

# Getting left behind? The localised consequences of exclusion from the credit market for UK SMEs

Marc Cowling<sup>a</sup>, Ross Brown<sup>b</sup>, Weixi Liu<sup>c</sup> and Augusto Rocha<sup>d</sup>

<sup>a</sup>Oxford Brookes Business School, Oxford Brookes University, Headington Campus, Oxford, OX3 0BP, UK, [mcowling@brookes.ac.uk](mailto:mcowling@brookes.ac.uk)

<sup>b</sup>School of Management, University of St Andrews, The Gateway' North Haugh, St Andrews, KY16 9RJ, UK, [Ross.Brown@st-andrews.ac.uk](mailto:Ross.Brown@st-andrews.ac.uk)

<sup>c</sup>School of Management, University of Bath, Convocation Ave, Claverton Down, Bath BA2 7AZ, UK, [w1542@bath.ac.uk](mailto:w1542@bath.ac.uk)

<sup>d</sup>Business School, University of Edinburgh, 29 Buccleuch Place, Edinburgh, EH8 9JS, UK, [Augusto.Rocha@ed.ac.uk](mailto:Augusto.Rocha@ed.ac.uk)

Recent research has identified a key subset of the business population that comprises firms who had sought external finance but subsequently withdrew from the credit market completely despite still requiring finance. Utilising the UK's Longitudinal Small Business Survey between 2015 and 2020, we identify the consequences in terms of lost jobs and sales of these small- and medium-sized enterprises (SMEs) dropping out of the credit market for finance. We conduct our analysis at the regional and sub-regional level and found that around 230,000 SMEs have dropped out of the UK credit market and that in many localities this has reduced job creation and sales income growth. We conclude that this exclusionary borrowing behaviour will add further to existing regional and sub-regional economic inequalities in the UK, making the 'levelling up' agenda a very elusive policy objective.

**Keywords:** SMEs, credit markets, scarring, sub-regional, jobs

**JEL Classifications:** C83, D53, E44, R11

## Introduction

Access to finance is crucial for small- and medium-sized enterprises (SMEs) and a lack of external finance has been identified as one of the biggest growth obstacles confronting SMEs (Beck and Demirguc-Kunt, 2006; Berger and Udell, 1998; Lee et al., 2015), especially those located in peripheral regions (Lee and Brown, 2017). It follows that understanding the nature of spatial funding gaps will be crucial for helping policy makers tackle the UK's so-called 'levelling-up' agenda (Evenhuis et al., 2021; Mayer et al., 2021). Indeed, the recent White Paper on levelling up acknowledges that a key barrier to 'levelling up' owes to 'sharp differences in access to financial capital across different parts of the UK' (H.M. Government, 2022, p. 66). In this paper, we wish to contribute to the wider 'levelling up' debate by specifically examining the nature and impact of credit constraints in SMEs across different spatial locations in the UK.

Most small firms operate in spatially proximate markets and traditionally small business finance was perceived to be a highly localised 'close-knit affair' (DeYoung et al., 2008, p. 114). This close spatial proximity helps resolve informational problems involved in lending by facilitating the transmission of soft information between small firms and banks who are the primary provider of finance (Berger and Udell, 1998). Furthermore, it is at this localised spatial level where the benefits of growing small firms manifest itself through higher incomes and employment growth (Baptista et al., 2008; Fleming and Goetz, 2011). Yet the ability of some SMEs to grow is often constrained by difficulties accessing credit markets to finance their day-to-day operations and to fund new investment (Cowling et al., 2020a; Lee et al., 2015), a process acutely magnified due to the Covid-19 pandemic (Brown et al., 2020).

In this paper, we focus solely on SME credit markets which we take to mean the supply and demand for

Received: November 1, 2022; editorial decision: June 16, 2023; accepted on: October 12, 2023

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external debt finance for SMEs provided by mainstream UK banks. The capital structure of most small firms reveals that the overwhelmingly majority of start-ups and SMEs rely on external bank debt finance such as owner-guaranteed bank loans, business bank loans and business credit lines (Robb and Robinson, 2014). While a very small minority of start-ups/SMEs seek recourse to entrepreneurial finance such as business angel investment and venture capital these are very much entrepreneurial outliers (Brown and Lee, 2019).<sup>1</sup> Our study will therefore focus on commercial bank credit, which is the most common source of external funding (De Bettignies and Brander, 2007; La Rocca et al. 2011). SMEs use external finance for a variety of purposes, especially for working capital to finance their day-to-day operations (British Business Bank, 2023; Brown and Lee, 2019).<sup>2</sup> However, given the specific financial structure of SMEs, short-term credit constraints are also likely to have significant effects on their investment decision-making (Fazzari and Petersen, 1993). This is because research strongly suggests that short-term financial constraints can simultaneously reduce longer-term investment (Nicolos, 2022).

While larger firms often seek recourse to internal earnings to fund their operations (Ughetto, 2008), SMEs are more likely to seek finance from external credit markets (Berger and Udell, 1998; O'Toole et al., 2015). However, due to problems associated with asymmetric information, it is also the case that when small firm seek external capital, they are often rejected by banks (Berg, 2018; Holton et al., 2014; Lee et al., 2015). It is this rationing aspect of the small firm debt capital market that can have unanticipated consequences as firms that have been refused loans can self-exclude from the market due to first-person scarring effects (Cowling et al., 2021b). Equally, others who might have put forward applications for loans self-exclude if they observe their peers being refused funding which is the secondary discouragement effect (Cowling et al., 2016; Mol-Gómez-Vázquez et al., 2022). In other words, credit rationing is cumulative and results in self-reinforcing sub-optimal borrowing behaviour.<sup>3</sup>

Over the past few decades, the distances between small business and bank lenders have increased markedly which has further exacerbated credit constraints, especially for rural and peripheral SMEs (Alessandrini et al., 2010; Lee and Brown, 2017). The main causes of this seem to be the pervasive use of new automated lending technologies and the rapid decrease in the size of the bank branch network (Lee and Brown, 2017). There is now a growing body of empirical evidence revealing large spatial variations in access to bank finance in UK SMEs. The overwhelming bulk of this work suggests a firm's geographic location plays a pivotal role in shaping their ability to access debt finance (Lee and Brown, 2017; Degryse et al., 2018; Zhao and Jones-Evans, 2017). Consequently, access to credit is a very 'place specific' affair (Ughetto et al., 2019, p. 617) whereby some SMEs encounter a so-called 'liability of distance' in terms

of their ability to access external finance (Lee and Brown, 2017, p. 233). Typically, regions most adversely affected are peripheral and rural areas with sparse bank branch networks. Conversely, firms located in large cities are much less likely to perceive access to capital as a growth constraint (Lee and Luca, 2019). The cumulative knock-on effect of these trends may be increasing the use of other expensive forms of 'substitutive finance'—such as credit cards (Brown et al., 2019)—and increased levels of 'borrower discouragement' within SMEs (Lee and Brown, 2017).

Although it would appear that regional and sub-regional funding gaps palpably exist, the full ramifications of their effects on firm performance and wider economic growth remain somewhat overlooked. This is crucially important as the lack of demand for external credit may be having a major impact in terms of productivity growth within SMEs (Collier and Mayer, 2020; Levine and Warusawitharana, 2021).<sup>4</sup> This problem is magnified for SMEs located in certain peripheral parts of the UK economy where productivity weaknesses are often most acute (Evenhuis et al., 2021). This begs an important question: what impact is this decline in demand (and supply) of external debt finance having on SME performance? In order to examine the actual impact of these credit restrictions, this research will focus on the employment and sales income growth effects of SMEs dropping out of credit markets using a large longitudinal panel data set of UK SMEs over the period 2015–2020. This was a period of unprecedented uncertainty for SMEs given the twin impacts from Brexit, the Covid-19 pandemic and the associated strain on firm finances (Brown et al., 2020; Cowling et al., 2020a).

Specifically, the paper will establish the consequences of SMEs self-excluding from credit markets, and how this affects different geographical regions and sub-regions where they operate. We begin by identifying what types of firms have moved into a state of not engaging with credit markets, how persistent this state is, and what experiences drive this. Then we move on to tracing out the consequences of adopting this position, and not applying for external funding, even when funds are required. By way of a preview of some key findings, we find that in a general sense ceasing applying for finance which is needed is not a good thing for future growth outcomes. However, the full consequences of this excluding behaviour for the sub-regions of the UK is strengthened, or weakened, by the precise characteristics of the underlying business population. This would imply that policy attention explicitly targeted at supporting access to finance would have very different impacts, depending upon the precise nature of the sub-regional firm population.

The remainder of the papers is as follows. In Section 2, we discuss the relevant theoretical and empirical literature to formulate our hypothesis development. In Section 3, we present the longitudinal data used to empirically examine these issues. Section 4 reports the findings of our econometric modelling around SMEs engagement with

credit markets and subsequently the impact on job growth and sales incomes. We conclude in Section 5 and identify some public policy issues arising from our findings.

## Literature review

We begin by reviewing the theoretical literature around small business finance. We then consider the body of research associated with the spatial variations in access to finance across SMEs and the contribution of small firms to local and regional growth and employment.

### Access to finance in small firms: theoretical dimensions

It is a 'stylized fact' that small firms play a key role in promoting and stimulating economic dynamism, job creation and growth through their contribution to innovation, competitiveness and productive 'churn' (Urbano et al., 2019). Despite its vital importance, there are important theoretical explanations why certain SMEs may encounter problems obtaining finance. Lee et al. (2015) hold that there are three fundamental reasons access to finance can be problematic for small firms, especially innovative SMEs. First, theory suggests that smaller companies are more adversely affected by informational frictions and that their economic activity is more sensitive to the availability of bank credit (Ayyagari et al., 2021; Gertler and Gilchrist, 1994). On the whole asymmetric information issues tend to be most acute for SMEs with higher levels of intangible assets (Mina et al., 2013). Given SMEs have more information regarding the likely success of any innovation, banks cannot accurately estimate the likely returns to innovative investments due to informational asymmetries (Berger and Udell, 1998; Hall and Lerner, 2010). Second, the returns to innovation are highly skewed with only a small number of innovations generating significant revenues, while the remainder yield little or no return. Owing to the probabilities associated with outcomes being so highly uncertain, this makes it significantly harder for banks to evaluate the potential of innovative projects. Furthermore, while close relationship lending significantly reduces SMEs' expectations of being financially constrained, this does not hold for firms engaging in product innovation (Calabrese et al., 2020).

Finally, collateral is an important tool for banks to offset these informational asymmetries and help resolve credit-rationing. However, intangible assets produced by the innovation process may be difficult to value or transfer beyond an individual firm. Typically, large banks rely on objective lending technologies such as fixed-asset lending techniques (Berger & Udell, 2006). Typically, these techniques require either personal or business collateral that the firm can provide to secure the repayment of the loan. Innovative SMEs without significant tangible or re-deployable assets invariably have insufficient collateral to

obtain external finance (Cosh et al., 2009; Hall and Lerner, 2010). Consequently, many innovative firms seek finance from specialised financial intermediaries such as business angels and venture capitalists that address asymmetric information issues via *ex-ante* soft information collection and *ex-post* performance monitoring (Cowling et al., 2021a; Robb and Robinson, 2014).

Negative economic shocks could have fundamentally changed the landscape of small businesses' access to credit markets. On the supply side, unfavourable macro-economic conditions lead to increased uncertainty, which magnifies information asymmetry between borrowers and lenders (Mishkin, 2011; Sette and Gobbi, 2015). Consequently, banks tend to cut the credit supply during such periods toward small businesses (Cowling et al., 2012). On the demand side, it is likely to see fewer applications when bank capital decreases, such as during the GFC, because SMEs more likely to be discouraged based on the a priori expectation of the high rejection rate in such periods (Cowling et al., 2016).

Limited access to financial resources can seriously constrain entrepreneurial activities and thereby restrict the growth of small businesses. Using the latest UK SME Finance Monitor data, Calabrese et al. (2021) report that nearly one third of SMEs found access to external finance as the main obstacle to business growth. Employment and sales are two natural candidates of, and mostly used growth measures (Achtenhagen et al., 2010). Financial constraints largely restrict the ability of SMEs to invest in operational improvements and new projects, and the direct consequence is the low growth in sales revenue (Coleman, 2007). On the other hand, a stream of recent studies on the real effect of credit shocks, or a sudden constriction of liquidity, using quasi-experimental techniques, find that reduction in loan supply significantly increases job losses, particularly in the SME sector (Ayyagari et al., 2021; Greenstone et al., 2020). However, the effect of capital constraints is not always consistent between sales and employment (Shepherd and Wiklund, 2009). For example, Cowling et al. (2014) and Cowling et al. (2017) find better access to finance is crucial to achieving growth in sales but not employment during a recessionary environment. Further, the availability of financial resources is usually uneven across firms, resulting in varying growth performance. For instance, the low growth in female-owned businesses is often attributed to larger funding gaps confronting female entrepreneurs (Coleman, 2007).

### The nature and impact of spatial variations in access to finance

We now turn our attention to the literature on spatial variations in terms of accessing finance in SMEs. Since the GFC, studies examining access to finance in SMEs show that since this period, access to credit has become increasingly problematic for many UK SMEs irrespective of

location (Cowling et al., 2012). However, there has also been an upsurge of studies examining the role of geography in determining the ability of SMEs to access finance. Together these have been instructive in demonstrating the so-called 'liabilities of distance' confronting SMEs located in different locations (Lee and Brown, 2017). The bulk of this evidence suggests SMEs located in peripheral and rural regions find it harder to access all forms of SME finance (Table 1). This has been corroborated by different studies using different data sources and covering differing time periods, the majority of whom have been conducted in the UK and Italy (see Alessandrini et al., 2010; Lee and Brown, 2017; Zhao and Jones-Evans, 2017). While these findings largely correspond with other studies from other EU countries (Donati and Sarno, 2014), some UK studies

find no greater problems for SMEs in deprived areas (Lee & Drever, 2014).

In terms of the gaps in our knowledge, there is now a growing (albeit incomplete) body of evidence examining spatial variations in access to finance in UK SMEs, but this has rarely been examined at a granular sub-regional level. We would envisage that intra-regional differences or micro-geographies could be quite significant, especially given the size of the government regions examined in most small business surveys. We can also speculate that this will significantly reduce investment and growth within affected SMEs, especially if these financial constraints are most evident in growth-oriented, innovative firms with the greatest expansion potential. Undoubtedly, more spatially granular work on the potential negative spill-overs from

**Table 1.** Studies on geography and access to finance in SMEs between 2010 and 2022

Study	Data	Empirical setting	Key findings
Alessandrini et al (2010)	Survey of Manufacturing Firms published every 3 years by the Italian banking group Unicredit	Italy	SMEs located in provinces where the local banking system is functionally distant are less inclined to introduce process and product innovations
Mason & Pierrakis, (2011)	British Venture Capital Association	UK	Early-stage VC is heavily concentrated in London and the south-east of England
Donati and Sarno (2014)	Panel data of SMEs	Italy	Reliance on internal growth finance more important for SMEs in backward regions than core regions
Lee and Drever (2014)	Small Business Survey	UK	SMEs in deprived areas find it no harder to access finance than those located elsewhere
Zhao and Jones-Evans (2017)	SME Finance Monitor	UK	Greater functional distance between bank headquarters and branches exacerbates the credit constraints faced by local SMEs
Lee and Brown (2017)	SME Finance Monitor	UK	Strong evidence that innovative SMEs in peripheral regions have their applications for finance rejected
Degryse et al (2018)	FAME/BankScope/Annual Clearings Directory	UK	SMEs with a lower functional distance had less credit constraints during the financial crisis
Brown et al (2019)	Longitudinal Small Business Survey	UK	SMEs located in peripheral regions have greater usage levels of credit card finance and innovative and 3 growth-oriented SMEs are the most predisposed to this form of finance
Lee and Calabrese (2018)	SME Finance Monitor/ Points of Interest	UK	Firms in areas with more bank branches are more likely to successfully obtain finance whilst bank diversity does not matter
Cowling et al (2020c)	SME Finance Monitor	UK	Faced with the same risk, banks do react fairly to funding applications in terms of access but not price at the regional level. We conclude that regional differences directly and indirectly affect the way banks allocate and price short-term credit
Cowling et al (2021a)	British Business Angels Association	UK	Found pronounced regional disparities, with investment activity dominated by BAs in London and Southern England.
Brown et al (2022)	Longitudinal Small Business Survey	UK	Discouraged borrowers are more prevalent in London and peripheral UK regions

credit constraints in peripherally located SMEs is therefore needed to help public policy (like the ‘Levelling up’ agenda) better target initiatives to mitigate these negative impacts.

## Hypothesis development

We now outline the hypothesis formulated and tested during the study. The limitations within the existing empirical literature point to the need for more empirical work around the complex factors which coalesce to mediate access to credit in different types of SMEs and how they vary spatially. Given this and building on the theoretical concepts identified above, a number of testable hypotheses can be developed for our study. Given the cumulative effect of self-rationing combined with the greatest levels of informational opaqueness in certain types of SMEs we can posit the follow three hypothesis:

*Hypothesis 1: Credit self-rationing is negatively associated with firm size*

*Hypothesis 2: Innovative SMEs are particularly susceptible to credit self-rationing*

*Hypothesis 3: Credit self-rationing is highest in poorer peripheral spatial locations*

Turning to the actual impact of this self-rationing, further suppositions can be explicated in terms of the firm-level impacts. As noted above, restricted access to finance has multiple negative spillovers on firm performance which ultimately feed in to reduced productivity performance (Levine and Warusawitharana, 2021). Given this, we derive the following hypothesis:

*Hypothesis 4: Self-exclusion from credit markets will reduce jobs and sales growth*

## Data, method and descriptive statistics

The data utilised for our analysis is the UK Longitudinal Small Business Survey (LSBS) conducted by the Department for Business Energy and Industrial Strategy (BEIS). The LSBS has been shown by other scholars to offer powerful insights into the behavioural patterns of UK SMEs (see, e.g. Brown et al., 2022; Gkypali et al., 2021). It is a longitudinal panel data beginning in 2015, and the latest wave available is for 2020. It contains 27,921 firm units and 89,814 observations in total spread across six survey waves from 2015, 2016, 2017, 2018, 2019 and 2020. In this sense, the large sample size and the panel structure of the data enables us to explore the evolution of firms financing behaviours and the consequences of growth whilst allowing for changes in financing behaviour to fully play-out temporally. It also allows us to delve deeper beyond the core geographic re-

gions of the UK and get into the uniqueness of localities and sub-regions where the majority of smaller firms reside and trade. The Inter Departmental Business Register (IDBR) was the sample source for registered businesses. Dun & Bradstreet’s database was the sample source for unregistered businesses with no employees and contacts were screened out if they either had employees on their payroll or paid VAT, as these would in theory have duplicate contacts found within the IDBR.

The IDBR is a record of all UK enterprises that pay VAT (value added tax) or PAYE (pay as you earn), containing around 2.7 million unique entries for enterprises. The BEIS Business Population Estimates (BPE) publication estimates around 5.7 million enterprises in the UK in total. The difference in the figures is accounted for by unregistered enterprises that do not pay VAT or PAYE. Dun & Bradstreet was retained as the source for top-up businesses with no employees as its database contains records for both registered and unregistered businesses. A 336-cell sample stratification matrix was devised, and the targets within each cell informed by the BPE. These cells were combinations from the:

- 14 ‘one-digit’ SIC (Standard Industrial Classification) 2007 categories (ABDE, C, F, G, H, I, J, KL, M, N, P, Q, R, S)
- six size categories (unregistered zero employees, registered zero employees, 1-4 employees, 5-9 employees, 10-49 employees, 50-249 employees)
- four nations (England, Scotland, Wales, Northern Ireland)

The three key credit market questions that inform our analysis are:

Q1: “Please can you tell me all the types of finance that your business sought in the last 12 months? Please include applications for all types of finance including where you failed to obtain it. Please include renewals and extensions to existing facilities, e.g. to overdrafts, credit cards and loans.”

Q2: “For each the types of finance you sought in the last 12 months, please tell me whether you obtained all that you applied for, some but not all, or no finance”. And

Q3: “Although you did not apply for it, have you had a need for finance in the last 12 months? Which of these, if any, are reasons why you did not apply for this additional finance in the last 12 months? (a) feared rejection, (b) perceived it would be too expensive, (c) reluctance to take on additional risk, (d) prevailing economic conditions, (e) didn’t know where to find appropriate finance, and, (f) poor credit history”.

The first question gives us the simple share of small firms each year that are actively seeking external finance. The second question allows us to calculate, conditional

Table 2. Sample means, SD, median and pairwise correlations

	Mean	SD	Median	Real Sales	Employment	Age	EXPORT	RD	Innovation I	Innovation II	Partially Rationed	Fully Rationed	Stopped Applying	Sought Finance
Real Sales Es	2,733,806	7,548,547	452,000	1.000										
Employment	22.04	16.4	6	<b>0.525</b>	1.000									
Age of Firm	23.79	16.4	20	<b>-0.032</b>	<b>-0.051</b>	1.000								
EXPORT	0.064	0.245	0	<b>0.077</b>	<b>0.031</b>	-0.005	1.000							
RD	0.019	0.135	0	<b>0.042</b>	<b>0.048</b>	<b>0.127</b>	<b>0.098</b>	1.000						
Innovation—Goods & Services	0.100	0.300	0	<b>0.056</b>	<b>0.069</b>	<b>-0.025</b>	<b>0.190</b>	<b>0.169</b>	1.000					
Innovation—Process	0.095	0.294	0	<b>0.071</b>	<b>0.114</b>	<b>-0.140</b>	<b>0.179</b>	<b>0.176</b>	<b>0.353</b>	1.000				
Partially Rationed	0.111	0.314	0	0.003	<b>0.019</b>	<b>0.059</b>	<b>0.024</b>	<b>0.020</b>	<b>0.066</b>	<b>0.067</b>	1.000			
Fully Rationed	0.143	0.35	0	<b>-0.023</b>	<b>-0.013</b>	<b>0.036</b>	<b>0.041</b>	<b>0.016</b>	<b>0.071</b>	<b>0.060</b>	<b>0.074</b>	1.000		
Stopped Applying	0.041	0.198	0	<b>-0.038</b>	<b>-0.027</b>	<b>-0.027</b>	<b>0.049</b>	<b>0.042</b>	<b>0.135</b>	<b>0.122</b>	<b>0.104</b>	<b>0.117</b>	1.000	
Sought Finance	0.066	0.248	0	<b>0.052</b>	<b>0.097</b>	<b>-0.045</b>	<b>0.076</b>	<b>0.051</b>	<b>0.165</b>	<b>0.160</b>	<b>0.321</b>	<b>0.339</b>	<b>0.117</b>	1.000

Bold figures are significant at 5% level or below.

upon making an application, the outcome. There are three outcomes and these include (a) got all the finance I requested, (b) got some but not all of the finance I requested and (c) got none of the finance I requested. We designate these responses as no rationing, partial rationing and full rationing.

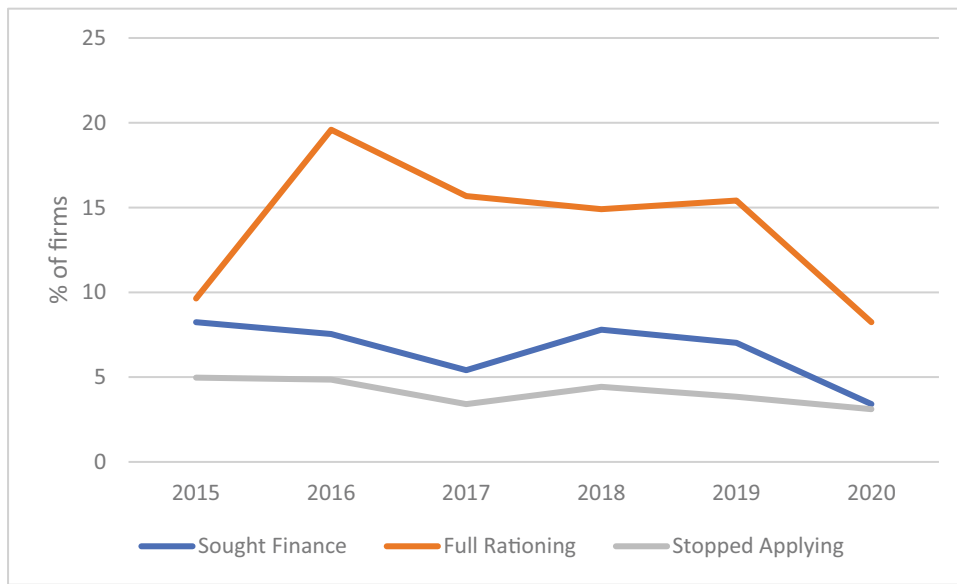
However, not all small firms that need finance make an application to a financier and those firms are the focus of Q3. This group of firms we designate as self-excluded from the external credit market and this formally includes various reasons for discouragement including being a poor credit risk through to the state of the macro-economy. The raw correlation between self-excluding from making funding applications and the 1-year lag of full and partial credit rationing are 0.097\*\*\* and 0.067\*\*\*, respectively.

Table 2 reports the full means, standard deviations, medians and correlations for our variables available for analysis. We observe that the typical small firm has £452,000 of real sales and 6 employees. It has been trading for around 20 years. It does not export, conduct R&D, innovate in any form and is not likely to seek finance. In contrast, 6.4% of small firms do export, 1.9% conduct R&D, 10.0% innovate their goods & services and 9.5% innovate their processes. Of the 6.6% who sought external finance, 11.1% were partially rationed, and 14.3% were fully rationed. In aggregate, 4.1% dis-engaged from the capital market even when they had a need for additional finance.

The correlation matrix shows that firm size is positively correlated with exporting and innovation and negatively associated with being fully rationed, even though the larger a firm is, the more likely it is to seek finance. In general, innovating firms are associated with a greater need for finance and a higher level of all forms of credit rationing. It was also the case that there was a positive and significant correlation between innovation and dis-engagement from credit markets, corroborating other recent work on borrower discouragement in SMEs (Brown et al., 2022). Finally, we find that all forms of capital rationing are positively associated with disengaging from credit markets per se.

The general time-series trend in terms of small firms seeking external debt finance from credit markets is downwards over the period from 2015 to the onset of the Covid-19 crisis in 2020, although there is considerable year-on-year variation (see Figure 1 below). What is apparent is that this indicates a distinct shift in the willingness of small firms to seek external capital in the UK since the Global Financial Crisis (GFC) that, in the UK, extended from late 2008 through to 2011. Prior to this, it was common to observe 20% to 30% of small firms seeking external capital (Cowling et al., 2012).

Conditional upon making an application for external capital, there is very considerable variation over time in the extent of full rationing, when a firm is completely rejected for all funds they sought. This ranges from 8.2% in the 2020 Covid-19 year to 19.6% in 2016 the year that



**Figure 1.** Time-series for sought finance, full-rationing, stopped applying.

the UK voted to leave the European Union. Over the full period from 2015 to 2020, on average, 14.3% of funding applications were completely rejected. This would equate to a total of around 51,673 smaller firms in the UK population. The provision of the three largest ever UK loan guarantee schemes ever during the Covid-19 crisis reduced the incidence of full rationing to a historically low level (Calabrese et al., 2021).

The final piece of the small firm debt capital market equation is the extent to which small firms simply stopped applying for external funds even when they had a need for capital. On average 4.1% of small firms simply stopped applying for finance over the period observed. This equates to 38.6% of the total population of small firms who needed additional capital. Again, the Covid-19 year (2020) had the lowest incidence of self-exclusion from credit markets with a rate of 3.1% which we might attribute to the large-scale government intervention in capital markets. This compares to a peak of 5.0% in 2015 when the UK economy was growing after the GFC. In this sense, it would appear that small firms do take note of the general macro-economic environment but also the relative munificence of government policy in the small firm arena.

On our two outcome measures which represent the key dependent variables of our final modelling of the effects of credit market engagement on growth we find that this was a period generally characterised by low growth and declining employment. The Covid-19 crisis led to a dramatic decline in sales of more than 25.3% and a 5.56% decline in employment (see Figure 2 below). More importantly, average growth rates in real sales are driven by a small proportion of faster growing small firms, whilst the median small firm reported slightly negative real sales

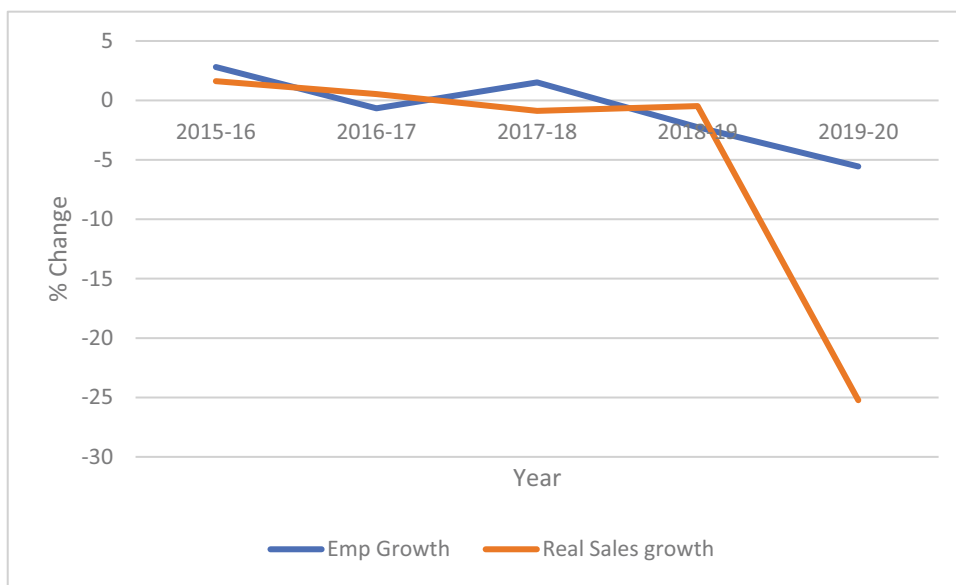
growth and zero employment change. This dynamic is well grounded in previous studies of small firm growth (Bottazzi et al., 2010; Reichstein and Jensen, 2005).

## Results

We now turn to our results and begin by considering what types of firms and the geography of these firms who have stopped applying for external funding. As we are interested in both the regional and sub-regional levels, we estimate separate models using these distinct geographical identifiers. The regional models are reported in Table 3 and the sub-regional models in Table 4. Then we move on to estimate separate models to test for the potential impact of stopping applying to capital markets for funds on employment growth and sales income growth. Again, we estimate one set of models for geographic region and one set for sub-regions. In all cases, we create an interaction term using the *Stopped Applying* dummy variable and the full set of 12 UK government office regions and 40 sub-regions corresponding with the Local Enterprise Partnership (LEP) jurisdictions.<sup>5</sup>

### Stopped applying

The first point from the broad geographic region set of models is that there is persistence in being in the Stopped Applying state in the sense that if a firm moved into that state last year there was an increasing chance that it remained in that state this year. We also observe that there was a negative relationship between employment size and stopping applying for funds. In this sense, the problem of



**Figure 2.** Time-series growth rates in employment and real sales.

self-rationing in credit markets is heavily concentrated amongst the smallest size categories of firms (i.e. SMEs with fewer than 10 employees), a finding consistent with the majority of European studies on access to finance in SMEs (Martinez et al., 2022). This provides strong evidence in support of hypothesis 1. In contrast, firm age was not found to be significant. Very few industry effects were apparent apart from a low probability of self-exclusion from credit markets amongst firms in real estate.

It was also the case that innovating firms were more likely to stop applying, again providing corroboration to support hypothesis 2. This was the case for goods and service innovators and process innovators. This is of concern in that it suggests that one of the key drivers of growth amongst the small business sector, the innovators, are withdrawing from credit markets even when they have a latent demand for funds. This is also consistent with information asymmetries being more acutely magnified for innovative small firms to the extent that they are more likely to face acute credit rationing (Lee et al., 2015). It would appear that this knowledge and experience stimulates self-exclusion via the cognitive mindset of such innovative entrepreneurs creating discouragement (Brown et al., 2022). More generally, we also find that any prior experience of absolute rationing in credit markets will lead to an increase in the probability of stopping applying for external funds.

In addition to this general, and average, effect of prior absolute rationing in credit markets in terms of increasing the probability that firms self-exclude in the future, we also identified some very specific geographic effects. Here, we find that smaller firms in the East, South-East, South

West, West Midlands and Yorkshire & Humber regions of England and firms in Northern Ireland when faced with absolute rationing when making prior applications for funds from credit markets all had a significantly higher probability of self-exclusion and stopping making future funding applications. Interestingly, at this broader spatial level, there is no clear and evident pattern in respect of relative wealth and economic dynamism.

At the more granular spatial level at a LEP level, there is also considerable variation and again we find that prior incidence of absolute rationing induces smaller firms in some LEP areas to stop applying for funds and in other areas they remain undeterred. Figure 3 graphically demonstrates the variegated nature of different borrowing states across the different LEPs. The specific LEP areas where this effect is strong include some major urban centres of population such as the capital city of London and more generally the South East, and also the traditional centres of industry such as Greater Birmingham, Greater Manchester and Sheffield City Region. Some smaller cities such as Leicester, Swindon and Gloucester also identified this absolute rationing to stopping applying effect, and also some peripheral and rural areas such as Cornwall, the Heart of the South West, Enterprise M3 (which ranges from Surrey to the North East to the Southampton and Portsmouth coast on its South West border), and the South East Midlands. As with our broader regional findings there is no consistent relationship between wealth and economic dynamism and the shift to self-exclusion from credit markets and a state of not applying.

There is, however, some important nuance if we consider the LEP areas with the highest incidences of (i)



Table 3. Government office region models

	[1] Stopped Applying			[2] Real Sales Growth			[3] Employment Growth		
	Coeff	Z	Pr > z	Coeff	Z	Pr > z	Coeff	Z	Pr > z
Lag Real Sales Growth				<b>-0.300</b>	-13.85	0.000			
Lag Real Sales				<b>-0.010</b>	-2.43	0.015			
Lag Stopped Applying	<b>1.904</b>	24.23	0.000						
Lag Employment Growth							<b>-0.321</b>	-31.40	0.000
Lag Employment Size	<b>-0.078</b>	-3.10	0.002				<b>-0.045</b>	-11.30	0.000
Year Firm Started	6.054	1.37	0.170	0.081	0.09	0.926	-0.835	-1.20	0.229
<b>Industry Sector</b>									
ABDE—Primary									
C—Manufacturing	-0.136	-0.70	0.485	0.043	1.14	0.253	0.014	0.47	0.641
F—Construction	0.182	0.96	0.339	0.040	1.01	0.313	-0.010	-0.33	0.742
G—Wholesale/ Retail	-0.127	-0.70	0.485	0.012	0.33	0.741	0.006	0.21	0.831
H—Transport/ Storage	-0.100	-0.41	0.685	0.060	1.20	0.229	0.045	1.15	0.249
I—Accommodation/ Food	0.156	0.76	0.446	0.036	0.85	0.394	0.009	0.25	0.802
J—Information/ Comms	-0.168	-0.79	0.427	-0.028	-0.67	0.504	0.002	0.05	0.962
KL—Financial/ Real Estate	<b>-0.741</b>	-2.67	0.008	0.003	0.06	0.954	-0.005	-0.15	0.880
M—Professional/ Scientific	-0.247	-1.34	0.181	-0.043	-1.22	0.222	-0.029	-1.00	0.319
N—Administrative/ Support	0.037	0.18	0.854	0.053	1.31	0.190	0.016	0.51	0.611
P—Education	0.260	1.09	0.274	0.039	0.78	0.438	0.047	1.18	0.237
Q—Health/ Social Work	0.174	0.86	0.388	<b>0.081</b>	2.07	0.038	<b>0.081</b>	2.49	0.013
R—Arts/ Entertainment	0.421	1.79	0.073	-0.001	-0.02	0.980	-0.028	-0.67	0.504
S—Other service	-0.018	-0.07	0.941	-0.023	-0.49	0.623	-0.025	-0.64	0.520
EXPORT	-0.040	-0.37	0.708	0.010	0.50	0.617	0.002	0.13	0.898
R&D	0.094	0.74	0.462	0.003	0.12	0.906	0.017	0.96	0.338
Innovation Goods & Services	<b>0.388</b>	4.61	0.000	0.013	0.74	0.458	<b>0.045</b>	3.63	0.000
Innovation Process	<b>0.294</b>	2.78	0.005	<b>0.083</b>	4.25	0.000	<b>0.043</b>	2.97	0.003
<b>Region</b>									
	Region*Lag Not Fully Rationed			Region*Lag Still Applying			Region*Lag Still Applying		
East Midlands									
East of England	-0.239	-1.37	0.170	-0.010	-0.28	0.779	0.021	0.79	0.428
London	0.090	0.54	0.589	-0.049	-1.33	0.182	-0.033	-1.19	0.234
North East	-0.150	-0.58	0.561	-0.127	-2.32	0.020	0.022	0.53	0.595
North West	-0.172	-0.96	0.335	-0.002	-0.05	0.963	0.047	1.66	0.097
South East	-0.232	-1.46	0.145	<b>-0.066</b>	-2.01	0.045	0.041	1.63	0.103
South West	-0.224	-1.36	0.175	-0.027	-0.78	0.433	0.024	0.91	0.363
West Midlands	-0.155	-0.87	0.385	-0.034	-0.90	0.366	0.043	1.49	0.135
Yorkshire & Humber	0.075	0.42	0.675	0.014	0.34	0.733	0.026	0.87	0.386
Scotland	0.183	1.14	0.252	-0.003	-0.09	0.931	<b>0.075</b>	2.73	0.006
Wales	0.287	1.42	0.154	0.007	0.14	0.892	<b>0.072</b>	1.97	0.049
Northern Ireland	0.022	0.11	0.910	0.049	1.15	0.250	0.050	1.47	0.142
<b>Region</b>									
	Region*Lag Fully Rationed			Region*Lag Stopped Applying			Region*Lag Stopped Applying		
East Midlands	1.059	1.89	0.059	<b>-0.395</b>	-3.62	0.000	0.014	0.21	0.833
East of England	0.206	0.30	0.764	0.067	0.83	0.409	<b>-0.154</b>	-2.68	0.007
London	<b>1.832</b>	4.21	0.000	-0.066	-0.80	0.425	0.000	-0.01	0.995
North East	0.889	1.03	0.303	-0.163	-0.90	0.366	-0.035	-0.29	0.772

Table 3. Continued

Region	Region*Lag Fully Rationed			Region*Lag Stopped Applying			Region*Lag Stopped Applying		
North West	0.899	1.45	0.147	-0.073	-0.81	0.421	0.005	0.09	0.932
South East	<b>1.370</b>	3.54	0.000	-0.023	-0.29	0.772	-0.016	-0.30	0.768
South West	<b>1.408</b>	3.41	0.001	0.027	0.35	0.725	-0.023	-0.43	0.668
West Midlands	<b>1.276</b>	2.50	0.012	-0.074	-0.93	0.355	0.013	0.21	0.835
Yorkshire & Humber	<b>1.338</b>	2.47	0.013	<b>-0.187</b>	-2.02	0.044	-0.003	-0.05	0.962
Scotland	0.601	1.28	0.199	<b>-0.128</b>	-2.02	0.043	0.020	0.43	0.665
Wales	0.065	0.06	0.952	-0.077	-0.44	0.663	<b>-0.246</b>	-2.66	0.008
Northern Ireland	<b>1.858</b>	3.33	0.001	0.045	0.58	0.559	0.124	1.93	0.053
Lag Fully Rationed				-0.007	-0.16	0.875	0.027	0.86	0.390
Constant	-48.736	-1.46	0.146	-0.517	-0.08	0.938	6.349	1.20	0.228
Observations	13,764			3558			8130		
Group	8491			2257			4915		
Wald Chi-2	831.04			291.28			1,371.16		
Pr > Chi-2	0.00001			0.00001			0.00001		

Bold figures are significant at 5% level or below.

applying for loans, (ii) being subject to full or partial rationing and (iii) stopping applying for loans. Using LEP level GVA per capita expressed as a proportion of the UK average as our indicator of economic well-being, we find that the four LEP areas with the highest demand for loans (Liverpool City Region, York and North Yorkshire, Leicester and Leicestershire and Greater Lincoln) were all areas with a lower than average relative GVA per capita. For example, Greater Lincoln had 76.0% of UK GVA, and Liverpool City Region 76.2%. Full rationing was most apparent in Cornwall, Lancashire, Enterprise M3 and Black Country LEAs. The Black Country and Cornwall have a very low relative GVA at 68.4% and 70.9% of the UK average respectively. The contrast with Enterprise M3 which has a 125.5% relative GVA is stark. It would appear that full rationing is found at the extremes of the GVA distribution rather than solely in the poor areas. The incidence of partial rationing follows a similar pattern with the highest rates in poor LEP areas with less than 80% of the UK average GVA (Black Country, North Eastern and Humber) and very rich areas (West of England) with 112.1% of UK GVA. Finally, we note that the decision to exclude oneself from the credit market completely is more concentrated in wealthier LEP areas such as Cheshire and Warrington (118.7% relative GVA) and The Marshes (113.7% relative GVA), although Tees Valley also has a high incidence of withdrawal but a very low relative GVA (74.7%). On balance, seeking finance is most commonly associated with poor LEP areas, as indeed is full and partial rationing, but the relationship is not absolutely clear as all forms of rationing can also be present in wealthy areas too. Therefore, we find partial support for hypothesis 3 but at the sub-regional level the picture becomes much more blurred and spatially variegated.

## Job growth

In this section, we explore the impact on job growth with a particular focus on firms that have stopped applying for external funds in the previous year. Again, we focus specifically on the regional and sub-regional differences by incorporating an interaction term between lagged stopped applying and our geographical identifier (region and LEP area) to allow for time to elapse between the initial decision to stop applying for external funding and the impact on job growth. As with our initial models, we include a full set of firm specific demographic characteristics including lagged firm size and growth, firm age and a full set of industry sector dummy variables.

First, we find that smaller firms grow faster which is consistent with a body of research testing firm size—growth effects often using a Gibrat's Law approach (Calvo, 2006; Santarelli et al., 2006). However, we also find that lagged firm growth had a negative and significant effect on current growth. This confirms that growth is not persistent and is highly discontinuous over time (Coad et al., 2013; Esteve-Pérez et al., 2022). In contrast with many previous studies, we find that firm age did not impact on current job growth, and that very few industry effects were apparent. We do observe significant innovation effects and both goods and service innovators and process innovators had higher job growth.

At the broad regional level, we find that firms that continued to apply for external capital when they needed it achieved high jobs growth in Scotland and Wales and that this effect was magnified in Wales where firms that stopped applying were found to grow their employment at a significantly slower rate. At the more localised geographic LEP level, we find that stopping applying for funding had a large and negative effect on job growth in most

**Table 4.** Local enterprise partnership results for sub-regional models

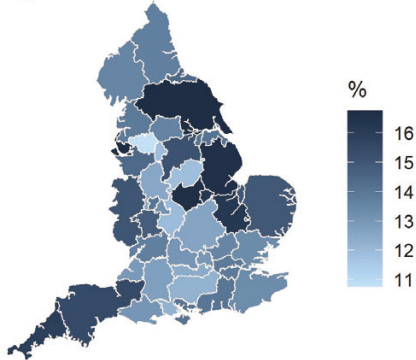
	Stopped Applying			Real Sales			Employment		
	Coefficient	Z stat	Pr > Z	Coefficient	Z stat	Pr > Z	Coefficient	Z stat	Pr > Z
<b>Local Enterprise Partnership</b>									
Black Country	Reference			-0.096	-0.36	0.722	-0.134	-0.71	0.480
Cheshire and Warrington	0.381	0.90	0.371	-0.272	-1.39	0.166	-0.031	-0.24	0.813
Coast to Capital	0.455	1.18	0.239	0.052	0.32	0.751	0.134	1.01	0.312
Cornwall and the Isles of Scilly	0.566	1.39	0.164	-0.007	-0.05	0.959	-0.020	-0.17	0.862
Coventry and Warwickshire	0.143	0.32	0.745	0.038	0.27	0.786	-0.135	-1.04	0.297
Cumbria	0.209	0.44	0.663	0.057	0.21	0.833	0.278	1.46	0.145
Derby, Derbyshire, Nottingham and Nottinghamshire	0.224	0.57	0.568	0.071	0.46	0.642	-0.145	-1.32	0.186
Dorset	-0.951	-0.89	0.375				<b>1.115</b>	2.86	0.004
Enterprise M3	0.195	0.51	0.611	-0.344	-1.26	0.207	-0.153	-1.38	0.168
Gloucestershire	-0.096	-0.21	0.833	0.103	0.46	0.646	-0.234	-1.36	0.175
Greater Birmingham and Solihull	0.436	1.09	0.277	-0.095	-0.65	0.514	0.043	0.35	0.724
Greater Cambridge & Greater Peterborough	0.286	0.71	0.479	0.160	0.90	0.368	<b>-0.269</b>	-2.16	0.031
Greater Lincolnshire	0.303	0.70	0.482	0.012	0.07	0.948	0.114	0.76	0.449
Greater Manchester	0.240	0.61	0.539	0.133	0.95	0.341	-0.096	-0.87	0.382
Heart of the South West	0.163	0.43	0.664	0.082	0.70	0.484	-0.142	-1.45	0.147
Hertfordshire	0.340	0.75	0.452	0.112	0.41	0.679	0.092	0.62	0.538
Humber	0.041	0.07	0.941				-0.073	-0.30	0.761
Lancashire	-0.188	-0.42	0.672	-0.036	-0.16	0.873	0.093	0.56	0.574
Leeds City Region	0.256	0.66	0.509	-0.164	-1.37	0.170	-0.076	-0.65	0.516
Leicester and Leicestershire	0.231	0.52	0.603	0.162	0.81	0.415	0.054	0.35	0.726
Liverpool City Region	-0.068	-0.14	0.889	-0.204	-0.89	0.372	-0.334	-1.88	0.060
London	0.388	1.10	0.270	-0.026	-0.27	0.784	-0.041	-0.54	0.590
New Anglia	-0.246	-0.57	0.568	0.070	0.48	0.629	-0.056	-0.43	0.665
North Eastern	-0.082	-0.18	0.856	-0.340	-1.72	0.086	-0.080	-0.54	0.592
Northamptonshire	0.166	0.30	0.761	<b>-5.648</b>	-14.95	0.000	-0.214	-0.88	0.377
Oxfordshire LEP	0.186	0.41	0.681	0.097	0.36	0.721	-0.248	-1.55	0.121
Sheffield City Region	0.660	1.70	0.090	-0.196	-0.88	0.381	0.077	0.71	0.479
Solent	0.133	0.31	0.758	0.102	0.45	0.655	-0.038	-0.26	0.795
South East	0.105	0.29	0.773	0.085	0.78	0.436	<b>-0.240</b>	-2.63	0.009
South East Midlands	-0.269	-0.60	0.551	0.026	0.15	0.882	0.013	0.09	0.931
Stoke-on-Trent and Staffordshire	0.265	0.56	0.575	-0.103	-0.27	0.786	0.172	0.93	0.352
Swindon and Wiltshire	0.053	0.12	0.907	0.261	1.33	0.183	-0.004	-0.02	0.981
Tees Valley	0.532	1.01	0.313	<b>0.777</b>	2.05	0.041	-0.070	-0.30	0.765
Thames Valley Berkshire	-0.279	-0.57	0.568	0.103	0.57	0.566	-0.047	-0.29	0.772
Thames Valley Buckinghamshire	-0.400	-0.64	0.525	0.227	0.60	0.549	<b>-2.656</b>	-6.21	0.000
The Marches	0.191	0.44	0.662	-0.196	-0.52	0.604	0.045	0.25	0.803
West of England	-0.063	-0.15	0.882	-0.023	-0.06	0.953	-0.056	-0.39	0.697
Worcestershire	-0.520	-0.91	0.363	-0.026	-0.14	0.885	-0.243	-1.28	0.201
York and North Yorkshire	0.535	1.30	0.194	-0.096	-0.42	0.672	-0.212	-1.26	0.207
Observations	11,222			2810			6559		

Table 4. Continued

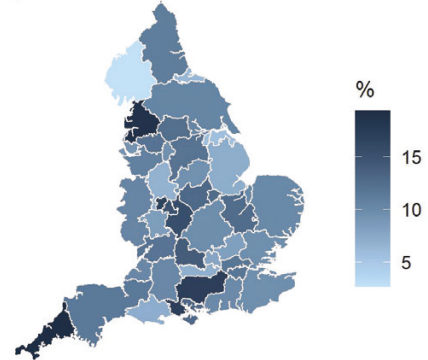
	Stopped Applying			Real Sales			Employment		
	Coefficient	Z stat	Pr > Z	Coefficient	Z stat	Pr > Z	Coefficient	Z stat	Pr > Z
Groups	6960			1752			4014		
Wald Chi-2	617.140			499.720			1226.07		
Pr > Chi-2	0.00001			0.00001			0.00001		

Bold figures are significant at 5% level or below.

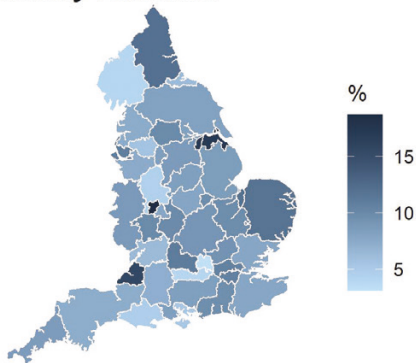
### Sought Finance



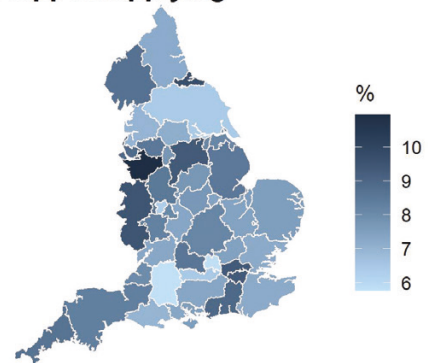
### Fully Rationed



### Partially Rationed



### Stopped Applying



**Figure 3.** Spatial distribution of borrowing states by LEP.

LEP areas. Where these negative employment effects were largest was in the Enterprise M3, Gloucestershire, Greater Birmingham and Solihull areas. In this sense, we are drawn to conclude that self-exclusion from external credit markets, often induced by a previous incidence of full rationing, has a clear and detrimental effect on the ability of firms to create jobs and that these effects are most strongly felt at the local area rather than the regional level.

### Real sales growth

Here we repeat the core employment growth analysis, but use real sales growth as our outcome variable of interest. The core findings are consistent with our job growth re-

sults in that smaller firms grow faster and that lagged growth rates have a negative effect on current sales growth rates. Again, growth is not persistent which highlights the volatility of smaller firms income (and employment) over time. Firm age found to be insignificant, and few industry sector effects were apparent. However, process innovators were associated with higher sales growth suggesting that improving internal operations is important to generating higher sales.

At the regional level, we find that self-excluding from credit markets has a strong and negative effect on sales growth in the East Midlands and Yorkshire & Humberside regions of England and also in Scotland. The magnitude of the effect is particularly large in the East Midlands.

At the sub-regional level, firms that continued to apply for external funds in York and North Yorkshire achieved higher sales growth, but firms that stopped applying in the North East of England and Northamptonshire, on average had significantly lower sales growth. On the whole, self-exclusion negatively impacts both jobs and sales growth, hence we find compelling support for hypothesis 4.

### Real sales and employment growth at sub-regional level adjusting for differences in firm characteristics for firms that stopped applying for finance

Using the sub-regional models for real sales and employment growth, we then predict both for each sub-region taking account sub-regional differences in average firm characteristics to get a truer picture of these key business outcomes for businesses that stopped applying for finance even when they had a need for it. These are graphically presented in [Figure 4](#) (real sales growth) and [Figure 5](#) (employment growth).

[Figure 4](#) shows that SMEs in a small handful of sub-regions, including Tees Valley, Swindon & Wiltshire, Stoke-on-Trent & Staffordshire, Leicester & Leicestershire, Thames Valley, Coventry & Warwickshire and Greater Lincolnshire, that stopped applying for finance were still able to achieve real sales growth. But these sub-regions were the exception, as in the vast majority of sub-regions stopping applying for finance was associated with lower sales growth. This effect was particularly pronounced in Northamptonshire, the Enterprise M3 area, Dorset, Hertfordshire and the West of England.

[Figure 5](#) also shows that in a small handful of LEP sub-regions, including Dorset, Cumbria, Coast-to-Capital, Sheffield City and Stoke-on-Trent & Staffordshire, SMEs that stopped applying for finance were still able to achieve employment growth. But again these sub-regions were the exception as in the vast majority of sub-regions stopping applying for finance was associated with lower employment growth. This effect was particularly prominent in Thames Valley, Liverpool City, Northamptonshire, Greater Cambridge and the Black Country.

Taken together, our predicted sub-regional analysis suggests that in a general sense stopping applying for finance when one still has a need is clearly not a good thing for future growth outcomes. But, the full consequences of this behaviour for the sub-regions of the UK are strengthened or weakened by the precise characteristics of the underlying business populations. This would imply that policy instruments that are explicitly targeted at supporting access to finance would have very different impacts depending upon the precise nature of the sub-regional firm population. In this sense if the policy goal is common—more firm growth and employment—the nature

and scale of interventions to achieve that goal must take into account the local business population and be differentiated at the sub-regional level to account for these differences.

## Discussion and conclusion

This paper set out to contribute to the wider ‘levelling up’ debate by specifically examining the nature and impact of credit constraints in SMEs across different spatial locations in the UK. We traced out the potential effects of SMEs engagement and experiences with external debt markets on job and sales growth using a large UK longitudinal survey over the 2015–2020 time period. We acknowledge that the time-period examined was one of tremendous turmoil and acute uncertainty for SMEs given the twin forces of Brexit and the Covid-19 pandemic. Indeed, it is well accepted that SMEs are disproportionately impacted by such exogenous shocks ([Eggers, 2020](#)). Smaller firms are those most constrained by limited internal financial resources and difficulties accessing external credit markets, especially during periods of heightened uncertainty ([Cowling et al., 2020a](#)).

Our central concern in this paper was that lack of access to capital for investment in growth enhancing activities would have a real and tangible impact on their ability to generate new jobs and sales. In an average year, we estimate that 230,000 small firms make this choice to self-exclude from credit markets even though they need additional funds. At the macro-economic level, this would directly and negatively impact on the UK economy as smaller firms create a disproportionate share of net new jobs and have increased their aggregate share of total UK GDP significantly over time.

We also considered the fact that most small firms are rooted in their local environments in the sense that they trade locally, employ local people and when they grow can stimulate local economic multipliers through an income and consumption effects. In this respect, it was important to establish whether there was a general effect for smaller firms in respect of access to capital and growth but also whether there was a unique and differential effect across regions and local areas. This is important as there are many regions and areas of the UK that have been underperforming for a generation following the de-industrialisation which began in the 1970s and has accelerated through the transition from a manufacturing economy to a service-based economy ([Harris et al., 2020](#)).

By highlighting the deleterious effects of exclusionary borrowing behaviour our paper provides a key contribution to the wider literature on access to finance in SMEs. Indeed, we find a clear and distinct causal chain of events which have their roots in exclusion from the external credit markets. When small firms make funding applications and are rejected in an absolute sense (full

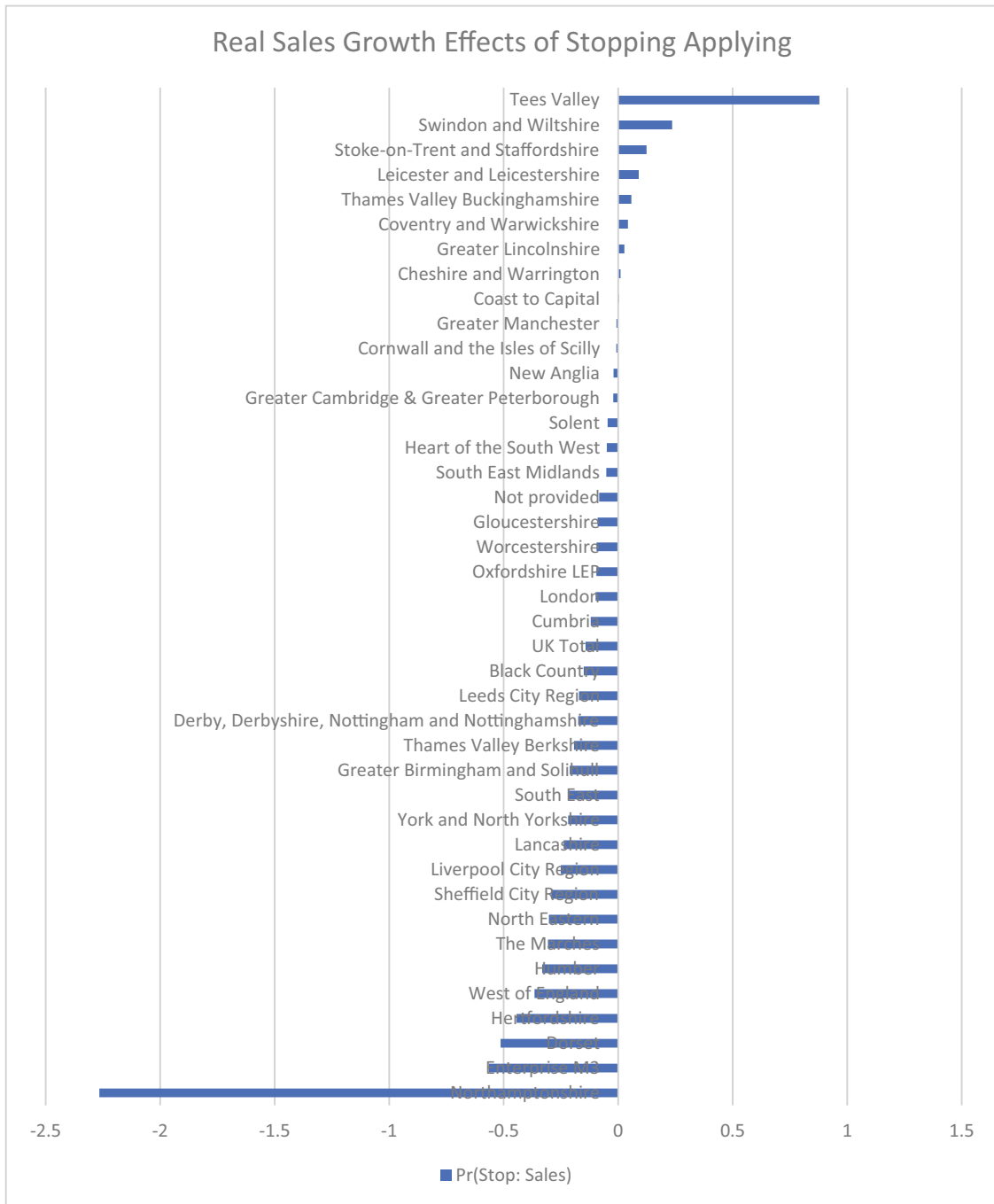
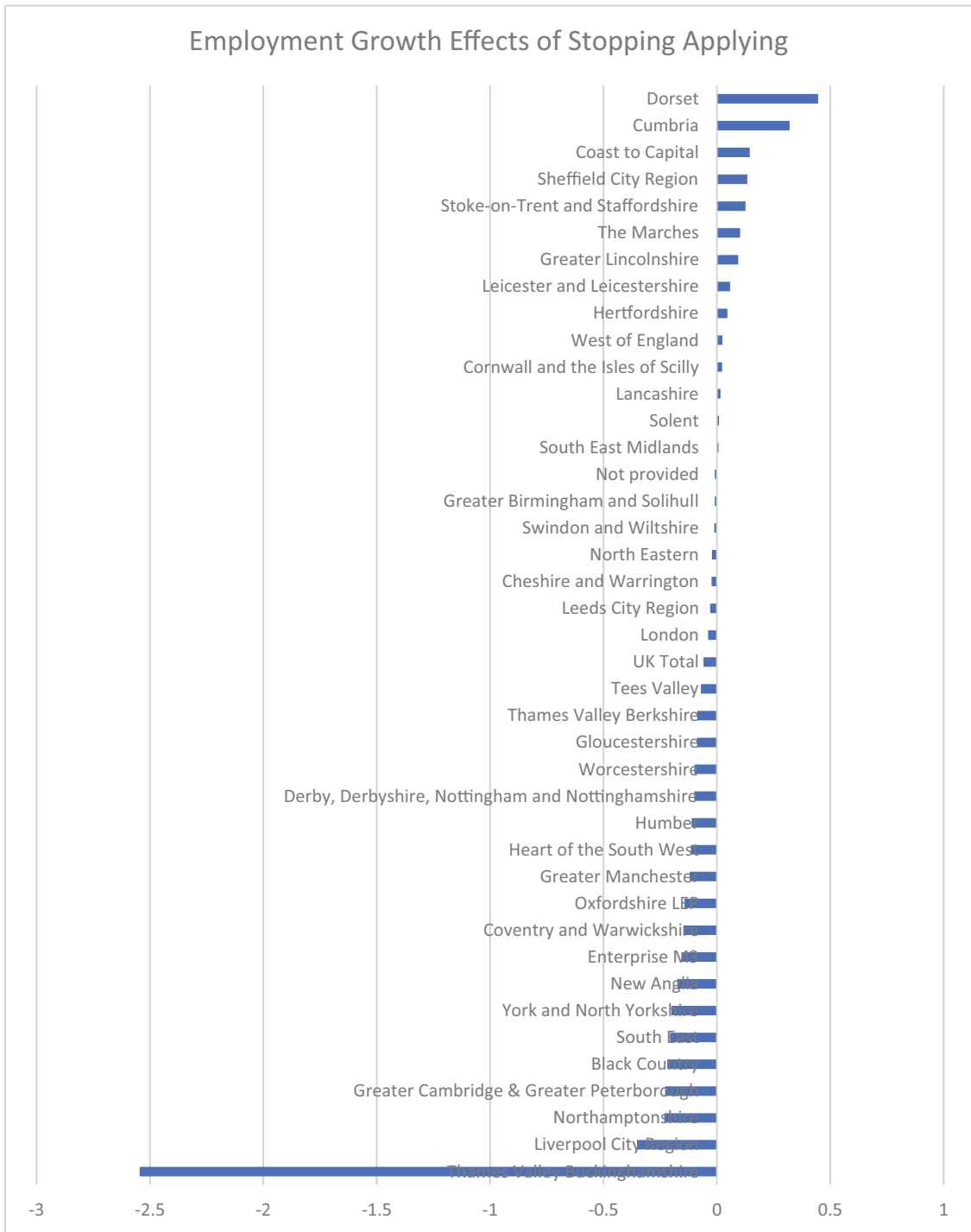


Figure 4. Sub-regional real sales growth.

rationing) this increases the probability that in the future they will self-exclude from credit markets, although this is not the sole reason. Importantly, once a small firm has made this initial choice it becomes more embedded over time. In an average year, almost a quarter of a million small firms make this choice to self-exclude from

capital markets even though they need additional funds. This ‘scarring effect’ ultimately reduces their ability to grow their employment and sales as new investment in growth enhancing capability is scaled back. Importantly, there is a differential effect for both self-exclusion from debt markets due to full rationing and jobs and sales



**Figure 5.** Sub-regional employment growth.

growth being constrained by this self-exclusion across UK regions and sub-regions. We can speculate that the much stronger reduction in sales compared to jobs during the observation period may have been further

accentuated by the pandemic given its disproportionate impact on local service-based SMEs in sectors such as food services, hospitality, recreation and accommodation, etc.<sup>6</sup>

Our findings also have direct relevance to the extant body of research on spatial variations in credit access for SMEs. While most previous research has noted inter-regional differences when accessing finance as depicted by the 'liability of distance thesis', this research reveals an even more complex intra-regional micro-geographic pattern of access to finance issues. A SME's geographic location seems to play a crucial role in mediating a firm's ability to access finance, a problem accentuated for innovative and growth-oriented firms. In sum, debt finance markets appear just as spatially constructed as equity markets (Chen et al., 2010; Martin et al., 2005). However, the fact that major inter-regional differences exist in SMEs accessing finance suggests that the distance effects are possibly mediated in a highly complex and heterogeneous manner producing a complex spatial mosaic of borrowing patterns. We would urge scholars to further delineate and tease out these complex micro-geographies of credit access at the sub-regional level within the UK and other economies.

The findings also have very direct public policy implications given the centrality of small firms to local, regional, and national economic growth and employment. Given the fact that the twin shocks of Brexit and Covid will be felt spatially unevenly due to the geography of the UK economy (Harris et al., 2020), this accentuates the need for a successful response to ensure that places are not left (further) behind. Here, we draw on the experience of the UK government Covid-19 loan guarantee schemes which supported the sustainability of more than a million small firms through the crisis by supporting their capitalisation and liquidity. Importantly, these schemes were accessed by many small firms who were previously self-excluding from external finance markets. In this sense the Covid-19 guaranteed lending schemes firstly reduced the incidence of full rationing and secondly reduced the incidence of complete dis-engagement from external credit markets (Cowling et al., 2021b).

Given the quite clear differential local and regional effects of full rationing and subsequent dis-engagement from debt markets per se, it follows that the public policy instrument most amenable to address these difficulties is the loan guarantee scheme (Cowling et al., 2020c). This would help prevent a low investment, low growth equilibrium as the small firm sector emerges from the Covid-19 crisis loaded up with existing debt. Where the loan guarantee instrument could play a major role as a spatial instrument is by using its four key parameters (i.e. the guarantee coverage ratio, the interest rate premium, the term structure and the maximum loan size), to create unique configurations to target specific types of firms located in particular local areas. Place-sensitive policies such as this are centrally funded and designed in general terms but are spatially differentiated according to local conditions (Martin et al., 2022). This type of spatial targeting is crucial to increase small firm growth per se whilst also directly

increasing local employment rates and potentially creating local economic multiplier effects through increased income and consumption.

As well as requiring a major re-calibration in policy instruments, the manner in which these support interventions are pitched to the SME community also needs rethinking. Often SMEs who self-ration from debt finance are unaware of schemes aimed at tackling borrower discouragement such as loan guarantees (Wernli and Dietrich, 2021). Many of the younger and smaller SMEs struggling to obtain external finance are often poorly externally networked and therefore fail to receive adequate specialist advice (Owen et al., 2023). Yet support, advice and policies like loan guarantees can only be effective if they achieve strong uptake. In order to overcome this type of informational opacity, banks should work closely with LEPs and regional agencies to make a concerted effort to proactively advertise and publicise these types of loan guarantee support instruments to potential borrowers. Frequently business support initiatives pay far too little to these promotional aspects during the design of new support mechanisms. Banks could also be encouraged to offer a more straightforward application as many SMEs are often deterred from applying for finance due to the costs and hassle of applying (Brown et al., 2022).

In order to take 'levelling up' agenda seriously, these are the types of innovative, spatially calibrated and targeted policy initiatives required to redress the structural spatial inequalities confronting the UK economy. Carrascal-Incera et al. (2020) claim the UK's extreme interregional inequalities are a result of complex interrelationships and access to finance is patently a pivotal issue underpinning this situation because this ultimately compounds the UK's long standing and deeply pronounced regional productivity differentials (Mayer et al., 2021). In order to tackle these complex and deeply entrenched inter and intraregional inequities, much more innovative and radical policy making will be required in the future.

## Endnotes

- 1 Research on UK SMEs shows that less than 2% received venture capital funding (Brown and Lee, 2019).
- 2 In contrast, only a third of SMEs sought external finance to invest in business growth (British Business Bank, 2023).
- 3 This may account for the decline in the demand for external finance in SMEs since the global financial crisis (Lee et al., 2015). In 2010, roughly 25% of all SMEs had sought external finance in the previous 12 months whereas in 2020 this figure had decreased to approximately 10% (BEIS, 2021).
- 4 See Levine (2005) for a detailed discussion of finance and productivity growth.



- 5 Local Enterprise Partnerships (LEP) 'are business led partnerships between local authorities and local private sector businesses which play a central role in determining local economic priorities and undertaking activities to drive economic growth and job creation, improve infrastructure and raise workforce skills within the local area'. (The LEP Network, 2022).
- 6 <https://commonslibrary.parliament.uk/research-briefings/cbp-9152/>

## Acknowledgements

The authors wish to acknowledge the funding they received for the project from the Economic and Social Research Council (ESRC) grant number ES/W010259/1. They also wish to acknowledge the very helpful and constructive comments received from the peer reviewers. However, the views in the paper are strictly those of the authors alone. The usual disclaimer applies.

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