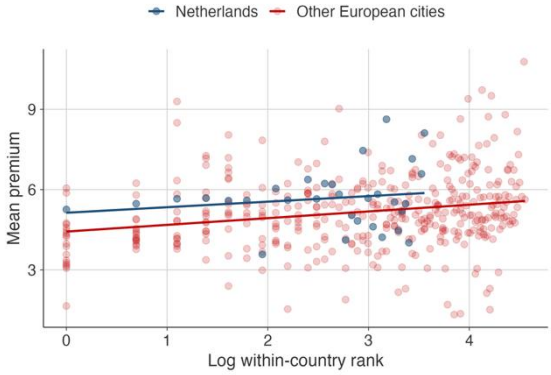
Appendix 3.3 The Relationships Between the Costs-of-Capital and (the natural log of) the Rank Order of the City by European Country

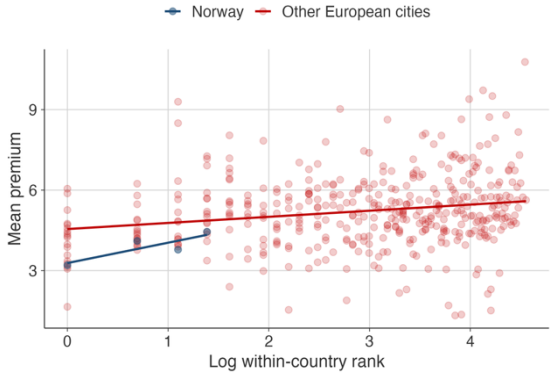


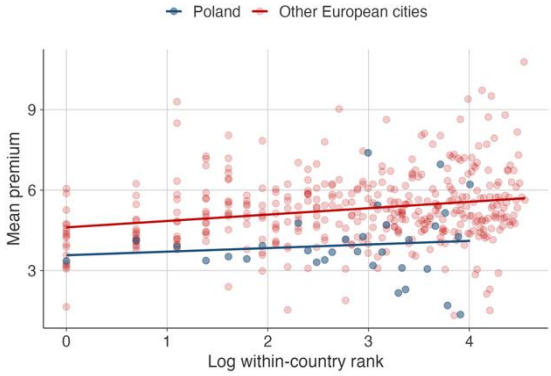

Ireland
Other European cities
Mean premium
Log within-country rank

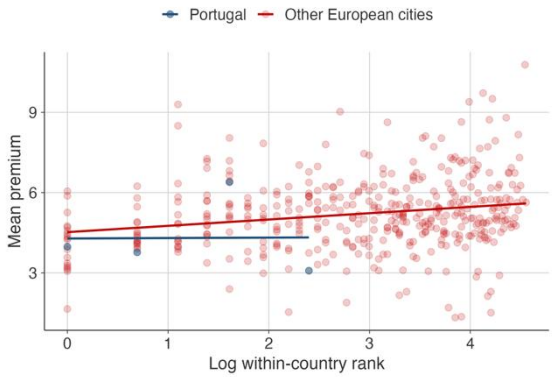
Italy
Other European cities
Mean premium
Log within-country rank

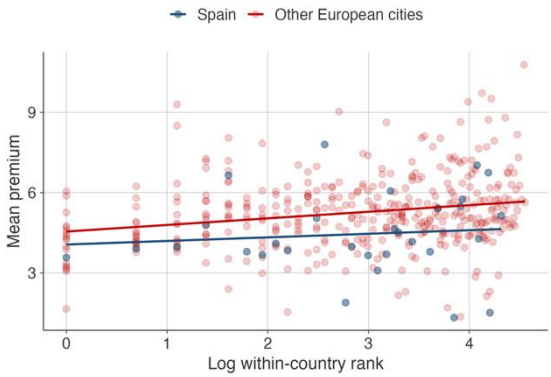

Luxembourg
Other European cities
Mean premium
Log within-country rank


Netherlands
Other European cities
Mean premium
Log within-country rank


Norway
Other European cities
Mean premium
Log within-country rank


Poland
Other European cities
Mean premium
Log within-country rank


Portugal
Other European cities
Mean premium
Log within-country rank


Spain
Other European cities
Mean premium
Log within-country rank

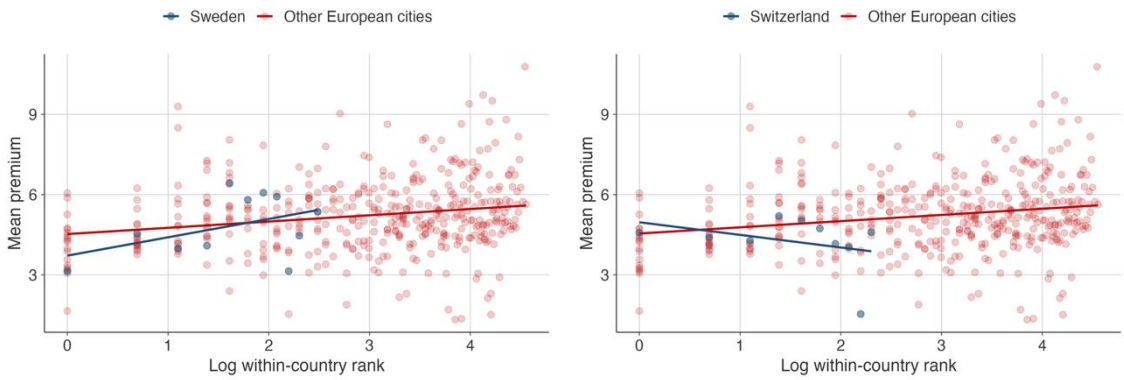
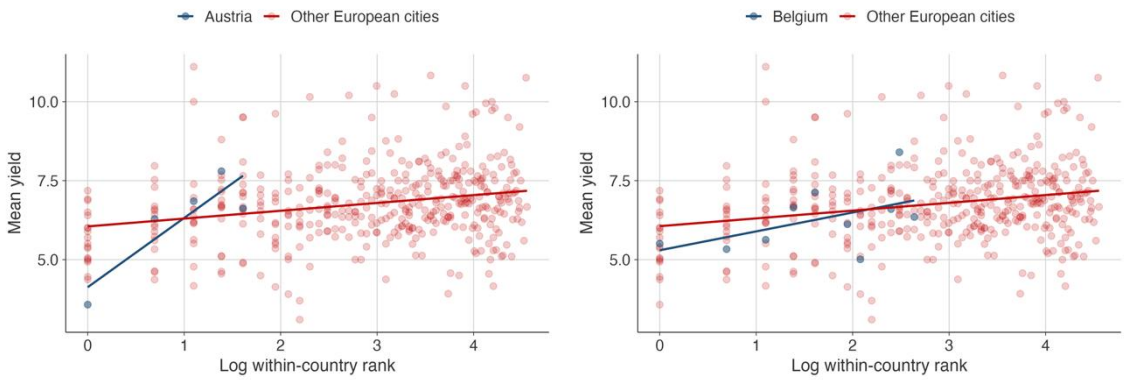
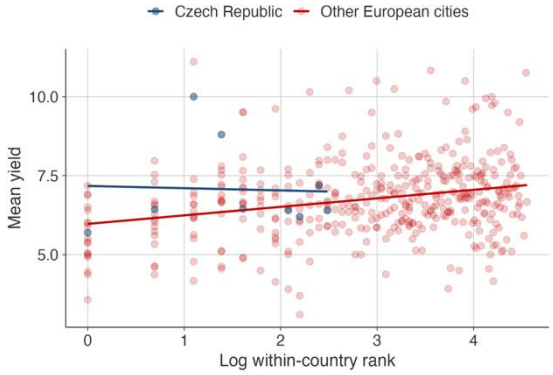
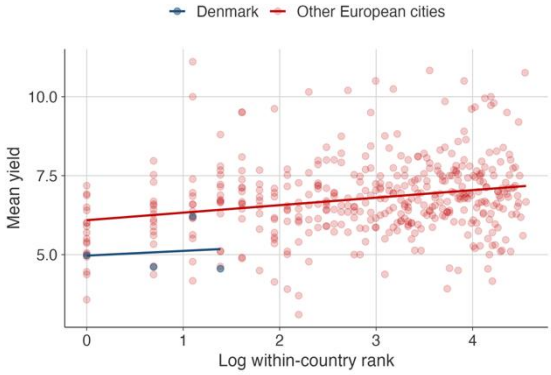


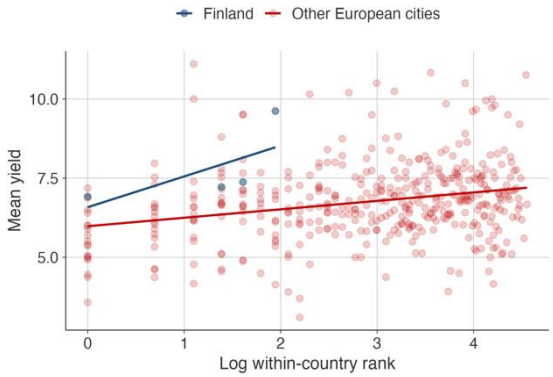
Figure A3.3 Relationships Between Costs of Capital (Risk Premia) and the Natural Log of the Rank of the City, in Terms of Population Size, Ordered by European Country.

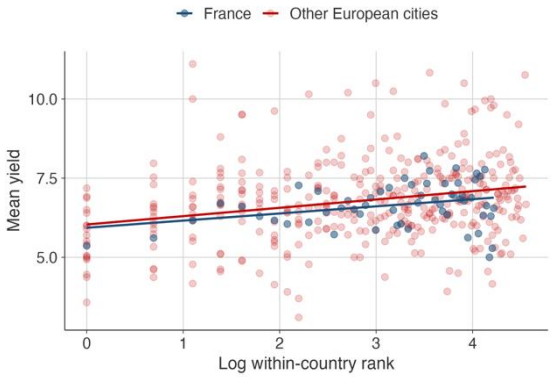

Austria
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

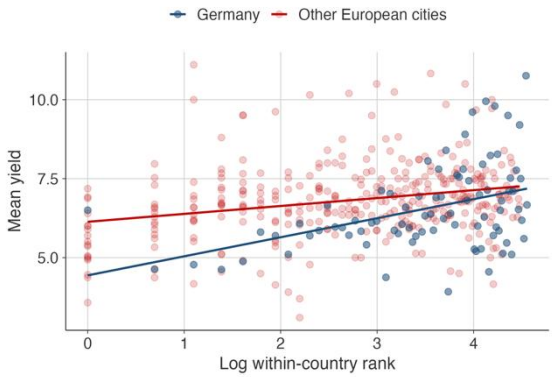
Belgium
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

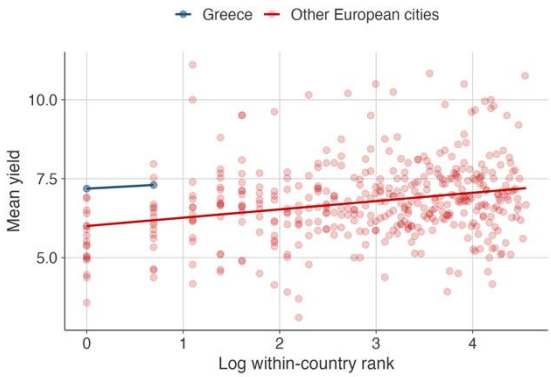

Czech Republic
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

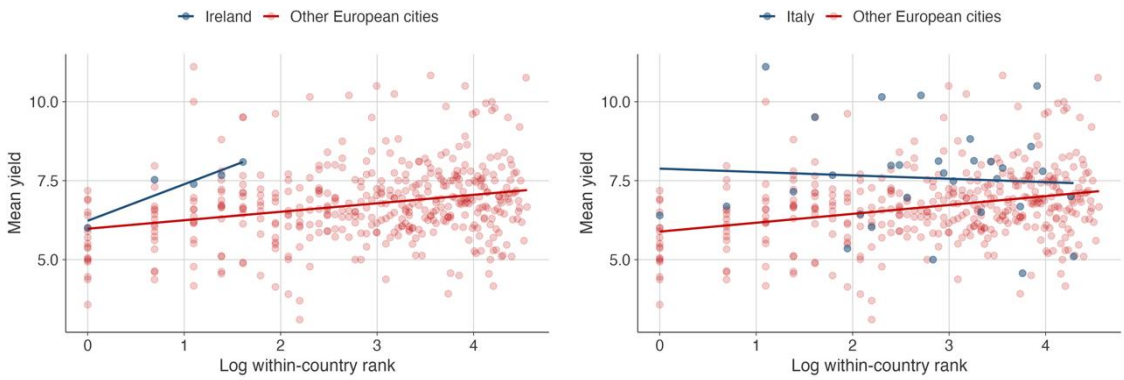

Denmark
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Finland
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

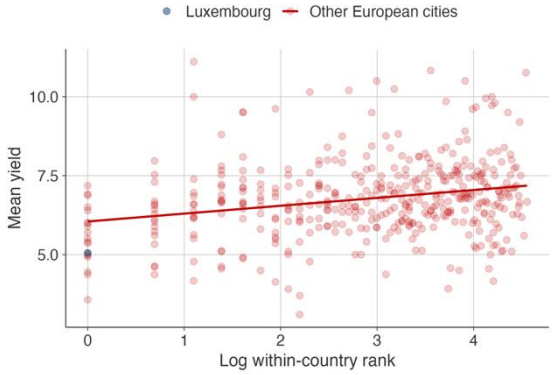

France
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

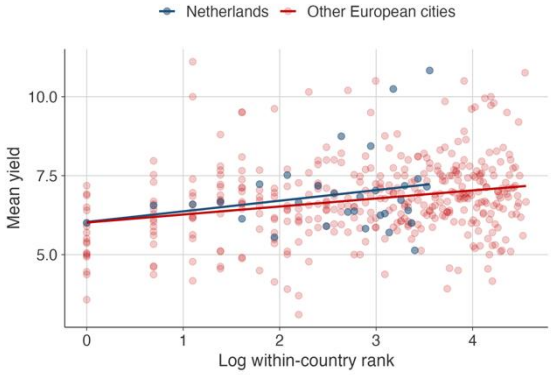

Germany
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

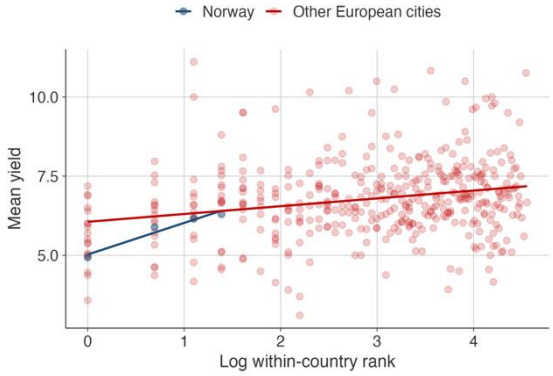

Greece
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

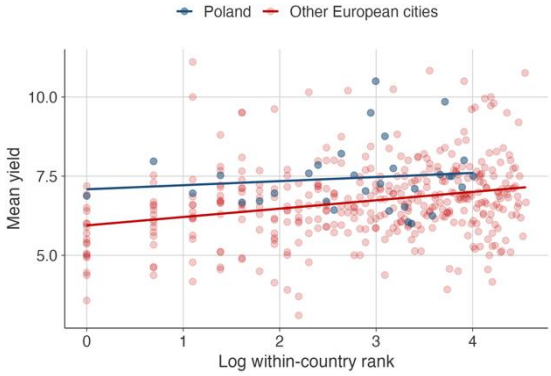

Ireland
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

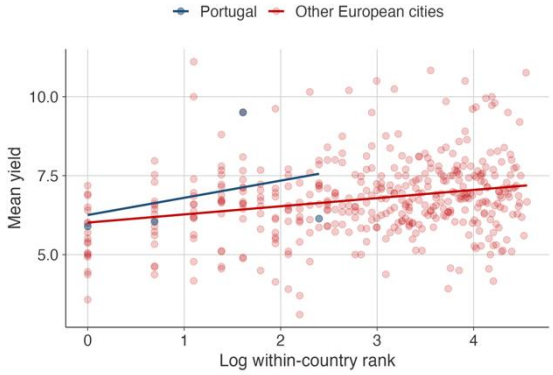
Italy
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

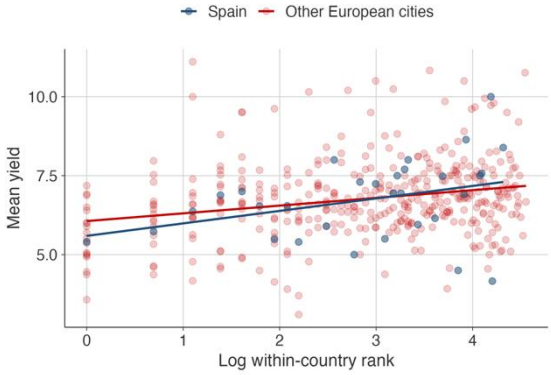

Luxembourg
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Netherlands
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Norway
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Poland
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Portugal
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank


Spain
Other European cities
Mean yield
10.0
7.5
5.0
0
1
2
3
4
Log within-country rank

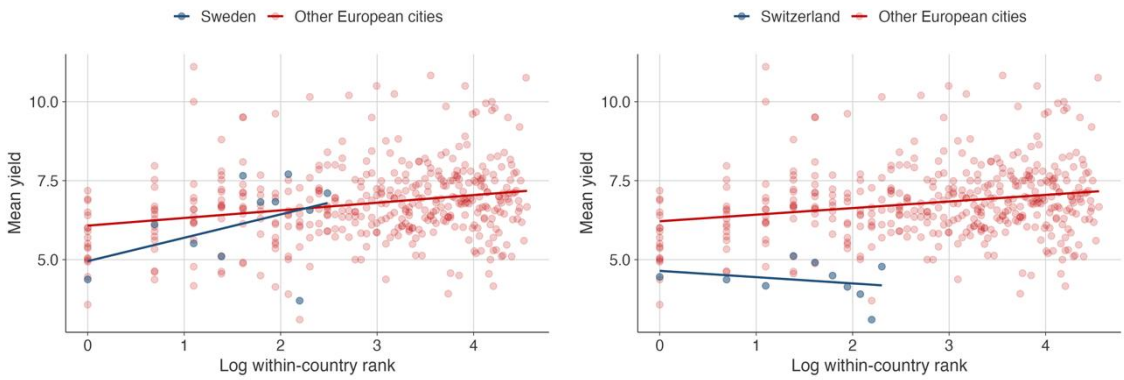
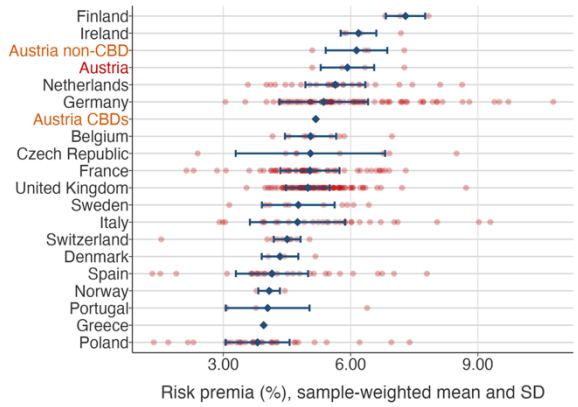
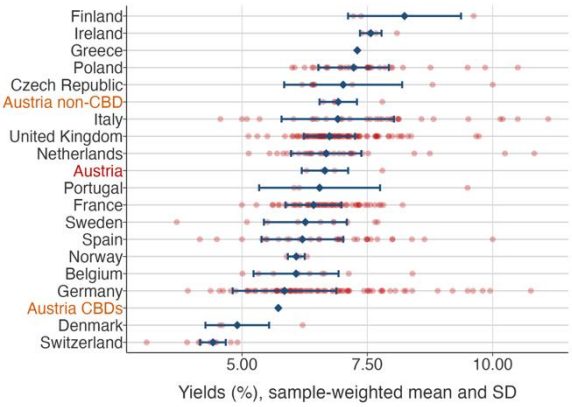
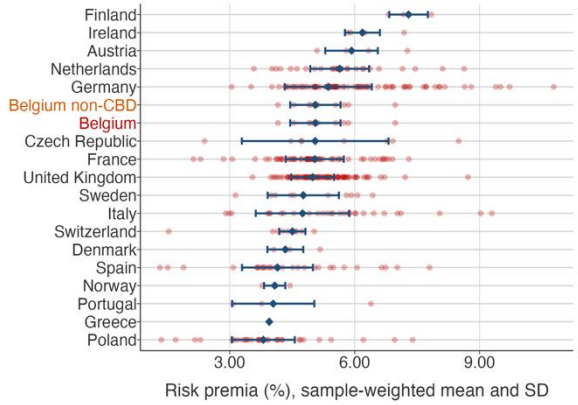


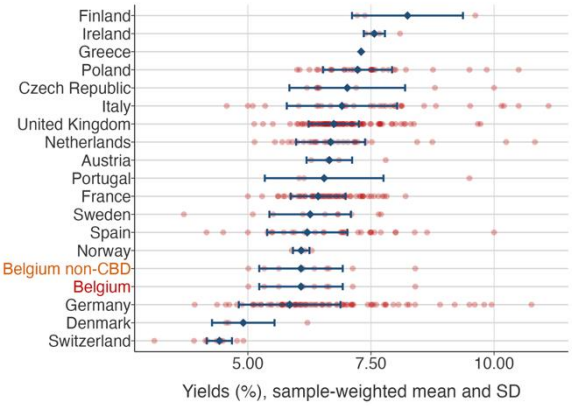
Figure A3.4 Relationships Between Costs of Capital (Yields) and the Natural Log of the Rank of the City, in Terms of Population Size, Ordered by European Country.

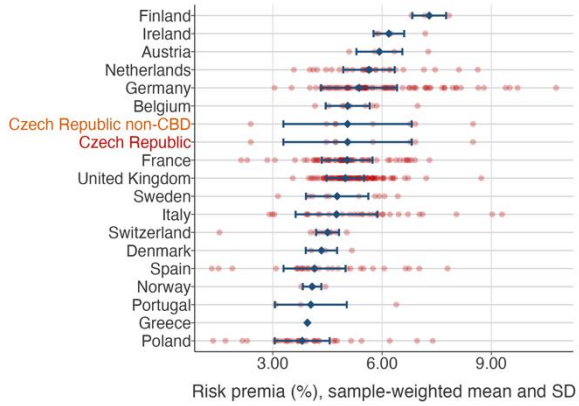
Appendix 3.4. The Differences Between CBD and Non-CBD Capital Cost for European Countries After Excluding Capital Cities

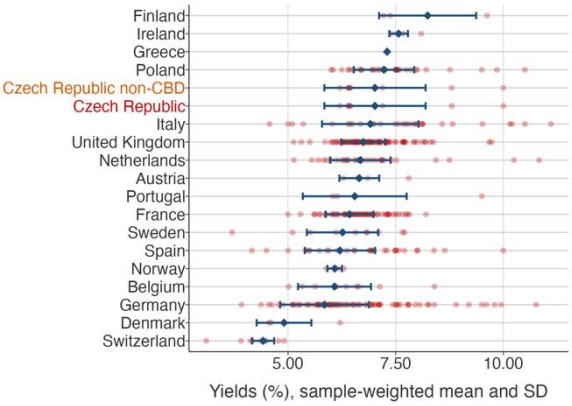


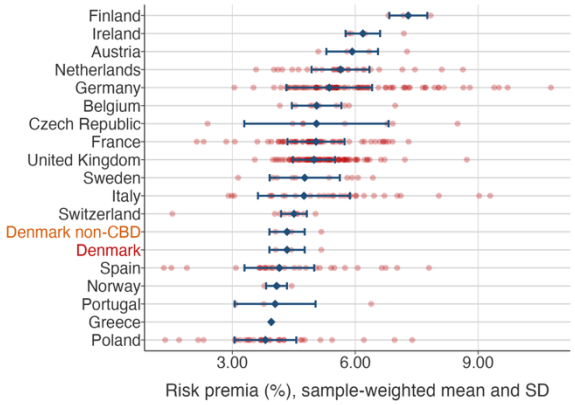








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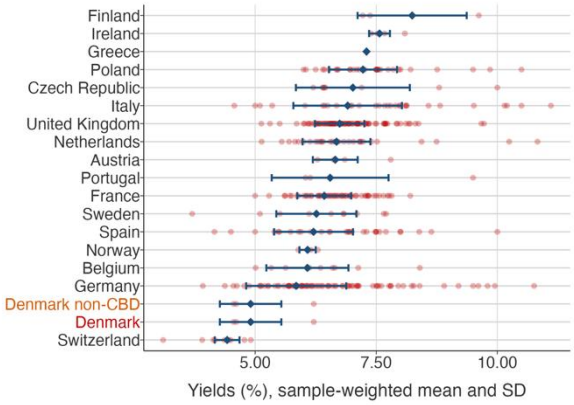
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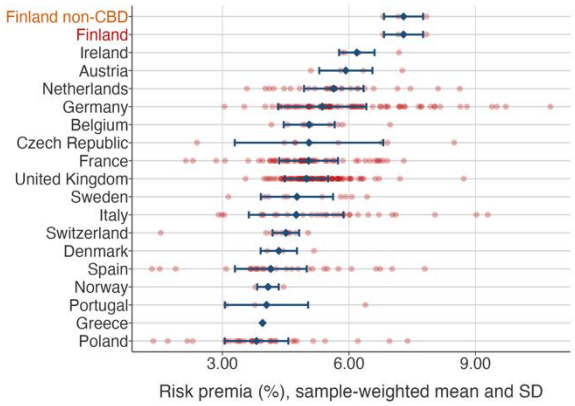
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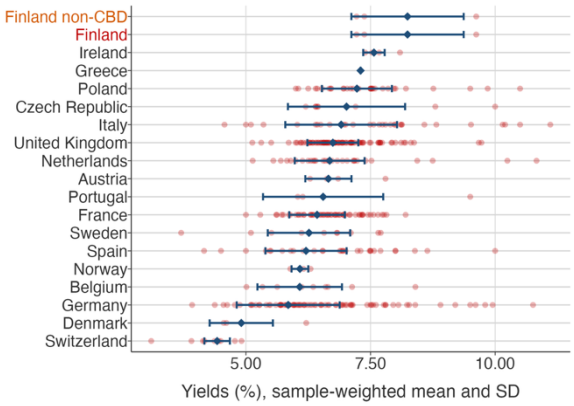
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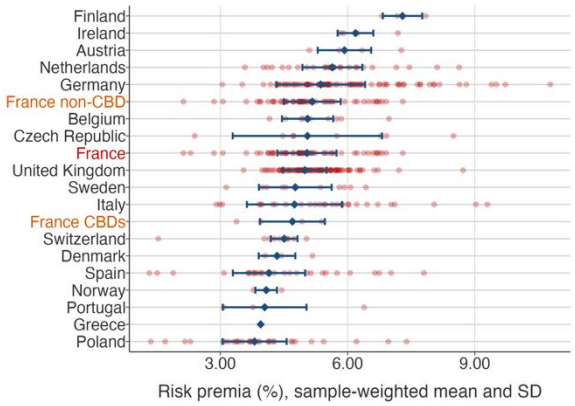
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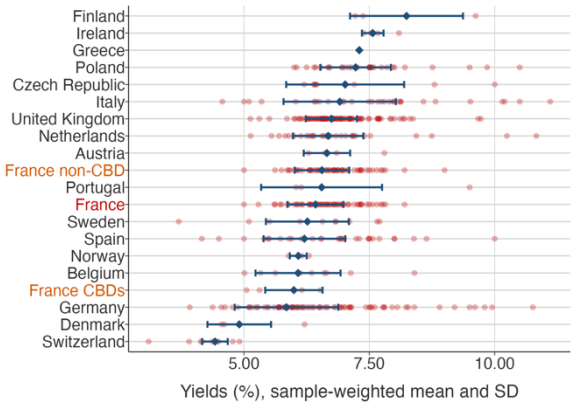
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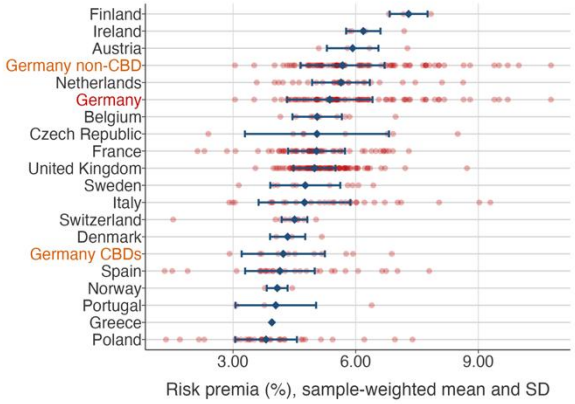
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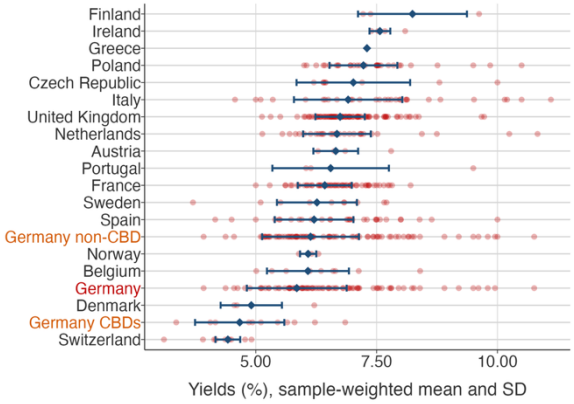
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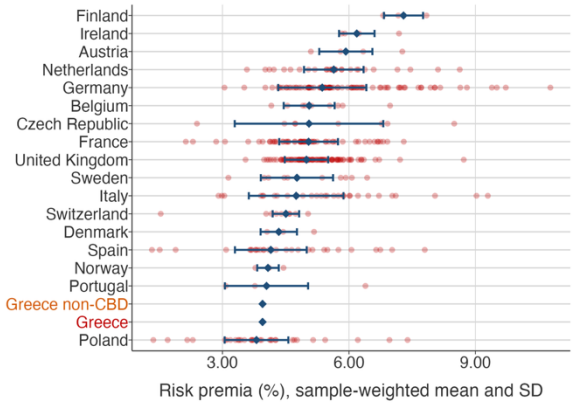
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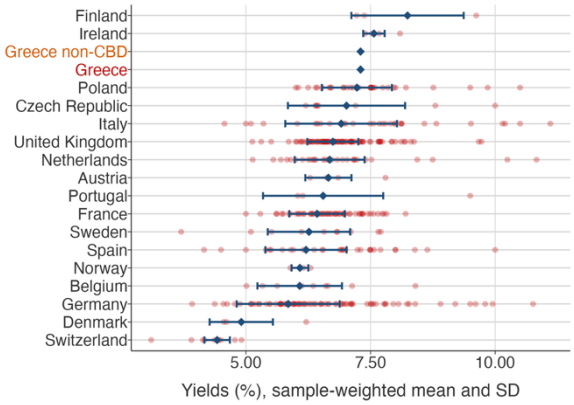
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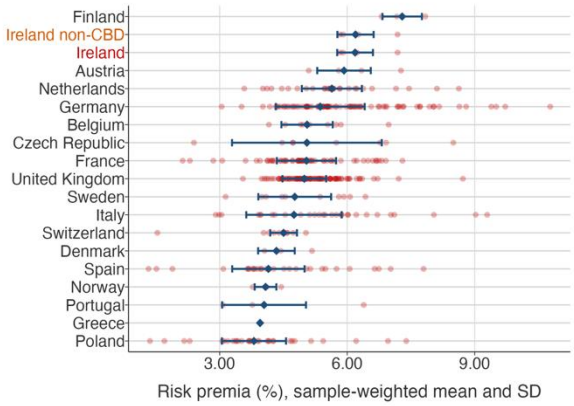
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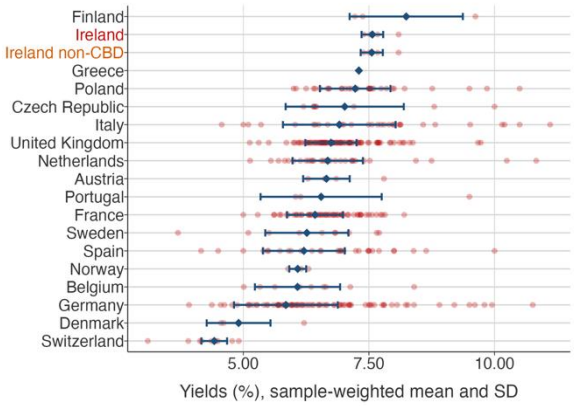
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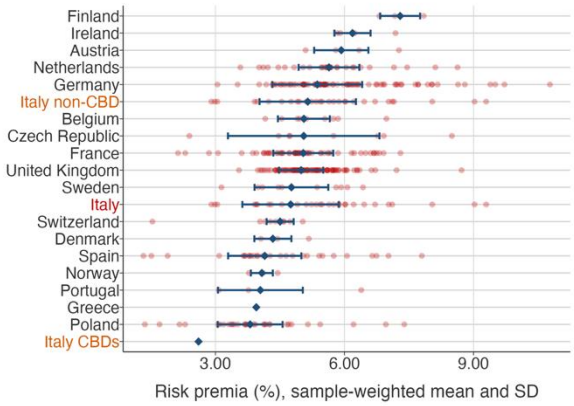
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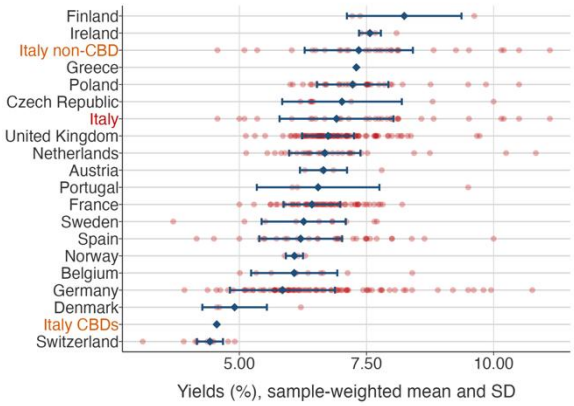
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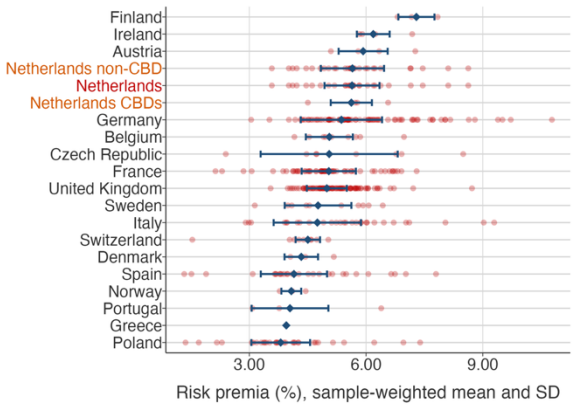
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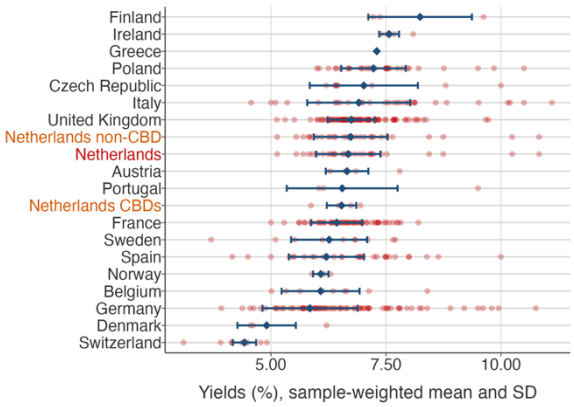
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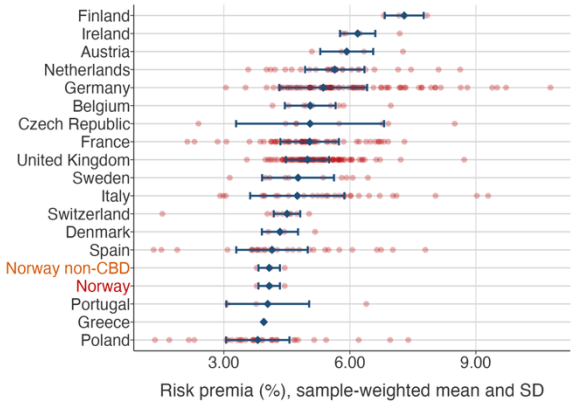
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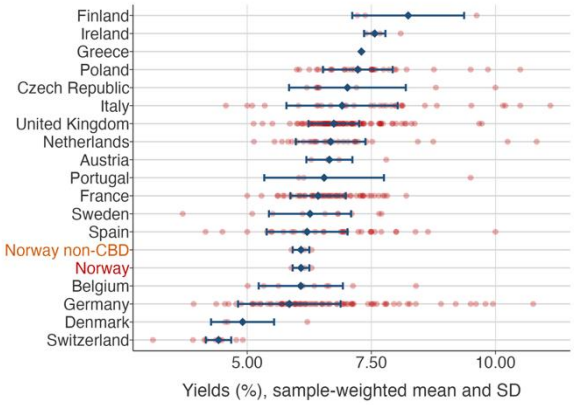
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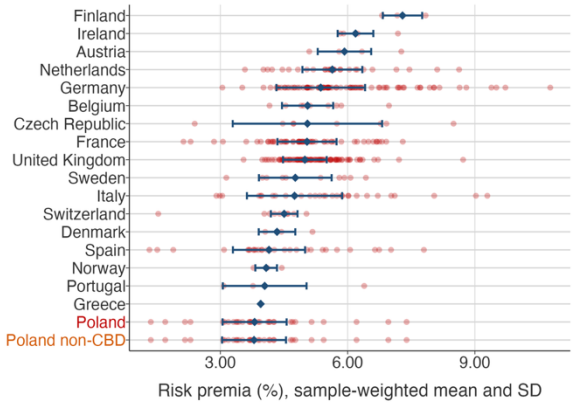
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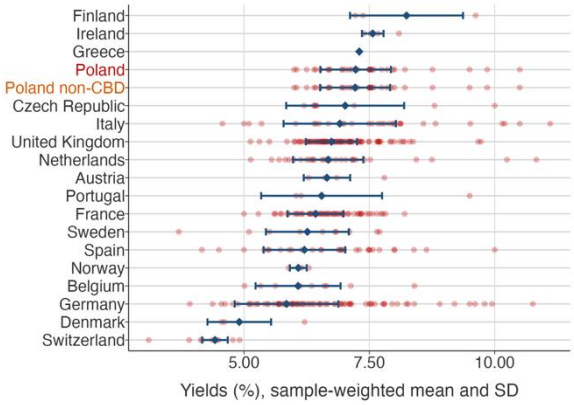
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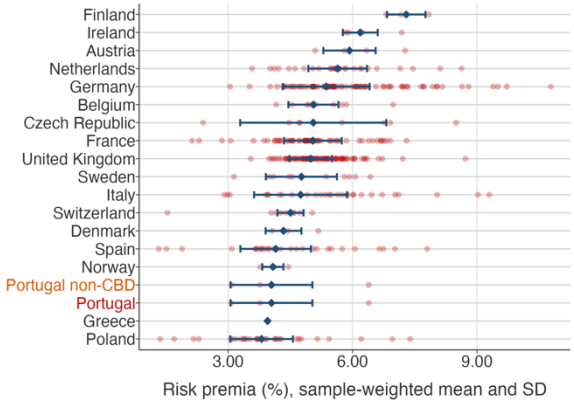
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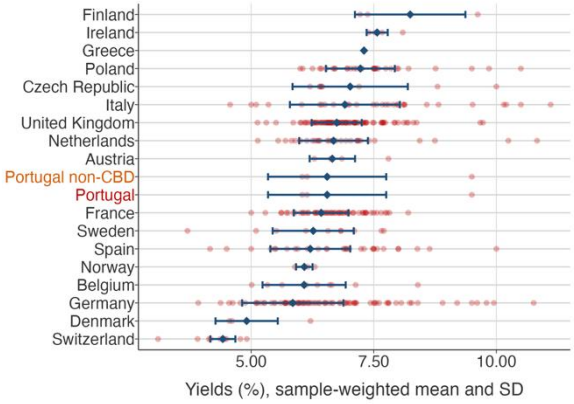
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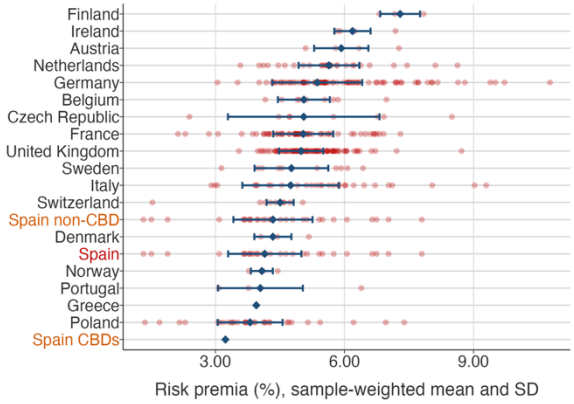
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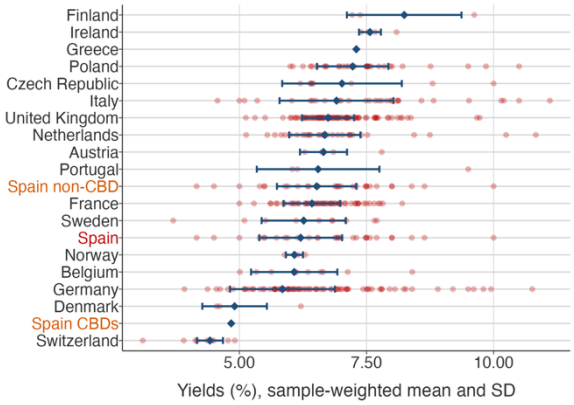
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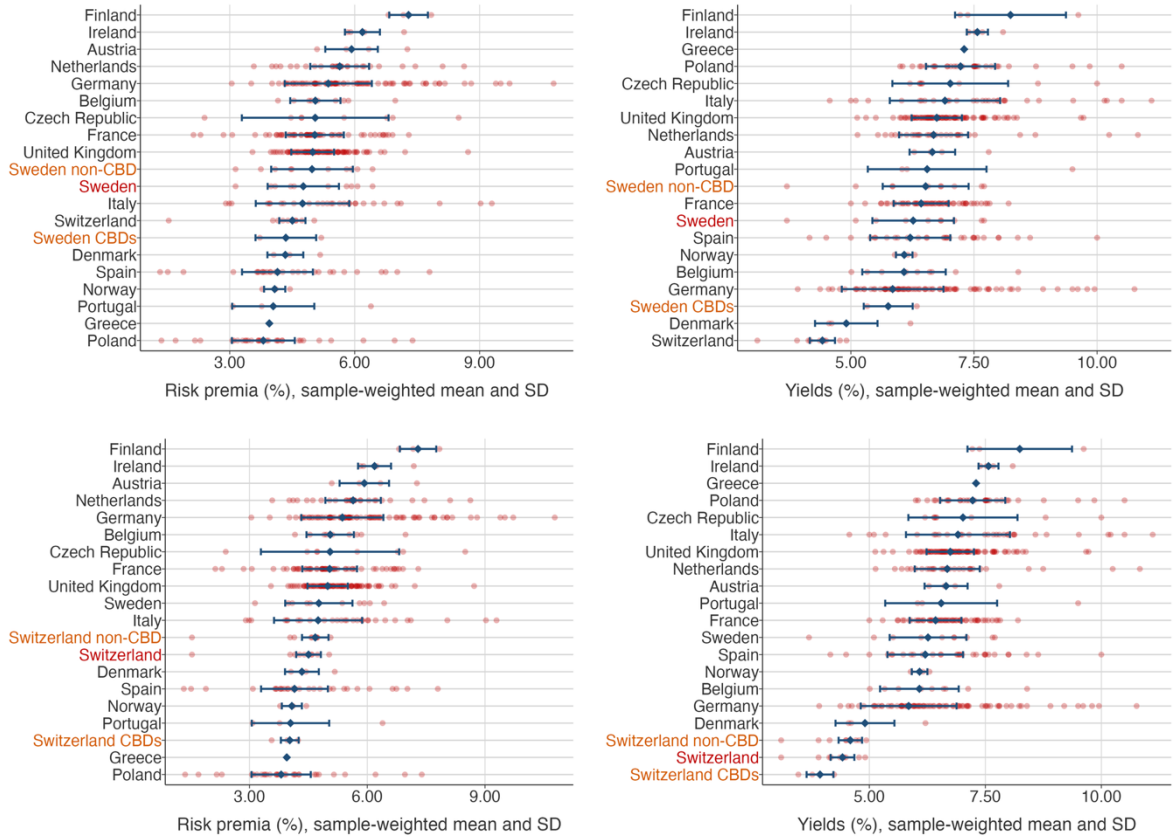

Figure A3.5 Differences Between CBD and Non-CBD Capital Costs for European Countries After Excluding Capital Cities, Ordered by European Country.

Appendix 3.5 Regression Results for Cross-Border Accessibility to Financial Centres

Table A3.1 Banking Variable and Financial Centre Gravity Regressions, GDP 2019 Levels, UK and Continental European Cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.104***	-0.079	-0.063	-0.076	0.052	-0.087*	-0.045	-0.063
	(0.029)	(0.051)	(0.048)	(0.050)	(0.034)	(0.045)	(0.042)	(0.045)
Total FinCentre Gravity (log)		0.197***	0.148**	0.170***		0.175***	0.139**	0.162***
		(0.045)	(0.058)	(0.047)		(0.054)	(0.058)	(0.045)
Distance to Largest FinCentre (log)			-0.065**	-0.049*			-0.079***	-0.062**
			(0.027)	(0.026)			(0.026)	(0.028)
Country's Top-3 Bank Asset (%)				0.007**				0.008***
				(0.002)				(0.003)
Flögel-Hejnova Concentration				-0.001				-0.002
				(0.001)				(0.001)
Observations	242	242	242	238	225	225	225	222
R^2-Adjusted	0.077	0.235	0.274	0.385	0.011	0.141	0.174	0.323

Table A3.2 Banking Variable and Financial Centre Gravity Regressions, GDP 2019 Levels, only Continental European Cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.119***	-0.089	-0.078	-0.058	0.074**	-0.089	-0.051	-0.037
	(0.033)	(0.067)	(0.065)	(0.064)	(0.033)	(0.062)	(0.062)	(0.051)
Total FinCentre Gravity (log)		0.219***	0.182**	0.166**		0.205***	0.171**	0.150**
		(0.050)	(0.066)	(0.056)		(0.061)	(0.068)	(0.051)
Distance to Largest FinCentre (log)			-0.046	-0.038			-0.070*	-0.048
			(0.031)	(0.026)			(0.037)	(0.032)
Country's Top-3 Bank Asset (%)				0.008**				0.010***
				(0.003)				(0.003)
Flögel-Hejnova Concentration				-0.002				-0.002**
				(0.001)				(0.001)
Observations	199	199	199	195	183	183	183	180
R^2-Adjusted	0.096	0.293	0.309	0.401	0.024	0.199	0.222	0.355

Table A3.3 Banking Variable and Financial Centre Gravity Regressions, % Growth in Per Capita GDP 2010-19, UK and Continental European cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.400	0.225	0.536	0.036	-0.634	0.313	1.460	0.765
	(1.235)	(3.742)	(3.905)	(2.826)	(1.384)	(3.695)	(4.187)	(2.973)
Total FinCentre Gravity (log)		-0.675	-1.642	-1.806		-1.197	-2.174	-2.123
		(3.247)	(4.009)	(3.139)		(3.798)	(4.160)	(3.221)
Distance to Largest FinCentre (log)			-1.282	-2.503			-2.165	-3.300*
			(1.597)	(1.512)			(2.200)	(1.796)
Country's Top-3 Bank Asset (%)				-0.340*				-0.332*
				(0.183)				(0.173)
Flögel-Hejnova Concentration				-0.148				-0.166*
				(0.091)				(0.084)
Observations	242	242	242	238	225	225	225	222
R^2-Adjusted	-0.004	-0.007	-0.005	0.109	-0.004	-0.006	-0.001	0.121

Table A3.4 Banking Variable and Financial Centre Gravity Regressions, % Growth in Per Capita GDP 2010-19, only Continental European Cities.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.304	0.421	0.654	-0.577	-0.355	0.669	1.645	0.491
	(1.530)	(4.269)	(4.465)	(2.910)	(1.705)	(4.224)	(4.922)	(3.155)
Total FinCentre Gravity (log)		-0.763	-1.562	-1.117		-1.289	-2.170	-1.661
		(3.397)	(4.405)	(2.790)		(4.055)	(4.648)	(2.843)
Distance to Largest FinCentre (log)			-0.982	-2.310			-1.831	-3.371
			(1.873)	(1.651)			(2.676)	(2.344)
Country's Top-3 Bank Asset (%)				-0.432				-0.412
				(0.265)				(0.266)
Flögel-Hejnova Concentration				-0.126				-0.148
				(0.099)				(0.090)
Observations	199	199	199	195	183	183	183	180
R^2-Adjusted	-0.005	-0.009	-0.011	0.109	-0.005	-0.009	-0.009	0.118

Table A3.5A: UK Metropolitan GDP Per Capita 2019, Levels Regressions.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.032	-0.144	-0.132	-0.064	-0.037	-0.166*	-0.115	-0.102
	(0.058)	(0.092)	(0.086)	(0.067)	(0.045)	(0.091)	(0.081)	(0.079)
Total FinCentre Gravity (log)		0.212**	0.211**			0.171*	0.235**	
		(0.088)	(0.080)			(0.085)	(0.096)	
Main FinCentre Logit-Share			0.062***				0.085	
			(0.020)				(0.051)	
Main FinCentre Gravity (log)				0.139***				0.121*
				(0.047)				(0.062)
Other FinCentres Gravity (log)				0.081				0.107
				(0.058)				(0.070)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	-0.011	0.091	0.232	0.196	-0.011	0.053	0.129	0.088

Table A3.5B: UK Metropolitan GDP Per Capita 2019, Levels Regressions, Including Distance to the Country's Main Financial Centre.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.018	-0.108	-0.124	-0.099	-0.008	-0.122	-0.091	-0.093
	(0.037)	(0.083)	(0.084)	(0.079)	(0.037)	(0.083)	(0.070)	(0.078)
Distance to Largest FinCentre (log)	-0.132**	-0.114**	-0.035	0.107	-0.108	-0.096	0.770	-1.962
	(0.052)	(0.049)	(0.093)	(0.162)	(0.064)	(0.061)	(0.554)	(2.754)
Total FinCentre Gravity (log)		0.154*	0.193**			0.147*	0.903	
		(0.081)	(0.085)			(0.081)	(0.541)	
Main FinCentre Logit-Share			0.046				0.712	
			(0.031)				(0.473)	
Main FinCentre Gravity (log)				0.229*				-1.840
				(0.122)				(2.734)
Other FinCentres Gravity (log)				0.105				0.103
				(0.070)				(0.071)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	0.176	0.219	0.215	0.182	0.073	0.115	0.158	0.077

Table A3.6A: UK Metropolitan GDP Per Capita 2009-2019, Growth Regressions.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-0.848	-2.045	-1.772	-2.563*	-1.723	-2.363	-0.528	-0.681
	(0.904)	(2.278)	(2.146)	(1.378)	(1.025)	(2.300)	(2.126)	(2.061)
Total FinCentre Gravity (log)		1.439	1.427			0.845	3.169	
		(2.340)	(2.167)			(2.380)	(2.055)	
Main FinCentre Logit-Share			1.450***				3.071***	
			(0.533)				(1.092)	
Main FinCentre Gravity (log)				2.854***				3.756***
				(0.936)				(1.277)
Other FinCentres Gravity (log)				1.201				-0.062
				(1.458)				(1.859)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	-0.005	-0.018	0.139	0.192	0.030	0.009	0.226	0.229

Table A3.6B: UK Metropolitan GDP Per Capita 2009-2019 Growth Regressions, including Distance to the Main Financial Centre.

	All Cities				Excluding London			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	-1.204*	-0.989	-0.693	-0.701	-0.728	-0.649	-0.642	-0.777
	(0.708)	(2.042)	(2.129)	(2.096)	(0.946)	(2.108)	(2.031)	(2.113)
Distance to Largest FinCentre (log)	-3.307***	-3.339***	-4.770*	-5.754	-3.759***	-3.768***	-3.560	22.055
	(0.954)	(1.058)	(2.397)	(4.326)	(1.294)	(1.360)	(11.348)	(41.099)
Total FinCentre Gravity (log)		-0.263	-0.986			-0.101	0.081	
		(2.202)	(2.479)			(2.134)	(10.291)	
Main FinCentre Logit-Share			-0.831				0.171	
			(0.897)				(8.781)	
Main FinCentre Gravity (log)				-2.013				25.791
				(3.482)				(40.506)
Other FinCentres Gravity (log)				-0.043				-0.021
				(1.887)				(1.892)
Observations	43	43	43	43	42	42	42	42
R^2-Adjusted	0.244	0.225	0.215	0.215	0.248	0.228	0.207	0.212

Table A3.7A: European (excl. UK) Metropolitan GDP Per Capita 2019, Levels Regressions.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.136***	0.004	0.012	0.037	0.091**	0.000	0.017	0.013
	(0.034)	(0.067)	(0.061)	(0.062)	(0.035)	(0.067)	(0.050)	(0.049)
Total FinCentre Gravity (log)		0.133**	0.119**			0.114**	0.131*	
		(0.046)	(0.042)			(0.052)	(0.068)	
Main FinCentre Logit-Share			0.015**				0.030	
			(0.006)				(0.039)	
Main FinCentre Gravity (log)				0.068**				0.049
				(0.025)				(0.047)
Other FinCentres Gravity (log)				0.085*				0.100**
				(0.041)				(0.034)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	199	199	183	183	183	183
R^2-Adjusted	0.506	0.555	0.560	0.562	0.475	0.506	0.507	0.512

Table A3.7B: European Metropolitan (excl. UK) GDP Per Capita 2019 Levels Regressions, Including Distance to the Main Financial Centre.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.099**	0.023	0.028	0.049	0.104***	0.028	0.020	0.017
	(0.037)	(0.053)	(0.049)	(0.055)	(0.032)	(0.049)	(0.046)	(0.046)
Distance to Largest FinCentre (log)	-0.071**	-0.044**	-0.082	-0.068	-0.083	-0.061	-0.122**	-0.108**
	(0.025)	(0.020)	(0.054)	(0.049)	(0.051)	(0.041)	(0.052)	(0.047)
Total FinCentre Gravity (log)		0.091**	0.074**			0.091**	0.031	
		(0.031)	(0.028)			(0.034)	(0.032)	
Main FinCentre Logit-Share			-0.020				-0.063**	
			(0.021)				(0.027)	
Main FinCentre Gravity (log)				0.019				-0.045
				(0.033)				(0.035)
Other FinCentres Gravity (log)				0.075**				0.097***
				(0.035)				(0.031)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	199	199	183	183	183	183
R^2-Adjusted	0.551	0.567	0.567	0.564	0.500	0.517	0.519	0.520

Table A3.8A: European (excl. UK) Metropolitan GDP Per Capita 2009-2019, Growth Regressions.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.246	0.600	0.430	0.954	0.097	-0.055	-1.481	-1.550
	(1.128)	(1.940)	(2.013)	(1.582)	(1.398)	(1.903)	(2.385)	(2.356)
Total FinCentre Gravity (log)		-0.358	-0.053			0.191	-1.244	
		(1.418)	(1.358)			(1.133)	(1.439)	
Main FinCentre Logit-Share			-0.341*				-2.476**	
			(0.183)				(1.127)	
Main FinCentre Gravity (log)				-0.621				-2.576*
				(0.684)				(1.292)
Other FinCentres Gravity (log)				-0.365				1.386
				(1.060)				(1.356)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	199	199	183	183	183	183
R^2-Adjusted	0.602	0.600	0.599	0.600	0.590	0.588	0.594	0.594

Table A3.8B: European Metropolitan (excl. UK) GDP Per Capita 2009-2019 Growth Regressions, Including Distance to the Main Financial Centre.

	All Cities				Excluding Each Country's Largest Financial Centre			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Population (log)	0.679	0.166	0.019	0.692	-0.250	-1.180	-1.485	-1.562
	(1.234)	(2.147)	(2.278)	(1.802)	(1.482)	(2.364)	(2.382)	(2.347)
Distance to Largest FinCentre (log)	0.840	1.019	1.995	1.467	2.161	2.435	0.153	0.377
	(0.698)	(0.598)	(2.220)	(2.388)	(1.465)	(1.452)	(2.117)	(2.079)
Total FinCentre Gravity (log)		0.613	1.062			1.114	-1.119	
		(1.405)	(1.829)			(1.350)	(1.154)	
Main FinCentre Logit-Share			0.537				-2.359	
			(0.965)				(1.684)	
Main FinCentre Gravity (log)				0.450				-2.249
				(1.759)				(1.969)
Other FinCentres Gravity (log)				-0.161				1.395
				(1.054)				(1.335)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	199	199	199	199	183	183	183	183
R^2-Adjusted	0.602	0.600	0.599	0.598	0.594	0.592	0.592	0.592

PART 4: Summary, Conclusions and Directions for Future Research

The research undertaken and detailed here examines the two questions of:

(i) Through what channels do FS hubs contribute to UK GDP growth, and what is the relative contribution of London vs. regional hubs?
(ii) Do regional FS hubs generate distinct growth benefits compared with additional growth in London?

Our research has addressed these questions via a threefold approach. We began in Part 1 by conducting an OECD-wide investigation and literature review into all of the available evidence on the links between the presence of financial services centres (FS), both nationally and regionally, and their role in fostering national and regional growth. Our research built both on economic history and economic geography and allowed us to develop an analysis spanning four decades which situated the current evidence and debates on a solidly grounded underpinning. This also allowed us to articulate how the UK reflects, or differs from, the international evidence of other countries. This comparative perspective was then used as the basis on which our subsequent empirical approaches to the research questions were framed.

One of the issues which becomes readily apparent from this wide-ranging review of the UK and international literature and evidence is that the UK in many regards appear to differ from other countries in terms of the economic growth and development linkages between the presence of financial services sectors (FSS) and city and regional growth. On the one hand, the linkages appear to be stronger in the UK, especially in and around the London economy. On the other hand, at the same time, these linkages appear to be weaker for more peripheral regions in the UK than is the case in other countries. Moreover, our wider understanding of these issues has changed markedly over the last two decades, given that our previous assumptions and framings were based largely on the experience of the postwar era, and these assumptions and framings have been undermined by the experiences of the 2008 global financial crisis.

The wide-ranging literature and evidence put forward here in Part 1 raised various important and puzzling issues which are largely specific to the UK. For example, even though London hosts some of the deepest capital markets in the world, and the share of high growth innovative firms and university spinouts varies very little by UK region, there are still highly skewed core-periphery geographical patterns of access to business finance for SME start-ups and scale-ups. This skewness is very hard to account for, other than on the basis of UK-specific behavioural and structural perceptions on the part of investors, especially when compared to other countries. Moreover, the unparalleled post-crisis core-periphery regional spreads in UK investment risks that focused most adversely on second-tier and third-tier city centres cities are very hard to explain using standard urban economic arguments, especially give the depth of London's capital markets, and the fact that the whole of the UK is smaller than the US state of Michigan. Again, there appear to be UK-specific behavioural and structural perceptions on the part of investors, especially when compared to other countries. As such, what these puzzles and paradoxes point to is the fact that the wider economic and productivity growth implications of Financial Services Sector (FSS) and banking clusters in the UK are much less straightforward than might previously have been considered to be the case.

In order to further our understanding of these various puzzling features of the UK economy, Part 2 of this research therefore adopted an empirical approach that is grounded in the global literature and international evidence while also being nuanced and tailored with respect to the

particularities of the UK experience. In particular, in order to examine the national and regional economic roles of the UK system of financial services sector (FSS) clusters in the light of the international evidence, it is necessary to identify the similarities and differences between the UK context and comparator countries regarding the structure, scale, distribution, and economic growth roles played by financial services sector (FSS) clusters and centres, and then to build a modelling strategy aimed at uncovering these differences.

In Part 2 of our research agenda, we set out our empirical approach in which developed a gravity-type model analysis of the economic geography of UK growth and prosperity by integrating detailed firm-level data across all local authorities of the UK. This research demonstrated that the growth and prosperity transmission mechanisms within the UK between FS clusters and their wider regional hinterlands are typically very localised, whereas London has a major impact on the economic geography of prosperity of the UK across a much broader scale. At the same time, London the financial services activities in London appear to play little or no observable positive growth role beyond its own immediate hinterland.

Part 3 of our research followed on from the UK-specific analysis in Part 2, but then extended the empirical approach in the light of the European-wide evidence. Aiming to compare and contrast the UK with comparator European economies, we analysed how the economic geography of major European centres of financial and banking services shape city and regional growth and prosperity across European nations and regions. As we suspected on the basis of Parts 1 and 2 of our research, our comparative UK-Europe analysis shows that the UK is indeed rather different to many different parts of Europe in several regards. First, the potentially positive economic role of city-size in regional growth and prosperity, a cornerstone of mainstream urban economic arguments, is simply not perceived by the investment community as being nearly as important or beneficial for growth in the UK as it is across the rest of Europe. Second, the economic geography of distance and investor risk perceptions within the UK are simply different to the rest of Europe. Of course, one might argue that in such a densely populated and highly urbanised country as the UK, investors do not need to travel far away from London in order to realise sufficient opportunities which satiate their supplies of investor capital, and this could provide a rationale as to why distance and perceived investment risks are so steeply related in the UK, irrespective of whether London-specific investments are included or excluded. However, as we have seen, the countries with similar or even higher population densities to the UK, namely the Netherlands, Belgium and Germany, all display very different distance-risk perceptions relationships to the UK, while those which are the most similar to the UK are countries which much lower population densities and urbanisation levels. These comparisons thereby obviate this density-related explanation of the UK's distance-risk perceptions gradient. As such, these paradoxical observations appear to be uniquely severe UK-specific distance-deterrence effects which to a large extent differ profoundly from standard urban economic arguments. A key part of the paradox, is likely to be related to the fact that access to regional financial centres plays a very limited role in UK regional growth and development, whereas in the rest of Europe these centres play a much more prominent role.

These findings all clearly point to a potentially fundamental behavioural or structural problem in the UK which limits the ability of regional financial services and banking centres to foster growth in a manner which is apparent across much of Europe. As such, these various findings also point to the need to reconsider the how these relationships are mediated by the structure and decision-making logic of the UK banking system, along with the structure and logic of the UK governance and fiscal systems. Consideration would therefore need to be given to issues regarding how the UK's central-sub-central fiscal architecture (McCann 2022) serves to bolster

or inhibit decentralised governance decision-making which is conducive to local investment promotion, and the role that key structural reforms to the financial architecture of the UK (McCann 2025) might play in reshaping the economic geography of finance.

The analysis we have undertaken here significantly advances our understanding of the UK links between FSS clusters and local, city and regional growth, and the ways in which the UK appears to be rather different in this regard to other European countries. Our results and findings are far richer and far more fruitful in terms of generating new insights than we first envisaged at the outset of this project. Although we always anticipated generating some novel insights, given that very little research of this particular form has been undertaken before, the results reported here are far more plentiful, nuanced and instructive than we could ever have imagined. Many of the insights we report here have never before been seen, and this offers new avenues for discussion and reflection. At the same time, the fact that much of the UK-specific data available to us is so recent, only allows us at this stage to undertake primarily cross-sectional types of models. This still leaves open questions regarding causality, which we can only comment on with recourse to indirect arguments and evidence rather than formal econometric testing. These causality questions are issues which will require further consideration at a later stage.

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