



Growth, working capital and refinancing: The geography of post-pandemic regional financial resilience in UK SMEs

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ABSTRACT

Understanding how small firms adapt and adjust financially following exogenous shocks is crucial and acts as a harbinger of regional financial resilience levels. Therefore, it is important to determine what shape firms are in as they emerge from a shock such as the Covid-19 pandemic, particularly with regard to their ability to finance new growth enhancing activities. Yet not all firms are ready to invest in future growth and simply need an injection of working capital while others need recourse to refinancing existing debts. To flesh out the concept of regional financial resilience, this paper examines how SMEs across different multi-scalar geographies (i.e. regions, sub-regions and districts) of the UK have been raising new loans to finance growth, working capital and/or simply refinancing their existing debt. Using a rich loan dataset for the UK covering 2021–2024 we find stark spatial variations in the proportion of firms reporting growth as the key mechanism for using the loans and these are strongest at the most disaggregate unit of spatial analysis examined (i.e. districts). Our findings suggest the future development of the UK economy is likely to display a very uneven spatial pattern with some areas investing heavily in growth, while for others, addressing cash flow problems or issues associated with existing debts are paramount. In response to the pandemic, small firms are exhibiting a complex spatial patchwork of regional financial resilience across the UK's deeply variegated space economy.

1. Introduction

The world economy has endured multiple debilitating ‘shocks’ over the last three decades, testifying to the view that we “now live in a world where deep uncertainty is the norm” (Teece, 2025, p. 16). Some of these were classic unforeseen “black swan” events which manifest themselves very abruptly such as 9/11 (Hatami et al., 2024), natural disasters such as earthquakes (Baiocchi et al., 2024) and Covid-19 (Brown and Rocha, 2020; Ascani et al., 2021); while others unfold more incrementally, but just as damagingly, such as the “slow burn” shock of the Global Financial Crisis (GFC) and Brexit (Demirgüç-Kunt et al., 2020; Cowling and Brown, 2024; Hassan et al., 2024). These events give rise to a palpable sense of uncertainty in the economy and a general decline in investment activity, fostering a pervasive “wait-and-see” mentality (Bloom, 2009, p. 624), especially amongst firms in the smallest size classes (Lee et al., 2015; Julio and Yook, 2012; Ghosal and Ye, 2015). The cumulative outcome of such destabilising shocks has significantly

undermined the UK's productivity levels over the last decade or so (Broadbent et al., 2024; Van Reenen and Yang, 2024; Bloom et al., 2025).

This paper examines the financial repercussions from the most recent crisis -Covid-19- for UK small and medium-sized enterprises (SMEs), who are widely acknowledged as a key engine of regional economic growth (Storey, 2003; Hijzen et al., 2010). Given the centrality of finance to enable small firm growth (Beck and Demirgüç-Kunt 2006; Cassar, 2004) the current instability may have major ramifications for start-ups and SMEs for years to come. Set against this turbulent post-pandemic backdrop an important empirical question therefore emerges: has the small business sector emerged from the most recent “crisis” period with a focus on growth, or is the sector still struggling with cash flow problems and/or with an existing debt overhang accrued during the pandemic? It follows that if the small business sector is focusing on growth, then this would suggest that growth-oriented small businesses could play a pivotal position as the engine of the future

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economic growth and wealth creation (Storey, 2003; Beck et al., 2008). Alternatively, if small firms continue to struggle with cash flow issues and existing debt overhang problems in the recessionary post-Covid-19 environment (Lawless et al., 2015) the levels of ‘regional resilience’ (Hassink, 2010) in the small business sector will continue to struggle and will fail to overhaul the historically poor productivity levels in UK SMEs (Haldane, 2018; Chen and Lee, 2023).

In recent years, there has been a rapid profusion of academic interest in the concept of ‘regional resilience’, a term invoked to describe how regions respond to exogenous shocks and disequilibrium (Boschma, 2015; Martin and Gardiner, 2019). The dynamic concept is formally defined as “the ability of a regional system to respond to external shocks by adapting its functions in the short-term and by pursuing new growth trajectories in the long-term” (Giannakis et al., 2024, p.1). Most studies of economic resilience focus on the resilience determinants at a “macro” level by addressing national, regional or city-level resilience (Cuadrado-Roura and Maroto, 2016; Fingleton et al., 2012; Martin and Gardiner, 2019), yet firms are the “true agents of change” that adapt and reorientate to cope with shocks (Shaheen et al., 2025, p. 211). Indeed, there is a strong connection between the resilience concept and smaller firms (Cowling and Brown, 2024) especially as prior evidence suggests that SMEs are disproportionately impacted by chronic uncertainty given their lower in-built resiliency capabilities, such as things like a lack of precautionary savings (Cowling et al., 2020), and an inability to navigate and overcome such shocks (Ghosal and Ye, 2015; Williams and Vorley, 2017; Brown et al., 2020). While many SMEs have limited resources and managerial capabilities, equally they often have the ability to respond rapidly to sudden changes in the marketplace caused by unforeseen shocks (Morgan et al., 2020). A good example of this type of organisational reconfiguration was the large increase in firm re-locations from Greece to Bulgaria to take advantage of the tax benefits in the latter country in the immediate aftermath of the GFC (Kapitsinis, 2017).

Importantly, the regional resilience literature suggests that the location of a small business will fundamentally shape its resilience levels (Ezcurra and Rios, 2019; Brown and Cowling, 2021). Extant research unequivocally shows that spatial factors inextricably mediate a small firm’s ability to raise capital and at a viable price (Pollard, 2003; Martin and Pollard, 2017; Ughetto et al., 2019). What this amassing body of evidence suggests is that spatial imbalances -and their associated liabilities of distance- in access to finance are systemically engrained in countries such as the UK for both debt and equity finance (Lee and Brown, 2017; Kapitsinis et al., 2021). This is important as the nature of regional financial markets then directly impinges on “regional growth prospects” of entrepreneurial firms in certain peripheral locations (Kapitsinis et al., 2021, p. 1777).

In this paper we wish to examine the spatial differences in financial plans of SMEs in the post-Covid-19 environment which enables us to invoke the concept of “regional financial resilience” in small firms located across the country. In doing so this paper presents and discusses the key findings across three distinctive spatial dimensions examined -i.e. regions, sub-regions and districts- to identify where smaller firms were focused on raising new loans to invest in growth, where firms were still struggling to fund their working capital requirements or if they were merely seeking to refinance existing loans. Therefore, the important key research question we wish to address herein is: *are there distinctive spatial patterns in the state of the UK small business sector in terms of how resilient SMEs are at ordering (and reordering) their financial structures and priorities in the post-pandemic period?* To address this empirical research question, we use a large and rich loan contract dataset that covers the period from April 2021 through to May 2024 to establish what small firms in the UK are raising new loans for in the post-pandemic period. Is it for growth and new investment? Or is it for working capital or the refinancing of existing debts? By answering these crucial research questions, we are able to investigate the levels of regional financial resilience in UK SMEs in the post-pandemic era.

By way of preview, our baseline finding shows that 48.0 % of new loans are issued for growth investments, 43.6 % are for working capital, and 8.4 % for debt refinancing. We also uncovered large spatial differences in new borrowing for growth across the three discrete geographical levels examined. At the regional level, we find that 57.7 % of new loans to firms located in Northern Ireland were for growth but only 44.4 % of new loans to firms in Yorkshire and Humberside were. New loans for growth were at a peak of 57.9 % of firms in Cornwall and the Isles of Scilly at the sub-regional level, and a peak of 80.0 % of firms in the Shetland Islands at the district level. Our findings on spatial differences demonstrate that observable firm-level differences get larger as the spatial unit considered gets smaller. This suggests that the future development of the UK will have a distinct and uneven spatial pattern as in some geographies firms are investing in growth, while in others they are tackling cash flow problems or issues associated with existing debts. Our evidence supports the fact that if we really want to understand what future contribution small firms are likely to make to the UK economy then we need to look beyond regions and get into smaller geographical units of analysis. This is particularly relevant as most SMEs operate in their local markets where they access resources and derive demand for their goods and services (Cowling et al., 2024). Overall, we conclude that as the economy navigates its way away from the Covid-19 pandemic, it is likely that in general the small firm sector is increasingly focused on investing in growth, and this is particularly so for younger and smaller firms who have traditionally made a high and disproportionate contribution to economic growth and dynamism.

The rest of the paper sets out as follows: Section 2 reviews the spatial literature of financing, investment and growth in the context of SMEs; Section 3 outlines the Recovery Loan Scheme (RLS) while Section 4 presents our core data; Section 5 presents and discusses the key findings; Section 6 concludes with policy suggestions.

2. Related literature: shocks, regional resilience & small firm investment

2.1. Shocks, regional resilience and SMEs

In recent years there has been an upsurge of interest in the concept of regional resilience within the economic geography and regional science literature to help aid our understanding of the factors that shape and determine the nature of economic change and performance over time in different spatial contexts (Hassink, 2010; Boschma, 2015). Martin and Sunley (2020) claim resilience is also having a discernible impact on policy thinking with a new imperative forming around ‘constructing’ or ‘building’ regional and urban economic resilience. Admittedly some claim regional resilience is a somewhat amorphous concept (Frohlich and Hassink, 2017), while others hold the view that this inherent malleability is its prime attraction (Christopherson et al., 2010). Central to this neo-Schumpeterian metaphor is the notion of “punctuated equilibrium” where the status quo can be radically disrupted by unforeseen or exogenous shocks (Cowling and Brown, 2024). By shocks we mean “sudden major disruptions to localities’ economic activities” while resilience refers to their underlying capacity to resist, adapt to, or transform in light of such shocks (Sutton et al., 2023, p. 508).

Interest in this concept has undoubtedly been fuelled by the acute levels of instability and uncertainty that has ravaged many economies since the turn of the Century owing to the powerful shocks such as 9/11, GFC, Brexit and most recently Covid 19 (Giannakis and Bruggeman, 2017; Brown et al., 2020; Fuller, 2022; Harris et al., 2020; Partridge et al., 2022). A common focus within the literature has been to examine how different locations cope with unexpected shocks such as major recessions and crisis events (Martin and Gardiner, 2019). Some maintain that the key utility of the resilience concept is that differences in resilience to major shocks can contribute to determining the long-run growth paths and trajectories of different regional economies (Brown et al., 2020; Rice and Venables, 2021).

While the body of evidence on resilience shows how aggregate economic performance is affected by cyclical shocks, it fails to properly explain how different types of firms, specifically SMEs, adapt, change and reconfigure themselves to accommodate destabilising unforeseen shocks. Yet an interesting and related research theme is the notion of entrepreneurial resilience (Korber and McNaughton, 2017) or firm-level resilience (Shaheen et al., 2025). Boschma (2015) states that it is crucial to relate regional resilience to different regional economic change agents, a key such agent being small firms owing to their limited internal resilience levels (Brown and Cowling, 2021). It is well established that the firms most vulnerable to economic shocks are small resource-constrained enterprises (Ghosal and Ye, 2015; Williams and Vorley, 2017). Due to their size such firms have limited capacity to cushion the impact of an exogenous shock due to their restricted financial resource base. This is particularly applicable in terms of their limited ability to deal with financial shocks due to their limited internal resources such as a lack of precautionary savings and poor borrowing capabilities (Cowling et al., 2020). Interestingly, some scholars have invoked the concept to explore how UK SMEs in different regions were adapting financially to the Covid-19 pandemic (Brown and Cowling, 2021). Those authors conclude that in line with other research on regional resilience (Partridge et al., 2022), this clearly suggests that the impact of the current Covid-19 crisis is likely to have a strong spatial dimension due to the varying composition of the small firm base located across the UK (Brown and Cowling, 2021).

2.2. Finance and SMEs

Despite its vital importance, there are important theoretical determinants explaining why some SMEs may encounter problems obtaining finance which hinge predominantly on informational opacity issues between borrower and lenders (Stiglitz and Weiss, 1981). These credit market imperfections are viewed as the primary *a priori* rationale for the existence of loan guarantee schemes such as the RLS examined herein (Beck et al., 2010; Cowling, 2010). At the heart of these issues is the fact that small firms are often riddled with “knowledge problems” (Fisher and Neubert, 2023) which can act as crucial “liabilities of smallness” (Gimenez-Fernandez, et al., 2020). Numerous studies using firm-level survey data have shown that SMEs not only perceive access to finance and the cost of credit to be greater obstacles than larger firms, but these factors constrain SMEs and negatively affect their performance more than their larger counterparts (Beck et al., 2008). Demand effects derived from firms will also emerge especially in times of financial stress following exogenous shocks like the Covid-19 crisis (Calabrese et al., 2022). For example, the aggregated need for external finance can be dependent on overall firms’ expectations for future investment which will be dampened as a result of the uncertainty such events instigate within smaller firms (Harrison et al., 2022).

Some hold that there are three fundamental supply-side causal factors underpinning small firm credit constraints (Lee et al., 2015). First, smaller companies are more adversely affected by informational frictions and are more sensitive to the availability of bank credit (Berger and Udell, 1998). Overall, asymmetric information issues tend to be most acute for SMEs with higher levels of intangible assets which is compounded by a lack of a loan track record (Hall and Lerner, 2011). Banks cannot accurately calculate the likelihood that the returns to investments will actually be realised due to these informational asymmetries (Berger and Udell, 1998; Hall and Lerner, 2010). As a result, banks incur higher uncertainty and risks in evaluating SMEs’ credit-worthiness and are less willing to lend funds to SMEs (Stiglitz and Weiss, 1981; Berger and Udell, 1998). Second, owing to the probabilities associated with outcomes being so highly uncertain, this makes it significantly harder for banks to evaluate the potential of new investment projects. While close relational lending significantly reduces SMEs’ chances of being financially constrained, the move towards more transactional lending may preclude access to such lenders (DeYoung

et al., 2008; Beck et al., 2008).

Finally, collateral is an important tool for banks to help offset these informational asymmetries to help resolve credit-rationing (Voordeckers and Steijvers, 2006) with one study finding that between 75 % and 88 % of SME loans involved collateral in France and Germany respectively (Davydenko and Franks, 2008). Typically, large banks rely on objective lending technologies such as fixed-asset lending techniques (Berger & Udell, 2006) which require either personal or business collateral that the firm can provide to secure the repayment of the loan. The resultant effect of these issues can manifest itself in considerable credit constraints for small firms which some believe “can seriously constrain entrepreneurial activities and thereby restrict the growth of small businesses” (Cowling et al., 2024, p.183).

2.3. The spatial dynamics of SME finance and investment

Whilst the theoretical issues relating to the finance, investment and growth of small firms have some common threads that are germane to all SMEs at the aggregate level (Stiglitz and Weiss, 1981), differences in all three are large and often persistent across different geographic units and spatial classifications within and across countries (Kallandranis et al., 2023; McNamara et al., 2020), regions (Cowling et al., 2020) and at the local (Karna and Stephan, 2022; Brown et al., 2025) or rural level (Kofarmata and Danlami, 2019). There seems strong evidence that some of the theoretical issues affecting SMEs in general are amplified due to spatial issues. In general, smaller businesses tend to be “hard information-deficient” making them more reliant upon soft forms of information (DeYoung, 2019, p.101). However, distance amplifies informational asymmetries and decreases the chances of soft information exchange being exchanged between borrowers and lenders (Lee and Brown, 2017).

Under an agency perspective to mitigate against moral hazard issues and poor decision making by entrepreneurs, the principal (i.e. the investors) wish to closely monitor their investee firms. To undertake this monitoring activity and to negate some of these agency problems, retaining close spatial proximity to firms is often considered paramount for investors due to “distance decay effects” incurred by transaction costs involved with monitoring and the transfer of soft information (Chen et al., 2010; Cumming and Dai, 2010; Cowling et al., 2021). Arguably, the demise of relational lending by banks over the last 20 years or so has significantly increased these “distance decay” effects which is why funding for small firms is so highly spatially uneven (Lee and Brown, 2017). So rather than operating on a “flat” or level playing field the credit market for small firms is inherently “spiky” (Martin and Sunley, 2017).

Indeed, there is now a large and expanding body of literature which shows strong spatial variations in the access to finance both debt and equity-based (Lee and Brown, 2017; Sheng et al., 2024), the cost of credit and levels of borrower discouragement (Cowling et al., 2024). In the UK it was shown that firms in peripheral areas face greater credit constraints and higher levels of borrower discouragement in SMEs than in core UK regions (Lee and Brown, 2017). In addition to this, other scholars have also found evidence of a rural peripheral ‘price’ penalty in those locations (Cowling et al., 2020). Similarly, Swedish research found increasing credit constraints in SMEs as the distance to major financial hubs grows (Andersson et al., 2023). As a result, SMEs in smaller and more geographically remote places would find it harder to invest and, therefore, to grow or increase productivity. Further research also in Sweden found a spatial dimension in credit constraints which showed that firms furthest from major cities are more credit constrained than firms close to urban areas (Kärnä and Stephan, 2022). Kärnä and Stephan (2022) found that the real effects from receiving a bank loan on firm growth and productivity are stronger in major cities than in more rural regions. These results are in line with the urban economics literature that suggest that urban areas provide locational advantages to firms.

Research also shows levels of regional resilience in small firms may be quite fragile in light of shock events such as Covid-19 (Partridge et al., 2022). For example, scholars found that many SMEs have extremely low levels of precautionary savings to help them navigate shocks, with an estimated 118,639 UK SMEs at immediate risk of a liquidity crisis (Cowling et al., 2020). Similar levels of financial fragility were found in US SMEs during the pandemic (Bartik et al., 2020) with a much larger decline in job postings reported among small firms than for larger firms due to the pandemic (Campello et al., 2020). Similarly, other research found that larger Italian firms that operate in more interconnected regions to be more resilient than firms that operate in relatively isolated regions (Shaheen et al., 2025). This evidence suggests that spatial variations accessing funding are now well-established, but the levels of regional financial resilience are much less well understood. However, on the whole the regional resilience literature suggests that “where your small business is located matters acutely” especially when faced with crisis episodes (Brown and Cowling, 2021, p. 322).

3. The recovery loan scheme

The Recovery Loan Scheme (RLS) was the UK public loan guarantee scheme that was implemented on 6th April 2021 to replace the two Covid-19 specific loan guarantee schemes: the Bounce Back Loan scheme (BBL) and the Coronavirus Business Interruption Loan scheme (CBILS). These two pandemic period loan guarantee schemes represented the largest, in numbers of loans and total capital, public interventions in the UK loan market ever seen. It was perceived that, due to the severity and duration of the pandemic, many smaller firms would still face problems as the UK economy slowly emerged from Covid-19 and that this would prevent them from taking advantage of new growth opportunities as many would still be holding residual debt and repaying their Covid-19 loans. This is termed the debt overhang problem as lenders are reluctant to supply new loans to firms already stacked up with existing debt (Lawless et al., 2015).

The guarantee coverage rate for RLS was set at 70 % which was significantly lower than the Covid-19 period schemes (BBL was a 100 % guarantee and CBILS an 80 % guarantee), but also lower than the pre-Covid-19 UK scheme, the Enterprise Finance Guarantee scheme (EFG) which had a guarantee coverage rate of 75 %. The ceiling on borrowing per firm was £2 m which was very large compared to the average borrowing of SMEs. The criteria for access were that a firm must show that it was fundamentally viable and not in difficulty but was open to all firms that had accessed pandemic period loan guarantees. Loans were available for up to six years for loans and asset finance and three years for overdrafts (lines of credit) and invoice finance facilities. With the exception of a borrower's personal domestic residence, lenders were allowed to take all forms of business and personal assets as collateral in addition to the 70 % public guarantee.

The specific terms and conditions of an RLS loan contract are at the discretion of the individual lender which is important as the approved lender list is wide and diverse and includes asset finance lenders, regional development funds, large, medium and small banks, community development finance lenders, invoice finance lenders, property development lenders, and a range of alternative finance lenders. The scheme also requires that approved lenders should only offer RLS finance if they are unable to offer finance on better terms without the 70 % public guarantee. In this sense, the public guarantee should alter the nature of the lenders loan supply curve in the short-run by shifting straightening the backward bending part of the loan supply curve at high interest rates and in the medium-term by shifting the loan supply curve outwards such that more loans are traded in the market at all interest rate levels (Shen, 2002). These effects should reduce the size of the credit rationing gap between loan demand from small firms and loan supply from small firm lenders which is the ultimate policy objective.

4. Data and descriptive statistics

The data for analysis is from the management information system (MIS) for the Recovery Loan Scheme (RLS) and records, for each issued loan, a rich set of firm and loan characteristics. It contains a total of 31,760 individual loan contracts issued between April 2021 and May 2024 to UK SMEs. Firm characteristics include age (defined as years from founding), size (measured in sales turnover), 21 standard industrial classification codes at the 1-digit level, geographic location identifiers including 12 standard geographic regions, 43 sub-regions, and 193 districts, and whether or not the firm has a limited liability legal status. At the loan contract level, detailed information is collected about the purpose for which the RLS loan is issued for, and this forms the basis of our empirical investigation as it identifies three distinct categories of loan purpose including for growth (and capital investment), for working capital, and for refinancing existing loans. Other loan information includes the date of loan issue (origination), the size of loan issued, the term structure (maturity), the type of lender issuing the loan, and the loan interest rate.

In total, 47.99 % of RLS loans are issued to finance growth, 43.59 % for working capital, and 8.42 % to refinance existing loans. In this sense, there is a separation in the SME sector in terms of their current status as regards their financing requirements with the most significant share of firms borrowing to fund growth related projects and investment, but a slightly smaller share having a clear requirement for liquidity and working capital. A much smaller proportion of firms are clearly having problems rolling over their existing loans and debt. At the three spatial levels we consider (see Fig. 1), we find that 57.7 % of firms in Northern Ireland at the regional level, 57.9 % of firms in Cornwall and the Isles of Scilly at the sub-regional level, and 80.0 % of firms in the Shetland Islands at the district level are more focused on growth than firms in other places. In all three cases the places identified are extremely peripheral in a literal sense from the capital city of London and the wealthy South Eastern region that surrounds it. For example, Belfast in Northern Ireland is 517 km (321 miles) from London, Falmouth in Cornwall is 378 km (235 miles) away from London, and the Shetland Islands is 1408 km (875 miles) away from London and even 774 km (481 miles) away from the Scottish capital of Edinburgh.

In contrast, refinancing existing loans and debts is at its highest at the regional level in Wales at 9.34 %, at the sub-regional level in Merseyside, 11.95 %, and at the district level in na h-eileanan siar (formerly the Western Isles of Scotland) at 28.57 %. What is evident is that as we move from big geographies (regions), through medium geographies (sub-regions) to small geographies (districts) the variations in borrowing for growth, working capital, and refinancing become larger between spatial units and greater variance is apparent. This might indicate that the future growth of the UK economy, at least that part driven by firms, will have a unique and uneven spatial distribution and one that is atypical for the UK which is normally characterised by a two-speed economy in which London and the South East is dynamic and productive and the rest of the UK is relatively less dynamic and unproductive.

Table 1 reports the sample characteristics separately for firms using RLS loans for growth working capital, or refinancing. In respect of firm age, the differences are only marginally significant at the 10 % level with growth finance firms being the youngest at an average of 12.35 years and refinancing firms the oldest at 14.57 years. Significant differences were found in respect of firm size with growth firms having the largest average sales at £2.82 m and refinancing firms the smallest average sales at £2.37 m. There were also significant differences in the share of firms with limited liability legal status (LTD), and here we find that firms borrowing for working capital had the highest LTD rate at 96.36 % and refinancing firms the lowest at 91.54 %. At the industry sector level, firms in mining and quarrying had the highest rate of borrowing for growth at 77.14 % and firms in the generation and distribution of energy had the lowest rate at 35.09 %.

Overall, our sample statistics show that there is very substantial

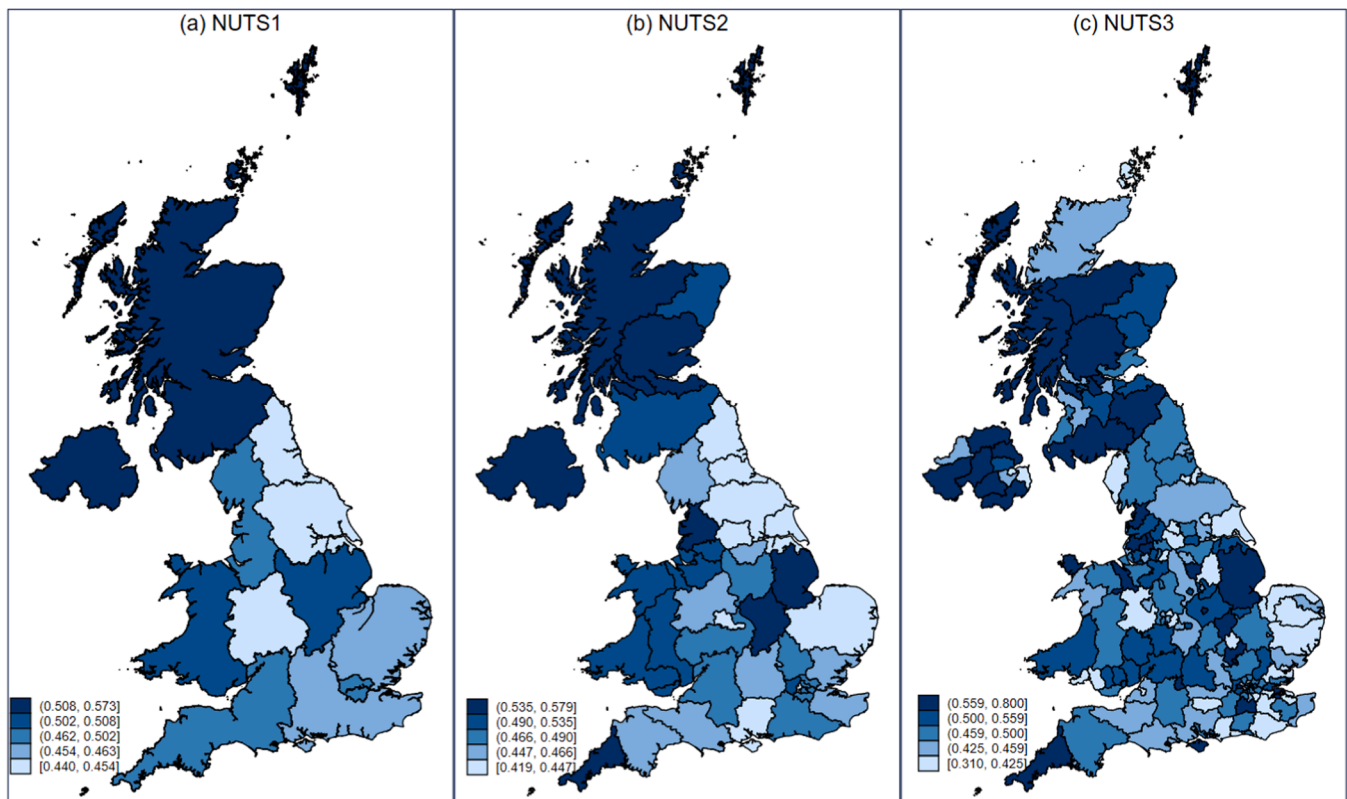


Fig. 1. Growth Loans at Three Spatial Levels, Notes: The source of the data in the above figure is from the UK government scheme management information system. The maps are the authors' own work using Stata.

Table 1
Firm characteristics by purpose of loan.

	Growth	Working Capital	Refinancing
Firm age	12.35	13.05	14.57
Std Deviation	[11.34]	[11.13]	[11.21]
Firm sales £m	2.823	2.689	2.371
Std Deviation	[1.710]	[1.134]	[5.626]
Limited Liability Legal Status %	94.61	96.36	91.54
Std Deviation	[22.58]	[18.72]	[27.84]
Industry Sector			
Agriculture, forestry, and fishing	59.11	30.00	10.89
Mining and quarrying	77.41	17.14	5.71
Manufacturing	50.39	42.51	7.11
Electricity, gas, steam and air conditioning supply	35.09	50.88	14.04
Water supply, sewerage, waste management	68.63	24.13	7.24
Construction	41.92	49.94	8.14
Wholesale and retail trade	44.77	48.60	6.62
Transportation and storage	66.63	26.80	6.58
Accommodation and food service activities	50.99	43.17	5.84
Information and communication	44.41	47.73	7.86
Financial and insurance activities	46.27	40.80	12.93
Real estate activities	46.09	24.88	29.03
Professional, scientific and technical activities	40.90	49.98	9.62
Administrative and support service activities	50.75	41.70	7.55
Public administration and defence	40.00	52.00	8.00
Education	43.90	50.23	5.87
Human health and social work activities	43.30	47.01	9.69
Arts, entertainment and recreation	58.10	37.23	4.67
Other service activities	53.13	40.16	6.71
Activities of households as employers	66.67	33.33	0.00

Source: The data is from the RLS scheme management information system.

spatial heterogeneity in terms of what firms are using RLS loans to finance and that the types of firms that are focused on growth are different from those focusing on working capital or refinancing issues. Specifically, larger (and to a lesser extent younger) firms are more growth focused, and particularly those in extractive industry sectors. This gives us an insight into where we might expect new growth in the future from the SME sector and where geographically in the UK we might expect to see this future growth in terms of its spatial distribution.

The full sample statistics are presented in Appendix Table A1 and show that the average firm is 12.9 years old and has sales of £ 2.6 m. The most numerous industry sectors include wholesale and retail with 17.78 % of firms, construction with 12.94 % of firms, and manufacturing with 12.24 % of firms. At the regional level, 16.34 % of firms are located in London, 13.93 % in the South East of England, and 10.41 % in the North West of England. The average RLS loan size is £ 211,156 highlighting the potential for loans of this scale to make a significant difference to firm outcomes. We also calculated the pairwise correlations for our main explanatory variables (see Appendix Table A2) and found significant correlations between firm size, age and LTD status. However, the magnitude of the correlations were not particularly large, for example between LTD status and size it was 0.0926 and for firm age it was only -0.0153.

5. Results

We are interested in establishing what types of firms in the post-pandemic period are raising new borrowing to support growth, working capital, or refinancing of existing loans and debt as a means of understanding more about where the future growth of the UK economy might come from. We are interested in two specific aspects of this: firstly, what types of firms are borrowing to invest in growth, and; secondly, what is the nature of the spatial distribution of borrowing for growth within SMEs. This is intended to provide a more complete pic-

ture of the ‘who’ and the ‘where’ aspects of new investment in growth related activities across the geography of the UK in the wake of the Covid-19 pandemic. As we have three mutually exclusive alternative reasons for new RLS borrowing, we choose to estimate a multinomial logit model using borrowing for working capital as our reference category.

$$\begin{aligned} \Pr(\text{Loan purpose} = i) &= \frac{\exp(X\beta_{\text{Growth}})}{1 + \exp(X\beta_{\text{Growth}}) + \exp(X\beta_{\text{Refinancing}})}, \text{ if Loan purpose} \\ &= 1 \quad (\text{for growth}) \quad \frac{1}{1 + \exp(X\beta_{\text{Growth}}) + \exp(X\beta_{\text{Refinancing}})}, \text{ if Loan purpose} \\ &= 2 \quad (\text{for working capital}) \quad \frac{\exp(X\beta_{\text{Refinancing}})}{1 + \exp(X\beta_{\text{Growth}}) + \exp(X\beta_{\text{Refinancing}})}, \text{ if Loan purpose} = 3 \quad (\text{for refinancing}) \end{aligned}$$

Where X is the row vector of observed values of the independent variables, and β_{Growth} and $\beta_{\text{Refinancing}}$ are the coefficient vector for loans specifically for supporting growth and refinancing, respectively.

5.1. Firm demographics

The results for our first regional model are presented in Table 2 (Model 1) and the relative risk ratios¹ are presented in Appendix Table A3. Here we find that as the economy moves further away from the Covid-19 pandemic in time, firms are becoming more willing to borrow to finance growth, but also more likely to be refinancing their existing debts. The magnitude of the time effect is greater for refinancing than growth ($\beta=0.201$, $Z = 8.48$ compared to $\beta=0.141$, $Z = 10.44$). This is the first indication of a bifurcation of firms into those with a forward growth-oriented focus and those still struggling to sort out their finances after the pandemic period. In terms of firm demographic characteristics, we observe that there is a negative firm size effect for growth and refinancing, again with the magnitude of the refinancing effects being larger than the comparable growth effect ($\beta=-0.068$, $Z = -4.25$ compared to $\beta=-0.043$, $Z = -4.81$). This suggests that larger SMEs are focused on borrowing for working capital and that micro firms are focused on both growth and refinancing.

It was also the case that firms with a ‘Limited’ legal status were significantly more focused on working capital than growth or refinancing. In respect of firms age, we find a negative and significant effect for growth ($\beta=-0.085$, $Z = -5.06$) and a positive and significant effect for refinancing ($\beta=0.431$, $Z = 13.15$). These results suggest that young firms are more focused on growth and older firms more focused on refinancing existing debts. At the industry sector level, growth is most evident for firms in financial services and real estate, and least apparent for firms in wholesale and retail, education, and arts and entertainment. Consistent with other research by Pedauga et al. (2022) this suggests a separation between knowledge intensive services where growth opportunities are prevalent and service sectors most impacted by the Covid-19 pandemic period and where new borrowing is focused on working capital, although we also find that real estate firms are also most likely to be borrowing for refinancing purposes.

In summary, to answer the question of what types of SMEs are focusing on new borrowing to finance growth, our results are fairly clear-cut and show that smaller and younger firms are much more likely to be using new RLS loans for growth purposes, although we also note

that the same types of firms are also borrowing additionally for refinancing purposes. In contrast, older and larger firms are more focused on borrowing to fund working capital. Overall, our findings point to small and young firms, particularly those in knowledge intensive service industries being at the forefront of the future growth of the UK economy. It is also the case that borrowing for growth has increased over time

between 2021 and 2024 as the economy moves further away from the pandemic period.

5.2. The spatial distribution of growth

Table 2 reports our models using three specific spatial categorisations: region, sub-region, and district. In order of these three categorisations, the results are shown in models 1, 2 and 3. We also present the magnitude of the spatial effect on growth loans at different levels in Fig. 2. At the regional level, we find that borrowing for growth is significantly more prevalent in the East of England, North West, Northern Ireland, and Scotland and least prevalent in Yorkshire and Humberside. Thus even at the most aggregated spatial level we observe some significant variation with Northern Ireland having the largest magnitude of positive coefficient ($\beta=0.459$, $Z = 4.09$) and Yorkshire and Humberside the largest negative coefficient $\beta=-0.193$, $Z = -3.23$). It is also evident that the two most dynamic regions, London and the wider South East region are well behind the leading regions in terms of firms focusing on growth. Tentatively, this might suggest that there will be a future rebalancing of the UK regional economic landscape as SME growth is likely to come from other regions of the UK. These findings are consistent with Kapsitsinis et al. (2021) who found that capital constraints impinge on regional growth prospects.

At the sub-regional (nuts 2) level, we find that firms in Merseyside and West Central Scotland have the highest probabilities of RLS borrowing to finance new growth. We note here that regional variations are greater than sub-regional variations. However, using our most disaggregated spatial categorisation (the district) we find even very large spatial variations in the distribution of borrowing for growth. Specifically, we find that four districts have a significantly higher prevalence of borrowing for growth and twenty-five regions a significantly lower prevalence of borrowing for growth. The high growth borrowing districts include the Causeway Coast and Glens (in Northern Ireland), and Central Bedfordshire, Mid Lancashire and Tyneside (in England). With the exception of Central Bedfordshire, all of these districts could be considered to be peripheral from the traditional areas of economic growth and dynamism. Much the same could be said for the spatial layer above districts (sub-regions) and also the highest spatial level which is the region.

The biggest losers in this borrowing for growth spatial distributions are Yorkshire and Humberside at the regional level, North Yorkshire at the sub-regional level, and Croydon at the district level. In this respect, even within the wider Yorkshire and Humberside region, borrowing for growth is unevenly distributed, and although London is in the middle range for growth finance, it has distinct pockets where this is not the case as for Croydon which is at the far reaches of South London. The big winner in this race for growth is Northern Ireland and specifically the parts around the Northern coast where the famous Giants Causeway is

¹ The relative-risk ratios, reports the estimated coefficients (the betas in Table 2) transformed to relative-risk ratios, that is e^β rather than β . This option only affects how results are displayed not how they are estimated. Therefore, we include the Table 2 reporting the estimated coefficients in the manuscript but provide the RRR in Appendix Table A3.

Table 2

Loan Purpose in RLS Borrowing at Three Spatial Levels.

Dependent Variables:	Loan Purpose					
	Model 1 (Reginal Effect)		Model 2 (Sub-reginal Effect)		Model 3 (District Effect)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance
<i>Key Firm Characteristics</i>						
Log sales	−0.0431 *** (0.0089)	−0.0682 *** (0.0161)	−0.0422 * ** (0.0090)	−0.0678 *** (0.0161)	−0.0445 * ** (0.0091)	−0.0683 *** (0.0163)
Log Age	−0.0851 * ** (0.0168)	0.4306 *** (0.0327)	−0.0856 * ** (0.0169)	0.4287 *** (0.0328)	−0.0881 * ** (0.0170)	0.4350 *** (0.0332)
LTD	−0.2936 * ** (0.0661)	−0.5116 *** (0.1019)	−0.3043 * ** (0.0663)	−0.5222 *** (0.1023)	−0.2913 * ** (0.0672)	−0.5009 *** (0.1038)
Year	0.1410 * ** (0.0135)	0.2008 *** (0.0237)	0.1415 * ** (0.0135)	0.2010 *** (0.0237)	0.1422 * ** (0.0136)	0.2027 *** (0.0239)
<i>Region NUTS1 (base: East of England)</i>						
East Midlands of England	0.1632 * ** (0.0612)	−0.0002 (0.1122)				
London	0.0575 (0.0506)	−0.0095 (0.0905)				
North East of England	−0.1639 * ** (0.0813)	−0.0331 (0.1414)				
North West of England	0.1605 *** (0.0555)	0.1347 (0.0982)				
Northern Ireland	0.4586 *** (0.1121)	−0.1016 (0.2242)				
Scotland	0.2622 *** (0.0674)	0.1118 (0.1203)				
South East of England	−0.0723 (0.0519)	−0.0027 (0.0918)				
South West of England	0.0022 (0.0598)	−0.0839 (0.1080)				
Unknown	0.8804 *** (0.2520)	0.6802 * (0.4071)				
Wales	0.0830 (0.0792)	0.1999 (0.1356)				
West Midlands of England	−0.1032 * (0.0575)	−0.1690 (0.1049)				
Yorkshire & Humber	−0.1926 *** (0.0597)	−0.2200 ** (0.1096)				
<i>Region NUTS2 (base: Bedfordshire and Hertfordshire)</i>						
Berkshire, Buckinghamshire and Oxfordshire			−0.2283 ** (0.0921)	−0.1760 (0.1717)		
Cheshire			0.0063 (0.1184)	0.1988 (0.2084)		
Cornwall and Isles of Scilly			0.1823 (0.1520)	−0.2009 (0.3086)		
Cumbria			−0.2176 (0.1775)	0.1527 (0.2877)		
Derbyshire and Nottinghamshire			−0.1188 (0.0990)	0.0632 (0.1783)		
Devon			−0.2386 ** (0.1217)	−0.2479 (0.2261)		
Dorset and Somerset			−0.1681 (0.1131)	0.2929 (0.1900)		
East Anglia			−0.2914 *** (0.0985)	−0.0856 (0.1775)		
East Wales			0.1006 (0.1281)	0.4099 * (0.2165)		
East Yorkshire and Northern Lincolnshire			−0.3302 ** (0.1338)	−0.1249 (0.2464)		
Eastern Scotland			0.0509 (0.1135)	−0.0253 (0.2125)		
Essex			−0.1070 (0.0981)	0.0950 (0.1745)		
Gloucestershire, Wiltshire and Bath/Bristol Area			−0.1433 (0.0969)	−0.2538 (0.1852)		
Greater Manchester			−0.0165 (0.0920)	−0.0179 (0.1718)		
Hampshire and Isle of Wight			−0.2663 *** (0.1027)	0.1526 (0.1781)		
Herefordshire, Worcestershire and Warwickshire			−0.1894 * (0.1070)	−0.2901 (0.2077)		
Highlands and Islands			0.1288 (0.1959)	−0.3142 (0.4048)		

(continued on next page)

Table 2 (continued)

Dependent Variables:	Loan Purpose					
	Model 1 (Reginal Effect)		Model 2 (Sub-regional Effect)		Model 3 (District Effect)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance
Inner London – East			–0.1340 (0.0947)	–0.2312 (0.1819)		
Inner London – West			–0.1682 * (0.0926)	–0.0751 (0.1684)		
Kent			–0.2468 ** (0.1048)	0.1084 (0.1830)		
Lancashire			0.2251 ** (0.1114)	0.0665 (0.2068)		
Leicestershire, Rutland and Northamptonshire			0.1257 (0.0989)	–0.0196 (0.1872)		
Lincolnshire			0.2183 (0.1536)	–0.1991 (0.3171)		
Merseyside			0.0002 (0.1173)	0.4384 ** (0.1949)		
North Eastern Scotland			0.0858 (0.1733)	0.1617 (0.3051)		
North Yorkshire			–0.4193 *** (0.1275)	–0.0773 (0.2244)		
Northern Ireland			0.3240 *** (0.1260)	–0.0968 (0.2486)		
Northumberland, and Tyne and Wear			–0.2560 ** (0.1228)	0.0489 (0.2133)		
Outer London - East and North East			–0.0062 (0.1055)	–0.0129 (0.1954)		
Outer London - South			–0.1330 (0.1137)	–0.1249 (0.2111)		
Outer London - West and North West			0.0613 (0.0934)	0.2958 * (0.1654)		
Shropshire and Staffordshire			–0.2619 ** (0.1041)	–0.0322 (0.1871)		
South Yorkshire			–0.2182 * (0.1198)	–0.1762 (0.2247)		
Southern Scotland			–0.0076 (0.1550)	–0.0102 (0.2818)		
Surrey, East and West Sussex			–0.1238 (0.0915)	–0.0094 (0.1667)		
Tees Valley and Durham			–0.3390 *** (0.1215)	–0.1090 (0.2186)		
Unknown			0.7440 *** (0.2585)	0.6823 (0.4210)		
West Central Scotland			0.3156 ** (0.1251)	0.4309 ** (0.2133)		
West Midlands			–0.2496 *** (0.0930)	–0.1921 (0.1731)		
West Wales and The Valleys			–0.1591 (0.1132)	0.0547 (0.2017)		
West Yorkshire			–0.3388 *** (0.0952)	–0.3271 * (0.1814)		
Region NUTS3 Effect	NO		NO		YES	
Sector FE	YES		YES		YES	
No. obs	28,114		28,114		28,114	
Model significance	0.0000		0.0000		0.0000	
LR χ^2	1527.71		1630.40		2013.84	
Pseudo R2	0.0295		0.0315		0.0389	

Notes: *** indicates significance at 1 % level, ** indicates significance at 5 % level, and * indicates significance at 10 % level. Figures in parentheses are standard errors.

Source: The data is from the RLS scheme management information system.

located. We note here that Northern Ireland has a unique status in the UK which allows it to still access the European Single Market even after Brexit due to its land border with (Southern) Ireland which may be one

such explanatory factor (Cowling and Brown, 2024). These sub-regional findings accord with those of Kallandranis et al. (2023) who found that finance issues tend to manifest themselves at the local level, and also

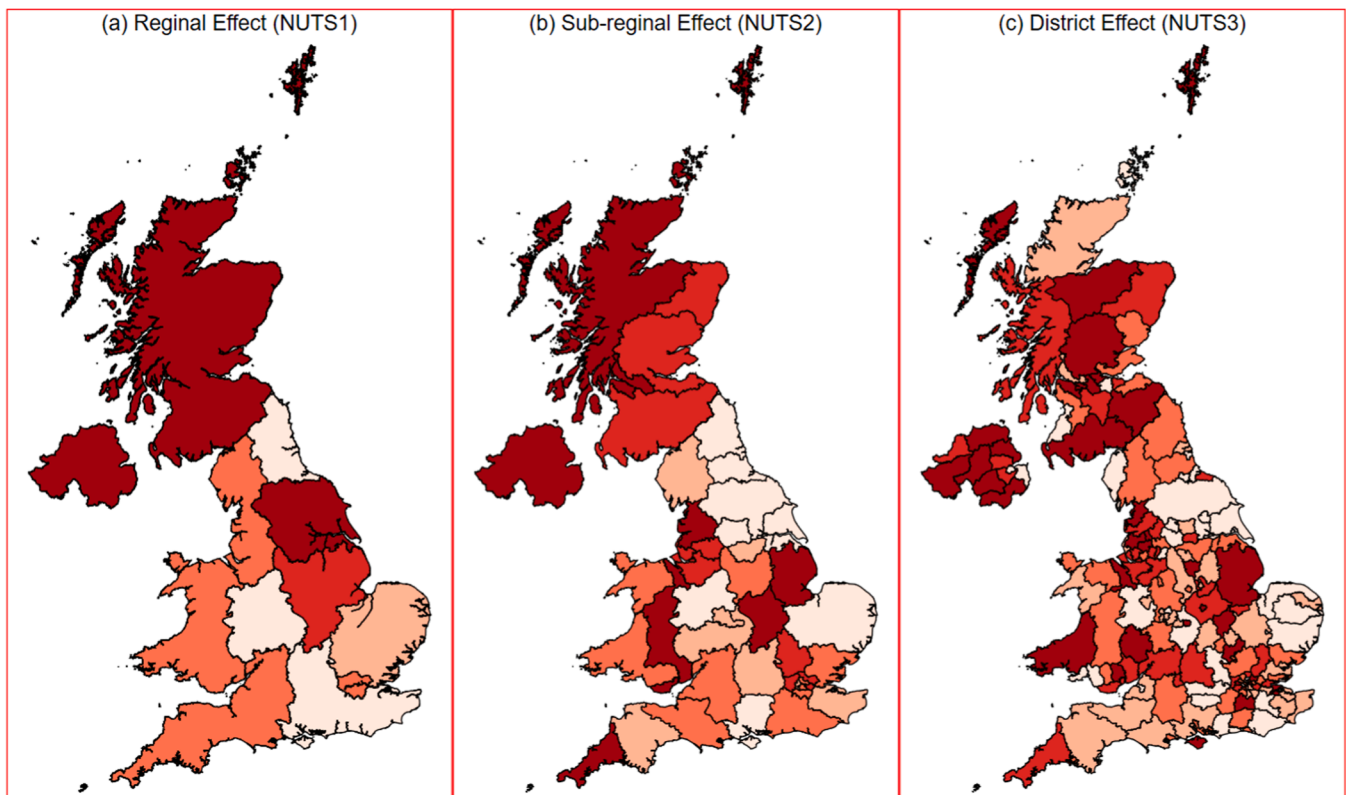


Fig. 2. Spatial Effect on Growth Loans at Three Spatial Levels. Notes: The source of the data in the above figure is from the estimation model 3 in Table 2. The maps are the authors' own work using Stata.

Karna and Stephan (2022) in respect of the increasing distance between firms and lenders to the benefit of major cities and the disbenefit of firms outside of major cities.

5.3. Robustness Checks

We also estimated a further set of models using a multinomial probit specification, as opposed to the multinomial logit specification, and a nested form of the multinomial logit model. The former makes different assumptions about the distribution of the error terms and the latter allows for hierarchical layers of variables to enter the model in blocks and we consider blocks for geographical identifiers at three spatial levels (region, sub-region and district), the specifics of RLS lending at these three spatial levels, and firm specific characteristics. All results and models are presented in Appendix Table A4.

From this set of additional models we observe that firm size is negatively associated with growth financing, suggesting that on average smaller firms are more likely to be borrowing for growth, and also firm age, suggesting that younger firms are more growth oriented. The time dynamics confirm that as we move further away from the pandemic, firms are borrowing more for growth reasons. These results are robust and consistent with the findings in our multinomial probit models in Table 2.

At a spatial level, in the nested logit models in Table A4, we replaced the spatial dummies with specific spatial variables as additional checks

for spatial effect. We find that larger average loan sizes at NUTS1 and NUTS2 levels are associated with a higher probability of borrowing to fund growth. However, higher spatial RLS loan counts (numbers of loans issued) are associated with a lower probability of borrowing for growth reasons. This highlights an interesting tension. In areas with fewer RLS loans, but larger ones, firms are borrowing for growth rather than working capital reasons. Where lots of firms are borrowing smaller amounts, loans are more likely to be for working capital. In general, it is reassuring to note that our robustness test models confirm the findings from our core set of models.

6. Discussion

This paper makes a number of important theoretical and empirical contributions. In order to assess levels of regional financial resilience, herein we set out to empirically investigate the extent to which UK SMEs were utilising the post-pandemic RLS to access new loans to support growth, or whether they were borrowing to support their working capital needs, and/or to refinance existing debts. We set our investigation in the broader context of whether or not the UK SME sector was able, or indeed likely, to resume their preeminent role as a powerful driving force behind economic growth as it was before the Covid-19 pandemic. We also focused on how this borrowing-growth nexus might play out differently across the UK at three different spatial levels, regions, sub-regions, and districts, as the UK has been characterised by

significant and persistent spatial economic (and social) inequalities for a number of decades (McCann, 2020; Bathelt et al., 2024).

Our starting point was around the 1.4 m UK SMEs emerging from the Covid-19 pandemic period, many of them with significant existing debts (the debt overhang problem) and limited ability to raise new loans. The public intervention to correct for this was the RLS which provided a 70 % guarantee on new lending to viable SMEs. Its wider remit was to ensure that as new opportunities for growth emerged in the post-pandemic period, no viable SME would miss out on them, thus releasing them to grow and create more jobs, although it was not limited to supporting growth finance. Our baseline finding was that nearly half of all RLS loans were to support growth, although more than four in ten were to provide working capital.

Importantly, from a conceptual perspective, we introduced the concept of regional financial resilience as a new addition to the resilience literature. How small firms cope with adversity and readjust financially is crucial for a region's ability to accommodate and withstand exogenous shocks. Empirically we observed some significant variations in terms of borrowing for growth at all three spatial levels considered and often in places that were physically and economically remote from the rich and dynamic South East of England and the capital city of London. This suggests that the future spatial configuration of SME growth patterns might have a unique and different complexion to that observed over the decades leading up to the Covid-19 pandemic. By its very nature this would potentially rebalance the UK economy away from its richest regions and localities. But this spatial distribution would also be impacted by the types of firms that are borrowing to finance new growth as the spatial distributions of SMEs across the UK are often quite different, and particularly so the more fine grained the spatial unit of analysis.

The work also contained important -and somewhat counter-intuitive- empirical results. Our analysis also showed that borrowing for new growth had a very distinct spatial distribution across all three spatial levels considered. Importantly, this was almost exclusively outside of the rich South East of England economy and the capital city of London. But we also found that the most growth-focused spatial areas were physically and economically remote from the South East of England, and this was particularly the case for Northern Ireland and areas in the North of England and Scotland. It was also the case that even within growth-oriented regions, there were pockets where there were high and low concentrations of growth firms which suggests that the deeper we delve into sub-regional analysis the richer and more nuanced the patterns of SME growth become. This clearly calls into question the veracity of current political focus on regions and super-regions, such as the Northern Powerhouse- as the appropriate geographical unit to implement economic policy and allocate funds in the UK (Lee, 2017).

Our interesting empirical results clearly have important policy implications. Our econometric analysis showed that the types of SMEs that are most likely to make a significant contribution to the future growth of the localities they are located in, and of course the wider UK economy, are the youngest and smallest. This confirms that this most dynamic segment of the UK business population is ready to resume its former, pre-pandemic, role as the engine of the economy which corresponds with other work on regional resilience in terms of sectoral resilience (Cuadrado-Roura and Maroto, 2016; Bishop, 2017). Our results also show that there is a positive time dynamic which suggests that the further the economy temporally transitions away from the pandemic period, the more firms in general are raising new loans to fund growth.

This is indicative of an emergent growth dynamic in the small business sector in the UK and suggests that (a) the RLS was an appropriate and well-targeted policy intervention, &, (b) that despite being “spatially blind” (i.e. no spatial targeting) in nature it had the unintended consequence of supporting the levelling up of spatial inequalities policy objective. It was also apparent that much of this new investment in growth was concentrated in specific knowledge intensive service sectors whilst those sectors most impacted by the Covid-19 pandemic period were able to borrow to finance general working capital or to refinance their existing debts.

Our analysis is the first step in understanding how the UK economy is emerging from the Covid-19 shock and how there are different spatial patterns of firm-level resilience and dynamics in terms of the willingness of SMEs to undertake new borrowing to finance growth. If we allow for an equal proportion of growth loans to be successfully granted this would imply that actual and realised growth at the firm and spatial level will be different, but at this moment in time we are not able to capture this as yet. This provides a unique opportunity going forward to collate spatial outcomes and to question whether this initial building block -i.e. the RLS- was instrumental in driving future economic growth across the UK.

7. Conclusions

It is fair to say the regional resilience metaphor has captured the imagination and indeed the ‘zeitgeist’ of scholars of regional economic phenomenon in recent years (Martin and Sunley, 2020). Our key proxy for assessing ‘resilience’ and the core unit of analysis used in this paper is the investment behaviour of SMEs which enables us to introduce the concept of “regional financial resilience”. In particular, we sought to examine how small firms adjust and adapt following the exogenous shock caused by Covid-19. As firms emerge from the pandemic it is important to understand what shape they are in, particularly with regard to their ability to finance new growth enhancing opportunities to help them bounce back from this critical (and deeply uncertain) temporal juncture posed by the global pandemic. Clearly not all firms are ready to invest in future growth with some simply in need of an injection of working capital and others seeking recourse to refinancing existing debts. Somewhat surprisingly, it appears that the smallest and youngest SMEs have the greatest levels of post-pandemic entrepreneurial resilience levels.

In this paper our primary consideration was how firms across the different geographies of the UK have been raising new loans to finance growth, working capital or simply refinancing their existing debt. The rich empirical data investigated found stark spatial variations in the proportion of firms reporting growth as the key mechanism for using the loans and this is starkest at the lowest unit of spatial analysis examined (i.e. districts). It clearly shows that levels of regional financial resilience will be marked by a much more complex spatial mosaic than the traditional core-peripheral dichotomies commonly depicted by other research on resilience have suggested (Ray et al., 2017; Bănică et al., 2024). This testifies to those who assert that “the spatial scale for the analysis of resilience needs to be a fine one” (Di Caro and Fratesi, 2018, p. 239). Thus, the future development of the UK will have a distinct and uneven spatial pattern at a granular level, with firms in some geographies investing in growth while in others they are tackling cash flow problems or issues associated with existing debts. While some have rightly questioned elements of the UK Government’s ‘Levelling Up’

agenda (Fransham et al., 2023), a simple policy instrument such as the RLS may actually be contributing to this policy objective despite being spatially blind in nature.

Inevitably, the research reported is not without flaws. Due to the self-reported nature of the application process, we are unable to precisely discern the specific purpose the loans were used for by the supported SMEs. In other words, some firms may end up using their loans (or a proportion thereof) for working capital issues despite declaring their intent to use it for growth and/or investment purposes. Clearly, to obviate some of these inherent limitations more ongoing detailed research is needed to ascertain whether these investment trends translate into greater levels of economic growth at the regional, sub-regional levels and district levels to fully gauge the temporality of regional resilience over the medium to long-term. How exogenous shocks play out in different spatial locations is a key contributory factor underpinning regional financial resilience. Plentiful opportunities abound for scholars to further probe how small firms cope financially with adversity when faced with unique unforeseen shocks such as Covid-19.

CRedit authorship contribution statement

Ross Brown: Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Marc Cowling:** Writing – original draft, Methodology, Investigation, Funding acquisition, Conceptualization. **Huan Yang:** Writing – original draft, Visualization, Software, Formal analysis. **Weixi Liu:** Writing – original draft, Funding acquisition, Conceptualization.

Declaration of Competing Interest

I can confirm that we have no interests to declare with regard to the paper

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Table A1
Sample Statistics

Panel A: Firm Variables	Mean
Firm age	12.86
Std Deviation	11.26
Firm sales £m	2.611
Std Deviation	13.800
Limited Liability Legal Status %	90.84
Std Deviation	28.84
Industry Sector %	
Agriculture, forestry, and fishing	1.42

(continued on next column)

Table A1 (continued)

Panel A: Firm Variables	Mean
Mining and quarrying	0.22
Manufacturing	12.24
Electricity, gas, steam and air conditioning supply	0.18
Water supply, sewerage, waste management	1.19
Construction	12.94
Wholesale and retail trade	17.78
Transportation and storage	5.19
Accommodation and food service activities	5.93
Information and communication	1.75
Financial and insurance activities	4.20
Real estate activities	8.53
Professional, scientific and technical activities	9.32
Administrative and support service activities	0.08
Public administration and defence	1.34
Education	3.78
Human health and social work activities	2.03
Arts, entertainment and recreation	2.83
Other service activities	0.02
Region NUTS1 %	
East	9.40
East Midlands of England	7.07
London	16.34
North East of England	3.06
North West of England	10.41
Northern Ireland	1.48
Scotland	5.46
South East of England	13.93
South West of England	7.71
Unknown	4.95
Wales	3.38
West Midlands of England	9.01
Yorkshire & Humber	7.79
Panel B: Loan Variables	
Loan size £s	211,156
Std Deviation	577,434
Loan Purpose %	
Growth	47.99
Working Capital	43.59
Refinancing	8.42
No. Observations	31,760

Table A2
Correlation Coefficient Matrix Table

	Log sales	Log Age	LTD	Year
Log sales	1			
Log Age	0.2744 *	1		
LTD	0.0926 *	−0.0153 *	1	
Year	−0.0233 *	−0.1991 *	−0.0122 *	1

Notes: * indicates significance at 5 % level or better.

Table A3

Loan Purpose in RLS Borrowing at Three Spatial Levels – Relative risk ratio

Dependent Variables:	Loan Purpose					
	Model 1 (Regional Effect)		Model 2 (Sub-Regional Effect)		Model 3 (District Effect)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance
<i>Key Firm Characteristics</i>						
Log sales	0.9579 *** (0.0086)	0.9340 *** (0.0150)	0.9587 * ** (0.0086)	0.9345 *** (0.0151)	0.9565 * ** (0.0087)	0.9340 *** (0.0152)
Log Age	0.9184 * ** (0.0155)	1.5382 *** (0.0504)	0.9180 * ** (0.0155)	1.5353 *** (0.0504)	0.9157 * ** (0.0156)	1.5449 *** (0.0512)
LTD	0.7456 * ** (0.0493)	0.5995 *** (0.0611)	0.7376 * ** (0.0489)	0.5932 *** (0.0607)	0.7473 * ** (0.0502)	0.6060 *** (0.0629)
Year	1.1514 * ** (0.0155)	1.2224 *** (0.0289)	1.1520 * ** (0.0156)	1.2226 *** (0.0290)	1.1528 * ** (0.0157)	1.2247 *** (0.0292)
<i>Region NUTS1 (base: East of England)</i>						
East Midlands of England	1.1772 * ** (0.0721)	0.9998 (0.1122)				
London	1.0592 (0.0536)	0.9905 (0.0897)				
North East of England	0.8488 * ** (0.0690)	0.9674 (0.1368)				
North West of England	1.1741 *** (0.0652)	1.1442 (0.1124)				
Northern Ireland	1.5818 *** (0.1774)	0.9034 (0.2025)				
Scotland	1.2997 *** (0.0876)	1.1182 (0.1346)				
South East of England	0.9303 (0.0483)	0.9973 (0.0916)				
South West of England	1.0022 (0.0599)	0.9196 (0.0993)				
Unknown	2.4118 *** (0.6078)	1.9744 * (0.8038)				
Wales	1.0865 (0.0860)	1.2212 (0.1656)				
West Midlands of England	0.9020 * (0.0518)	0.8445 (0.0886)				
Yorkshire & Humber	0.8248 *** (0.0492)	0.8026 ** (0.0879)				
<i>Region NUTS2 (base: Bedfordshire and Hertfordshire)</i>						
Berkshire, Buckinghamshire and Oxfordshire			0.7959 ** (0.0733)	0.8386 (0.1440)		
Cheshire			1.0063 (0.1191)	1.2199 (0.2543)		
Cornwall and Isles of Scilly			1.1999 (0.1824)	0.8180 (0.2524)		
Cumbria			0.8044 (0.1428)	1.1650 (0.3351)		
Derbyshire and Nottinghamshire			0.8880 (0.0879)	1.0652 (0.1900)		
Devon			0.7877 ** (0.0959)	0.7804 (0.1764)		
Dorset and Somerset			0.8453 (0.0956)	1.3403 (0.2546)		
East Anglia			0.7472 *** (0.0736)	0.9180 (0.1630)		
East Wales			1.1058 (0.1416)	1.5067 * (0.3263)		
East Yorkshire and Northern Lincolnshire			0.7187 ** (0.0962)	0.8826 (0.2175)		
Eastern Scotland			1.0522 (0.1195)	0.9751 (0.2072)		
Essex			0.8985 (0.0882)	1.0996 (0.1919)		
Gloucestershire, Wiltshire and Bath/Bristol Area			0.8665 (0.0840)	0.7758 (0.1437)		
Greater Manchester			0.9837 (0.0905)	0.9823 (0.1688)		
Hampshire and Isle of Wight			0.7662 ** (0.0787)	1.1648 (0.2074)		
Herefordshire, Worcestershire and Warwickshire			0.8275 * (0.0886)	0.7482 (0.1554)		
Highlands and Islands			1.1375 (0.2229)	0.7304 (0.2957)		

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Table A3 (continued)

Dependent Variables:	Loan Purpose					
	Model 1 (Regional Effect)		Model 2 (Sub-Regional Effect)		Model 3 (District Effect)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance
Inner London – East			0.8746 (0.0829)	0.7936 (0.1443)		
Inner London – West			0.8452 * (0.0783)	0.9276 (0.1562)		
Kent			0.7813 ** (0.0819)	1.1145 (0.2040)		
Lancashire			1.2524 ** (0.1396)	1.0687 (0.2210)		
Leicestershire, Rutland and Northamptonshire			1.1340 (0.1121)	0.9806 (0.1835)		
Lincolnshire			1.2439 (0.1910)	0.8194 (0.2599)		
Merseyside			1.0002 (0.1173)	1.5503 ** (0.3021)		
North Eastern Scotland			1.0895 (0.1888)	1.1755 (0.3587)		
North Yorkshire			0.6575 *** (0.0839)	0.9256 (0.2077)		
Northern Ireland			1.3826 *** (0.1743)	0.9077 (0.2257)		
Northumberland, and Tyne and Wear			0.7742 ** (0.0951)	1.0501 (0.2240)		
Outer London - East and North East			0.9938 (0.1048)	0.9872 (0.1929)		
Outer London - South			0.8754 (0.0995)	0.8826 (0.1863)		
Outer London - West and North West			1.0632 (0.0993)	1.3442 * (0.2224)		
Shropshire and Staffordshire			0.7696 ** (0.0801)	0.9683 (0.1812)		
South Yorkshire			0.8040 * (0.0963)	0.8385 (0.1884)		
Southern Scotland			0.9925 (0.1538)	0.9899 (0.2789)		
Surrey, East and West Sussex			0.8836 (0.0808)	0.9906 (0.1651)		
Tees Valley and Durham			0.7125 *** (0.0865)	0.8968 (0.1960)		
Unknown			2.1044 *** (0.5440)	1.9784 (0.8330)		
West Central Scotland			1.3711 ** (0.1715)	1.5387 ** (0.3282)		
West Midlands			0.7791 *** (0.0725)	0.8252 (0.1428)		
West Wales and The Valleys			0.8529 (0.0966)	1.0562 (0.2131)		
West Yorkshire			0.7126 *** (0.0678)	0.7210 * (0.1308)		
<i>Predictive Margins</i>						
Loan purpose	0.4670 ***		0.4670 ***		0.4670 ***	
=Growth	(0.0029)		(0.0029)		(0.0029)	
Loan purpose	0.4503 ***		0.4503 ***		0.4503 ***	
=Working Capital	(0.0029)		(0.0029)		(0.0029)	
Loan purpose	0.0828 ***		0.0828 ***		0.0828 ***	
=Refinancing	(0.0016)		(0.0016)		(0.0016)	
<i>Region NUTS3 Effect</i>	NO		NO		YES	
Sector FE	YES		YES		YES	
No. obs	28,114		28,114		28,114	
Model significance	0.0000		0.0000		0.0000	
LR χ^2	1527.71		1630.40		2013.84	
Pseudo R2	0.0295		0.0315		0.0389	

Notes: *** indicates significance at 1 % level, ** indicates significance at 5 % level, and * indicates significance at 10 % level. Figures in parentheses are standard errors.

Table A4
Loan Purpose in RLS Borrowing – Robustness Checks

Dependent Variables:	Loan Purpose											
	mprobit with Spatial Dummies				Nested mlogit with other spatial variables							
	(1)		(2)		(3)		(4)		(5)		(6)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance
<i>Key Firm Characteristics</i>												
Log sales	−0.0363 * ** (0.0076)	−0.0441 *** (0.0106)	−0.0355 * ** (0.0076)	−0.0437 *** (0.0107)	−0.0410 * ** (0.0089)	−0.0671 *** (0.0160)	−0.0407 * ** (0.0089)	−0.0668 *** (0.0160)	−0.0411 * ** (0.0089)	−0.0672 *** (0.0160)	−0.0397 * ** (0.0089)	−0.0657 *** (0.0161)
Log Age	−0.0750 * ** (0.0143)	0.2812 *** (0.0217)	−0.0753 * ** (0.0143)	0.2803 *** (0.0218)	−0.0810 * ** (0.0168)	0.4352 *** (0.0327)	−0.0826 * ** (0.0168)	0.4340 *** (0.0327)	−0.0849 * ** (0.0168)	0.4329 *** (0.0327)	−0.0825 * ** (0.0169)	0.4330 *** (0.0327)
LTD	−0.2482 * ** (0.0554)	−0.3618 *** (0.0717)	−0.2568 * ** (0.0555)	−0.3695 *** (0.0720)	−0.3176 * ** (0.0660)	−0.5249 *** (0.1017)	−0.3146 * ** (0.0660)	−0.5183 *** (0.1017)	−0.3099 * ** (0.0659)	−0.5135 *** (0.1017)	−0.3109 * ** (0.0660)	−0.5153 *** (0.1018)
Year	0.1202 * ** (0.0115)	0.1449 *** (0.0157)	0.1206 * ** (0.0115)	0.1447 *** (0.0158)	0.0254 (0.0224)	0.1030 ** (0.0403)	0.0425 * (0.0214)	0.1022 *** (0.0384)	0.0960 * ** (0.0193)	0.1433 *** (0.0346)	0.0240 (0.0225)	0.0946 ** (0.0407)
<i>Spatial Variables</i>												
Log Loan Size NUTS1					0.2129 *** (0.0461)	0.2117 *** (0.0820)					0.2344 ** (0.0947)	0.0428 (0.1695)
Log Loan Counts NUTS1					−0.2899 *** (0.0462)	−0.2520 *** (0.0816)					−0.2867 *** (0.1081)	0.0032 (0.1926)
Log Loan Size NUTS2							0.1405 *** (0.0388)	0.1422 ** (0.0686)			0.1558 (0.0949)	0.2451 (0.1695)
Log Loan Counts NUTS2							−0.2458 *** (0.0429)	−0.2518 *** (0.0758)			−0.1867 * (0.1132)	−0.3463 * (0.2014)
Log Loan Size NUTS3									0.0367 (0.0314)	0.0587 (0.0560)	−0.1955 * ** (0.0547)	−0.1248 (0.0971)
Log Loan Counts NUTS3									−0.1106 *** (0.0363)	−0.1478 ** (0.0646)	0.1839 * ** (0.0618)	0.0724 (0.1098)
<i>Region NUTS1 (base: East of England)</i>												
East Midlands of England	0.1379 *** (0.0523)	0.0130 (0.0737)										
London	0.0484 (0.0432)	−0.0002 (0.0600)										
North East of England	−0.1399 ** (0.0691)	−0.0354 (0.0946)										
North West of England	0.1374 *** (0.0473)	0.1034 (0.0654)										
Northern Ireland	0.3948 *** (0.0955)	−0.0105 (0.1432)										
Scotland	0.2231 *** (0.0573)	0.0977 (0.0799)										
South East of England	−0.0623 (0.0443)	−0.0074 (0.0610)										
South West of England	0.0003 (0.0510)	−0.0585 (0.0713)										
Unknown	0.7329 *** (0.2052)	0.4639 * (0.2803)										
Wales	0.0690 (0.0672)	0.1367 (0.0910)										
West Midlands of England	−0.0883 * (0.0490)	−0.1115 (0.0688)										
Yorkshire & Humber	−0.1658 *** (0.0509)	−0.1535 ** (0.0716)										
<i>Region NUTS2 (base: Bedfordshire and Hertfordshire)</i>												
Berkshire, Buckinghamshire and Oxfordshire			−0.1990 ** (0.0788)	−0.1335 (0.1119)								

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Table A4 (continued)

Dependent Variables:	Loan Purpose											
	mprobit with Spatial Dummies				Nested mlogit with other spatial variables							
	(1)		(2)		(3)		(4)		(5)		(6)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance
Cheshire			0.0021 (0.1010)	0.1343 (0.1387)								
Cornwall and Isles of Scilly			0.1542 (0.1299)	−0.1240 (0.1968)								
Cumbria			−0.1766 (0.1509)	0.0989 (0.1972)								
Derbyshire and Nottinghamshire			−0.1065 (0.0845)	0.0227 (0.1178)								
Devon			−0.2093 ** (0.1039)	−0.2001 (0.1483)								
Dorset and Somerset			−0.1497 (0.0960)	0.1706 (0.1281)								
East Anglia			−0.2527 *** (0.0841)	−0.0852 (0.1169)								
East Wales			0.0777 (0.1084)	0.2622 * (0.1461)								
East Yorkshire and Northern Lincolnshire			−0.2849 ** (0.1139)	−0.1191 (0.1613)								
Eastern Scotland			0.0430 (0.0972)	−0.0141 (0.1392)								
Essex			−0.0950 (0.0837)	0.0398 (0.1160)								
Gloucestershire, Wiltshire and Bath/Bristol Area			−0.1253 (0.0831)	−0.1852 (0.1201)								
Greater Manchester			−0.0182 (0.0788)	−0.0136 (0.1122)								
Hampshire and Isle of Wight			−0.2295 *** (0.0874)	0.0682 (0.1190)								
Herefordshire, Worcestershire and Warwickshire			−0.1639 * (0.0916)	−0.1987 (0.1333)								
Highlands and Islands			0.1039 (0.1670)	−0.1955 (0.2549)								
Inner London – East			−0.1194 (0.0812)	−0.1618 (0.1177)								
Inner London – West			−0.1483 * (0.0792)	−0.0701 (0.1111)								
Kent			−0.2138 ** (0.0893)	0.0471 (0.1219)								
Lancashire			0.1899 ** (0.0950)	0.0694 (0.1349)								
Leicestershire, Rutland and Northamptonshire			0.1039 (0.0846)	−0.0103 (0.1218)								
Lincolnshire			0.1869 (0.1318)	−0.1070 (0.2005)								
Merseyside			−0.0026 (0.0995)	0.2630 ** (0.1333)								
North Eastern Scotland			0.0664 (0.1473)	0.0976 (0.2040)								
North Yorkshire			−0.3577 *** (0.1084)	−0.0985 (0.1492)								

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Table A4 (continued)

Dependent Variables:	Loan Purpose											
	mprobit with Spatial Dummies						Nested mlogit with other spatial variables					
	(1)		(2)		(3)		(4)		(5)		(6)	
	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance	Growth	Refinance
Northern Ireland			0.2770 *** (0.1075)	−0.0258 (0.1594)								
Northumberland, and Tyne and Wear			−0.2211 ** (0.1046)	0.0140 (0.1424)								
Outer London - East and North East			−0.0086 (0.0902)	0.0062 (0.1275)								
Outer London - South			−0.1171 (0.0973)	−0.0956 (0.1383)								
Outer London - West and North West			0.0500 (0.0797)	0.1823 * (0.1104)								
Shropshire and Staffordshire			−0.2262 ** (0.0888)	−0.0486 (0.1234)								
South Yorkshire			−0.1920 * (0.1024)	−0.1195 (0.1454)								
Southern Scotland			−0.0091 (0.1321)	−0.0076 (0.1857)								
Surrey, East and West Sussex			−0.1093 (0.0782)	−0.0275 (0.1098)								
Tees Valley and Durham			−0.2927 *** (0.1035)	−0.1174 (0.1450)								
Unknown			0.6133 *** (0.2110)	0.4468 (0.2889)								
West Central Scotland			0.2623 ** (0.1056)	0.3070 ** (0.1432)								
West Midlands			−0.2169 *** (0.0796)	−0.1434 (0.1130)								
West Wales and The Valleys			−0.1384 (0.0966)	0.0206 (0.1336)								
West Yorkshire			−0.2947 *** (0.0814)	−0.2389 ** (0.1172)								
Sector FE	YES		YES		YES		YES		YES		YES	
No. obs	28,114		28,114		28,114		28,114		28,114		28,114	
Model significance	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
LR χ^2					1435.63		1431.26		1410.54		1455.70	
Pseudo R2					0.0277		0.0276		0.0272		0.0281	
Wald χ^2	1497.60		1590.76									

Notes: *** indicates significance at 1 % level, ** indicates significance at 5 % level, and * indicates significance at 10 % level. Figures in parentheses are standard error.

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