Shining a spotlight on small rural businesses: How does their performance compare with urban?

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ABSTRACT

Rural enterprises play an important economic role, contributing to national prosperity and wellbeing but are often a blind spot within rural development and wider economic policies and evidence. This paper presents an urban-rural analysis of a large scale survey of Small and Medium-sized Enterprises (SMEs). It applies Propensity Score Matching to allow for an assessment of the effects of rurality on business performance. Results show that England's rural firms have similar levels of turnover to their urban counterparts, but are more likely to report a profit. The analysis also reveals rural firms to be significantly stronger exporters of goods and services and to have goods or services suitable for exporting. However, there are some weaknesses and obstacles to business success that concern significantly more rural than urban firms, that vary with the rurality of local districts, and which require the attention of policy makers and support providers seeking to achieve spatially-balanced and more equitable economic development.

1. Introduction

Supporting Small and Medium-sized Enterprises (SMEs) is a key element of economic development and growth policies in most countries (Bennett, 2008; Mole et al., 2011; Lee and Cowling, 2015). Within this context, a longstanding issue concerns how the support needs for firms vary spatially, reflecting differences in the characteristics of businesses themselves or their owners, the markets for inputs and outputs and locational effects (Smallbone et al., 2003; Anderson et al., 2005). However, rural firms have often been a blind spot, with limited attention paid by policy and research to their innovation and exporting practices, their ability to secure business advice and support, or their aspirations and performance.

Given their contribution to economic prosperity and well-being, it follows that it is important to understand the needs and circumstances of rural firms in a more fine grained way, so that economic and spatial strategies can effectively harness the full potential of businesses from all places and sectors (Serwicka and Swinney, 2016). This is relevant at an international level (OECD, 2018), whilst also increasingly significant in the UK as policies and strategies are being (re-)formulated in the lead up to Brexit. For example, a key issue in the implementation of a new Industrial Strategy, which aims to build on the comparative advantages of urban and rural places to drive productivity and earning power across all parts of the UK (HM Government, 2017), will be how it takes into account rural economies and the needs and potential of rural firms (Garrod et al., 2017).

Many of the challenges and opportunities that are faced by rural firms may be similar to those of their urban counterparts. But to what extent might they play out differently or to varying extents in rural places? How far might any urban-rural variations simply reflect differences in the specific profile of urban and rural economies in terms of their business sectors, ages and sizes or, rather, their rural setting "net of these differences in composition"? (Shucksmith and Brown, 2016, p. 3). The paper unpacks these issues through an analysis of the UK Government's Longitudinal Small Business Survey (LSBS) for 2015. The survey occurred at a pivotal moment for the UK, when the economy was showing signs of recovery from the economic downturn, with modest macroeconomic growth of 2 per cent per annum, and preceding the June 2016 referendum on leaving the EU. We provide a rural-urban analysis of responses of firms in England as a whole as well as a more fine-grained consideration, by an urban-rural classification of Local Authority Districts (LADs). The latter allows for a consideration of intra-

rural differences. In addition to business performance (measured in terms of turnover and profit), we consider three key aspects of business activity, namely obstacles encountered, exporting, and innovation in products, services and processes.

The paper is organised as follows. Section 2 discusses relevant literature relating to rural businesses and economic development. Section 3 introduces the nature of the dataset and the Propensity Score Matching (PSM) method that we apply to assess the existence of any 'rural effect' on business performance. Results are presented in Section 4 in relation to business performance, obstacles, exporting and innovation, followed by conclusions and policy implications in Section 5.

2. Differentiating the performance, obstacles and aspirations of urban and rural firms

Internationally, on-going weaknesses and fragilities in many economies have created an added incentive to the search for economic growth, innovation and improved productivity (OECD, 2016). At the same time, pressures on public spending are placing greater emphasis on the role of private and social enterprise in wealth creation and service provision. Taken together these drivers reinforce the imperative that growth can and should come from all places and sectors, including rural economies (Serwicka and Swinney, 2016). However, to realise this ambition requires consideration of the extent to which the characteristics, circumstances and performance of rural firms are distinct from their urban counterparts, and how the picture might vary between localities and across diverse rural economies. Only by addressing this issue will it be possible to appropriately tailor mainstream enterprise policies and growth measures to the circumstances, challenges and opportunities facing rural firms and economies (Defra, 2013).

Understanding and supporting rural economies, and wider sustainable growth, depends on robust evidence. However, support for, and the study of, rural economies suffers from two overarching institutional biases. On the one hand, a rural enterprise support narrative, infrastructure and evidence base that are dominated by a focus on agriculture, forestry and tourism, which fails to recognise the heterogeneity of rural economies (Phillipson et al., 2004; Shucksmith and Brown, 2016). On the other hand, an urban bias in innovation and enterprise support strategies and institutions exists, which rarely recognise the economic contribution and dynamism of rural economies, acknowledge the interdependencies between urban and rural places, or distinguish the specificity and variability of activity across rural areas (Ward, 2006; Copus, 2010; Huggins and Clifton, 2011; Freshwater, 2016).

In England, for example, throughout the 20th Century, UK governments sought to counteract these biases through a succession of rural development agencies (House of Lords, 2018), but rural economies and firms seldom feature in a positive way in discussions of national economic performance or industrial strategy. This is reflected in persistent stereotypes of rural areas as being largely unproductive places (aside from agriculture) or as mere residential areas for retirees, dormitories for commuters, and spaces for leisure (Shucksmith and Brown, 2016). However, rural economies have traditionally outpaced their urban equivalents on many indicators such as businesses per head of the population, start-ups, and rates of growth in employment or numbers of enterprises (OECD, 2011). They often make a substantial contribution to economic development with many dynamic features. For example, in 2016 in England over half a million registered firms from predominantly rural areas employed 3.5 million people and contributed at least £246 billion to national Gross Value Added (Defra, 2018). Rural areas host higher proportions of self-employment (3.7% for rural compared to 0.8% for urban firms) and employment in small (28.6% for rural and 19.2% for urban firms) and microenterprises (29.6% for rural and 24.8 for urban firms) (Defra, 2018). Some of the country's most competitive districts in terms of new business formation and incubation are rural (Frontier Economics, 2014). Moreover, rural businesses produce a whole host of environmental services that are vital

to realising the value of natural capital for clean growth throughout the economy (HM Government, 2017), as well as underpinning vital community services (Bosworth, 2012; Bosworth and Turner, 2018).

Consequently, it is therefore necessary to consider the characteristics, needs and performance of rural SMEs. Overwhelmingly small businesses serve local markets and differences in the relative distribution of the factors of production (e.g. land, labour, capital, knowledge) across localities affect firm performance (Frontier Economics, 2014). Sparser population densities characterise rural areas compared to their urban counterparts, so that the average rural business confronts, within a given geographical radius, a relatively smaller pool of potential consumers. This may restrict the potential size of firms, particularly for those services where consumers' willingness to travel is limited. Given differences in population densities and related consumer demand, it is expected that rural businesses *ceteris paribus*, will be smaller in terms of turnover than their urban counterparts. Empirically, Loughran and Schultz (2005) examine the impact of geographic location in the United States and find that turnover is lower for rural-than urban-based firms. Previous UK research also supports this finding as, in contrast to urban businesses, rural firms tend to be smaller (Lowe and Talbot, 2000; Smallbone et al., 2003), with a higher prevalence of sole proprietorships and partnerships. Given their small size, coping with regulation and taxation issues can be more challenging for rural firms (Atterton and Affleck, 2010; Lee and Cowling, 2015). Likewise for Germany, Schwartz and Leifels (2016) report that rural SMEs have a slightly lower turnover, on average, compared to urban SMEs. Multiple studies identify that rural firms face fewer *local* market opportunities which encourages those with suitable goods and services to pursue extra-local and export opportunities (Smallbone et al., 1993; Gorton, 1999; Westhead et al., 2004; Anderson et al., 2005; Mills et al., 2012).

Given their smaller size, however, rural markets may attract less external competition and new entrants. For instance, the limited size of rural markets may be unattractive to large national and multinational companies, creating opportunities for small businesses willing to accept the lower growth potential. This is apparent in the retail sector where penetration of chain stores has been much lower in hamlets, villages and small market towns than large towns, cities and conurbations (Paddison and Calderwood, 2007). Rural small businesses thus may exist in niches that attract less external competition and so be relatively more stable. Given the strong correlation between new firm registrations and de-registrations (Keeble and Walker, 1994), this stability is likely to be associated with more incumbent businesses reporting that they are profitable. Rural firms' profitability may also benefit from relatively lower costs for business premises, particularly compared to large urban centres (Smallbone et al., 1993). In keeping with this, Curran and Storey (1993) report that manufacturing firms located in rural areas have higher rates of profitability than manufacturing firms located in urban areas in the UK. However, in contrast, Bennett and Smith (2002), applying a logit regression model to a survey of over 1500 UK SMEs found that location had no impact on determining performance measured in terms of employment, turnover and profitability. Anderson et al. (2005), considering data for Northern Ireland and applying ordinary least squares (OLS) regression analysis, found no statistically significant differences in employment and turnover between urban, accessible-rural, and remote-rural based businesses.

Differences in population densities also create variations in the nature of rural and urban labour markets. Rural firms, on average, have access to a smaller pool of potential workers within a given geographical radius. This affects both high and low skilled workers. Differences in the density and frequency of public transport often make rural jobs less accessible with take-up contingent on car ownership (Hodge et al., 2002; de Hoyos and Green, 2011). For low paid workers especially, the costs of car ownership, maintenance and fuel can make rural jobs less attractive. Moreover, while rural England has witnessed counter-urbanisation, this has inflated rural house prices and been skewed to older workers and retirees (Gkartzios and Shucksmith,

2015). Concurrently, the outmigration of young people to urban areas, in search of higher education, affordable housing and more lively social environments is a persistent issue for rural firms seeking to recruit and retain energetic and enthusiastic younger staff (Raley and Moxey, 2000; Atterton and Affleck, 2010).

Knowledge, which may be tacit and/or codified in nature, is a critical factor of production and how it is diffused affects opportunities for businesses (Arrow, 2000). The diffusion of knowledge occurs through multiple media (face-to-face communication, print, digital etc.) with the degree of connectivity between actors varying across rural and urban locations. Curran and Storey (1993), for example, ascertain that rural firms may be disadvantaged by greater distance from customers and suppliers, and lack of access to formal and informal networks of advice. Similarly, Smallbone et al. (2003) identify that very small firms find it more difficult to reach business support agencies and that the dispersed geography of business in rural areas presents added difficulties for providers in reaching rural firms cost effectively (the so-called 'rural premium'). This may be exacerbated by rural firms perceiving the support available to be oriented to larger, higher growth urban firms (Phillipson et al., 2004). While digital communication channels offer the possibility of overcoming physical isolation, many rural areas suffer from weak internet connections (Roberts et al., 2017). Frontier Economics (2014) found a positive relationship between rural business performance (measured in terms of employment and turnover growth, start-up and failure rates) and broadband coverage. As well as limiting connections to customers, poor physical and digital connectivity restricts the development of business networks and access to more informal forms of business advice and support. The latter can be particularly important for home-based businesses which are relatively more common in rural areas (Mason et al., 2011; Bosworth and Newbery, 2015).

Relative weaknesses may, however, stimulate innovation, which can take many forms including developing new products and services, working in new ways, and applying new techniques to old problems (OECD, 2014). In the 1990s and 2000s, several studies considered the level of innovation within urban and rural SMEs and when measured in terms of the introduction of new goods and services to market, found that rural businesses were relatively more innovative (Keeble et al., 1992; Hoffman et al., 1998; North and Smallbone, 2000; Smallbone et al., 2002). Anderson et al. (2005) discovered that more rural than urban businesses had introduced a new method to produce and deliver service products. In explaining these trends, Smallbone and North (1999) argue that the characteristics of the rural environment, particularly low population and business densities, drive rural businesses to become more innovative.

Notwithstanding theoretical arguments as to why the performance of urban and rural firms may differ, and some supporting empirical evidence, the extant literature suffers from three weaknesses that limit effective comparison between urban and rural firms, and which we seek to address in this paper. Firstly, the rural business literature is characterised largely by small *ad hoc* studies confined to a single locality or region, providing limited scope for scaling up, and often lacks an urban comparison. Secondly, national business surveys have tended to provide only aggregate descriptive statistics about SMEs and levels of business confidence, limiting the scope for differentiating the comparative needs, potentials and constraints facing rural and urban firms or conducting an intra-rural analysis. Finally, although some studies establish that rural and urban SMEs have distinctive characteristics or constraints, no previous analysis separates out whether a rural location has a distinctive effect or whether spatial variations in business performance reflect differences in the size, sector, age of businesses or other profile characteristics.

3. Methodology and secondary data

3.1. Data and descriptive statistics

The dataset used in this paper derives from the UK Government's Longitudinal Small Business Survey (LSBS) for 2015, undertaken between July 2015 and January 2016. It is a large-scale telephone survey of UK small business owners and managers across the UK, commissioned by the Department for Business, Innovation and Skills (BIS, 2016), which, following a merger with the Department of Energy and Climate Change, is now called the Department for Business, Energy and Industrial Strategy (BEIS). The survey is based on a random sample of firms taken from the Inter-Departmental Business Register (IDBR) and Dun and Bradstreet records, stratified by each UK nation, namely England, Scotland, Wales and Northern Ireland. The LSBS contains data on firm characteristics, such as firm size, sector, number of employees, and ownership structure. It also includes information on each business's recent performance, obstacles, future plans and expectations. The overall sample includes 15,502 enterprises, of which 13,403 are based in England and 3555 (26.5%) of English firms operate from locations that are defined as 'rural' using the UK Government's rural-urban classification. Given the distribution of the sample, and the use of contrasting rural-urban classifications in the devolved nations, our analysis focusses on England.

For England, the designation of rural and urban in the LSBS is based on a classification of output areas using 2011 Census data (ONS, 2013). This defines urban settlements as those with a population of 10,000 or more, with all smaller settlements labelled as rural. An output area (a one hectare cell) would thus be classified as urban if it is associated with a settlement of 10,000 or more people, so that the ONS definition of urban and rural depends on population density profiles rather than any social, accessibility or economic land use distinctions. Rural and urban are also further sub-divided into six (rural) and four (urban) categories respectively leading to a ten-fold classification. However, the number of enterprises in the LSBS dataset in some of these categories is too small for meaningful analysis. To consider local variability we therefore instead use the urban-rural classification of Local Authority Districts (LADs) which is based on the percentage of each LAD's population living in rural settlements and large market towns or urban centres (Defra, 2016). LADs in the LSBS were grouped using the 2011 Rural-Urban Classification of Local Authorities (Defra, 2016). The LAD classification consists of six categories: three for Predominantly urban districts, one for Urban with Significant Rural districts, and two for Predominantly rural districts (Largely Rural and Mainly Rural) (Table 1). The Mainly Rural category captures the most rural LADs and these are more likely to be located outside of the south-east of England and include remote, sparsely populated localities.

Our analysis therefore concentrates on the broad urban-rural settlement classification to compare rural and urban firms, complemented

Table 1
LSBS responses by local authority urban/rural classification.
Source: LSBS-2015 (BIS, 2016)

Local Authority Urban/Rural Classification	Number of Enterprises	
	Urban	Rural
Mainly Rural (≥80% of population rural including hub towns)	545	1237
Largely Rural (50%–79% of population rural including hub towns)	939	1123
Urban with Significant Rural (26%–49% of population rural including hub towns)	1295	749
Urban with City and Town	2959	289
Urban with Minor Conurbation	372	35
Urban with Major Conurbation	3738	122
Total	**9848**	**3555**

Table 2
Descriptive Statistics based on Rural-Urban Classification.
Source: LSBS-2015 (BIS, 2016)

Business profile	Percentage of businesses in each category (%)		Chi-square test (χ^2)
	Urban	Rural	
Size			
Without employees	77.7	73.3	$p < 0.05$
Micro (1–9 employees)	18.1	22.6	$p < 0.05$
Small (10–49 employees)	3.7	3.6	$p < 0.05$
Medium (50–249 employees)	0.6	0.5	$p < 0.05$
Sector			
Primary, production and construction	25.6	29.6	$p < 0.05$
Transport, retail and food service	17.7	21.1	$p < 0.05$
Business service	32.5	30.0	$p < 0.05$
Age of business			
0–5 years	15.6	11.2	$p < 0.05$
6–10 years	18.6	18.1	$p < 0.05$
11–20 years	24.1	23.4	$p < 0.05$
More than 20 years	41.2	47.2	$p < 0.05$
Generating a profit/surplus (%)	76.4	79.3	$p < 0.05$

Notes: Firms located in London are excluded and weighted percentages are given.

by analysis that considers differences between three types of rural LADs (Urban with Significant Rural, Largely Rural, and Mainly Rural). We also examine whether including or excluding London significantly affects the results.

We examine differences in small business performance measured in terms of turnover and profitability. The latter, in the LSBS, is a binary variable, where firms reported whether they generated a profit or not during the previous 12 months. Turnover is treated as a continuous variable, using information from two questions in the LSBS survey: actual turnover over the last 12 months; and turnover bands over the last 12 months where firms did not disclose a precise figure (here we used the mid-point of the band indicated by firms). Unless otherwise stated, throughout the analysis we apply BEIS weightings to correct for an over-representation of larger SMEs and under-representation of micro-businesses in the LSBS.

Table 2 summarises the descriptive statistics for urban and rural SMEs in England. It shows that more rural than urban firms operate in primary, production and construction industries and rural firms tend to be older than urban firms. However, rural firms are less likely to have no employees than urban firms. Previous analysis of IDBR data identifies similar structural trends regarding sector, age and employment scales (Frontier Economics, 2014).

Considering the descriptive statistics for the three types of rural LADs (Table 3), we find that Mainly Rural districts host a greater proportion of microbusinesses (1–9 employees) than Largely Rural and Urban with Significant Rural LADs. Firms in Urban with Significant Rural districts are more likely than their counterparts in the Largely Rural and Mainly Rural LADs to operate in the business services sector. However, Primary, Production and Construction firms are more likely to be located in Mainly Rural LADs, as are those in the transport, retail and food service sectors. Firms in Mainly Rural LADs tend to be older. These structural differences are consistent with the urban-rural differences reported in Table 2 and previous analysis of the comparative structure of England's rural economy (Frontier Economics, 2014). Firms in the Largely Rural and Mainly Rural LADs are also significantly more likely to report generating a profit, although the absolute differences are small.

Table 3
Descriptive statistics for intra-rural differences.
Source: LSBS-2015 (BIS, 2016)

Business profile	Percentage of businesses in each category (%)			Chi-square test (χ^2)
	Urban with Significant Rural	Largely Rural	Mainly Rural	
Size				
Without employees	78.4%	74.4%	72.3%	$p < 0.05$
Micro (1–9 employees)	17.9%	21.4%	23.2%	
Small (10–49 employees)	3.3%	3.7%	3.9%	
Medium (50–249 employees)	0.5%	0.6%	0.6%	
Sector				
Primary, Production and construction	28.5%	25.4%	28.9%	$p < 0.05$
Transport, retail and food service	18.1%	21.2%	22.9%	
Business services	33.8%	32.4%	29.1%	
Age of business				
0–5 years	11.7%	15.3%	12.5%	$p < 0.05$
6–10 years	17.1%	17.4%	19.6%	
11–20 years	27.7%	22.3%	19.5%	
More than 20 years	43.3%	44.7%	48.3%	
Generating a profit/ surplus (%)	77.6%	77.8%	77.8%	$p < 0.05$

Notes: Weighted percentages are given.

3.2. Propensity score matching

We applied Propensity Score Matching (PSM) to compare the performance of urban and rural businesses, measured in terms of turnover and profitability. PSM provides an effective way to disentangle whether any urban-rural variations in performance are a reflection of differences in the specific composition of urban and rural economies in terms of business sectors, ages and sizes, or a feature of the circumstances of being located in a rural setting independent of these differences in composition.

PSM, developed by Rosenbaum and Rubin (1983), is widely adopted where there is a need to estimate causal effects in the presence of a treatment as it allows for a comparison in outcomes between treated and non-treated groups. Its application spans a diverse set of policy fields from care for patients with cardiovascular disease (Austin, 2011) to the effectiveness of on-the-job training (Dehejia and Wahba, 2002). In our study the rural location of a firm is used as the treatment. The matching process involves balancing a large number of observed characteristics (covariates) between the two groups (urban and rural firms) (Table 4) by compressing the variables into a single propensity score (the probability of treatment on covariates), then comparing the performance of individual firms with similar (matched) propensity scores across the treatment (rural) and control/untreated (urban) groups. In practice, the propensity score is estimated using a logit (logistic) model, in which treatment status is regressed on observed baseline characteristics.[1]

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[1] The regression equation takes the form: *Propensity Score* $= Pr(T_i = 1) = \beta_0 + \beta_1 Z_i + \varepsilon_i$ where T is a dummy capturing whether the firm is located in rural or urban areas, with T = 1 if the firm is located in rural areas and = 0 if it is urban; i = 1, …, n is the number of

Table 4
Definition of the Variables used for Analysis.

Variable	Definition	Description
Treatment variable		
RURAL	Business is located in rural areas	1 = Yes; 0 = otherwise
Explanatory variables		
SECTOR_1	Primary, production and construction	1 = Yes; 0 = otherwise
SECTOR_2	Transport, retail and food service sector	1 = Yes; 0 = otherwise
SECTOR_3	Business service sector	1 = Yes; 0 = otherwise
TOTEMP	Natural logarithm of total employment, including employees, owners and business partners	Continuous (Number of employees, owners and partners)
AGEB	Age of business	Discrete (year bands)
UNREG	The status of business registration	1 = Unregistered; 0 = otherwise
SOTRAD	Sole trader	1 = hiring employees; 0 = otherwise
EMAGE	The interaction between the natural logarithm of total employment and business age	Continuous
Outcome variables		
TURNOVER	Total annual turnover	Continuous (UK£)
TURNOVER_1	Annual turnover	Discrete (UK£ bands)
PROFIT	Generating a profit/surplus in last 12 months	1 = Yes; 0 = otherwise

Table 5
Probability of a Business being located in a Rural Area - Logistic Regression Model.

Variable	Model I		Model II	
	Coefficient	SE	Coefficient	SE
Constant	−1.211***	0.190	−0.980***	0.196
SECTOR_1	0.232***	0.065	0.147**	0.067
SECTOR_2	0.319***	0.062	0.294***	0.064
SECTOR_3	−0.161**	0.063	−0.042	0.065
TOTEMP	−0.135*	0.080	−0.114	0.080
AGEB	0.037*	0.021	0.028	0.022
UNREG	−0.372***	0.081	−0.438***	0.083
SOTRADF	0.069	0.073	0.126*	0.075
EMAGE	0.002	0.009	−0.002	0.009
Number of Observations	12,648		10,750	
Correctly classified	75.31%		68.95%	
Probability (LR-statistic)	0.00		0.00	
Model Wald Statistic (χ^2_8)	160.10		241.30	

Notes: *, **, *** denote significance at 10%, 5% and 1%, SE is standard errors. *Primary sector is not included in SECTOR because it contributes to an insignificant estimate.*

On the basis of the propensity score, the matching process can be conducted using different approaches such as nearest-neighbour matching, radius (or caliper) matching, stratification matching, and inverse probability of treatment weighting (IPTW) (Rubin, 2004; Caliendo and Kopeinig, 2005; Curtis et al., 2007; Austin, 2011; Pan and Bai, 2015). In assessing matching quality, a balancing test should be satisfied to ensure that there are no significant differences on covariate means between the treatment and control (Dehejia and Wahba, 2002). If balancing tests are passed, the average treatment effect is calculated as the mean difference in the outcome across these two groups (Abadie and Imbens, 2012).

For a number of reasons PSM was preferred to more conventional probit or logit regression models. The latter are unsuitable for comparing the impact of location on business performance when performance is, as in the case of turnover, measured as a continuous variable. Nor would such an approach adequately disentangle the effect of location on performance from other business characteristics included in the models. The ability to efficiently collapse a range of covariates into a score is one of the main advantages of PSM as it avoids the "dimensionality problem" that occurs when units in the treatment and control groups are balanced on a large number of covariates one at a time, requiring a large number of observations because every time a new balancing covariate is introduced the minimum necessary number of observations in the sample increases exponentially. Simulations also indicate that PSM is both more robust and precise and has greater power than logistic regression (Cepeda et al., 2003; Glynn et al., 2006). Finally, PSM is an effective technique to reduce selection bias (Cepeda et al., 2003), and in the case of our analysis, it therefore addresses the over-representation of larger SMEs and under-representation of microbusinesses in the LSBS sample.

To consider differences in performance across the three LAD categories (Urban with Significant Rural, Largely Rural and Mainly Rural), due to limitations of PSM in estimating multiple treatments, we apply the Inverse Probability Weighting (IPW) approach to estimate

treatment effects (Cattaneo, 2010). Unlike PSM, IPW estimates a propensity score using a multinomial logit model. The rural classifications are regressed on the same set of covariates in Table 4 in which being located in an Urban with Significant Rural LAD is used as the reference category and, to avoid a concavity problem, turnover is employed as a discrete rather than continuous variable (Schröder and Rahmann, 2017).

4. Results and discussion

4.1. Urban-rural business performance

Table 5 details the logistic regression models concerning the probability of a firm being located in a rural area. Model I includes businesses located in London, while Model II excludes those based in the capital.[2]

In Model I, rural areas are more likely to have firms operating in production and construction, and transport, retail and food service sectors but less likely to have firms operating in the business service sector than urban areas. Also, rural areas are more likely to have older firms, whilst unregistered and small businesses are less likely to be located in rural than in urban areas. When excluding businesses located in London (Model II), rural areas are still more likely to have firms that are from the primary, production and construction, and transport, retail and food service sectors, and to be less likely to be unregistered.[3] They are also more likely to be sole traders.

Table 6 presents the results of the PSM. Model I shows that firms operating from rural areas of England, after controlling for sector, registration status, age, number of employees and other interaction variables, have lower business performance than urban firms (where the latter includes businesses located in London), when measured in terms of turnover. However, England's rural businesses are more likely to report being profitable than urban businesses. When excluding London (Model II), there are no significant differences in the level of turnover between rural and urban firms, but England's rural businesses

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[2] Both models appear to perform reasonably well, and the likelihood ratio (LR) is significant - indicating that there is no relationship between the log of odds of being rural and the set of independent variables. The model Wald test is also significant, implying that the estimated parameters of the chosen covariates included in the propensity score model are statistically significant.

[3] Balance test results for the PSM and IPW analysis are available from the authors on request.

(footnote continued)

observations; **Z** is a vector of observed variables such as size, age of business, sector and so on, that may affect the firm's location and turnover and profit, and ε is an error term.

Table 6
Results of propensity score matching.

Matching technique	Model I		Model II	
	Turnover	Profit	Turnover	Profit
	ATET (SE)	ATET (SE)	ATET (SE)	ATET (SE)
PSM (1-to-1)	−530,135.9*** (172,915.8)	0.025*** (0.008)	−213,224.3 (158,551.3)	0.017* (0.009)
Nearest Neighbour (3)	−396,349.7*** (138,817)	0.026*** (0.008)	−128,288.9 (127,732.3)	0.014* (0.008)
Caliper[a]	−354,844.4** (154,292)	0.024*** (0.008)	−243,979.7 (152,432.1)	0.018** (0.009)
Weighting (ITPW)	−545,104.5*** (165,089)	0.021*** (0.007)	−293,361.1* (158,945.1)	0.014* (0.008)
Stratification (5 quantiles)	−579,008.9*** (127,885.3)	0.025*** (0.008)	−328,121.7* (129,015.8)	0.018** (0.008)
Number of observations[b]				
Raw	**11,016**	**11,796**	**9370**	**10,028**
Matched	**5396**	**5826**	**5390**	**5818**
Variance ratio	**No significant difference**	**No significant difference**	**No significant difference**	**No significant difference**

Notes: *, **, *** denote significance at 10%, 5% and 1% level respectively, SE is standard error. ATET is average treatment effect on the treated.
  [a] The width of caliper for Model I is 0.0123 and for Model II is 0.0113.
  [b] The number of matched observations for Caliper matching is slightly different for both models: Model I, 5394 (turnover) and 5824 (profit), and Model II, 5388 (turnover) and 5816 (profit).

are still more likely to report being profitable than their urban counterparts. The difference in the results between the two models reflects the larger scale of SMEs in London, reflecting the capital's greater level and concentration of purchasing power.

There are a range of possible reasons why rural firms are more likely to report a profit, despite displaying similar levels of turnover. Rural wage levels are typically lower than in urban areas, partly because of a poorer choice of jobs, and more seasonal or part-time work, resulting in lower costs for labour (North and Smallbone, 1996; Gale, 1998). Rural firms are also more likely to be home-based than urban firms, thus incurring fewer fixed costs related to business premises. The cost of business premises and rents tend to be lower in rural areas, and many small rural firms may access mandatory or discretionary business rate reliefs, also lowering premises-related expenditure. Sparser population densities and/or greater dispersal of residents and business in rural areas mean the size of local markets will on average be smaller, but at the same time there may be less local competition. In short, outgoings are likely to be lower for many rural firms compared with their urban equivalents and lower competition and greater flexibility of business and owner relationships may enable a higher proportion of their revenue to be classed as surplus or profit.

Findings from the IPW analysis of performance between firms located in the three types of LADs show that there are no statistically significant differences in the likelihood of being profitable across the three LAD categories (Table 7). However, firms located in Largely Rural LADs are more likely to have a lower average turnover than firms located in Urban with Significant Rural LADs. Firms in Mainly Rural LADs also have a lower average turnover compared to those located in Urban with Significant Rural LADs but in this case the difference is not statistically significant.

4.2. Business aspirations and major obstacles faced by small businesses

Across England, SMEs plan to develop their businesses in the next three years (Table 8). Substantial numbers of both rural and urban firms plan to *Increase the skills of their workforce* (46.1% for rural and 46.9% for urban firms). More rural than urban firms plan to make *Capital investments (in premises, machinery etc.)* - 30.7% compared with 25.5% respectively. Significant variations across types of LADs are apparent. For example, firms in Largely Rural districts are more likely to plan to increase the capability of managers, to plan to develop and launch new products/services, and intend to introduce new working practices. Approximately 48% of firms located in Largely Rural LADs plan to improve their workforce's skills compared to 44.7% and 43.6% of firms in Mainly Rural and Urban with Significant Rural LADs respectively. These differences in part relate to spatial variations in the nature of local markets – the Largely Rural LAD category includes many relatively prosperous districts in the south of England, where economic opportunities are most abundant. In contrast, firms in Mainly Rural LADs are least likely to be planning to develop and launch new products/services.

As part of the LSBS, respondents estimated how much their turnover decreased or increased in the last 12 months (Table 9). Overall, businesses most likely reported no change in their turnover compared to the previous year, with slightly more witnessing growth as opposed to shrinkage, which is consistent with a macroeconomic state of modest growth. Rural firms in England (20.1%) are more likely to report that they witnessed significant growth in turnover than their urban counterparts (18.3%). Yet, 17.7% of rural firms also describe that they saw significant shrinkage in turnover compared to 16.4% of urban firms. At the LAD level, more firms in Largely Rural (20.6%) than those in Mainly Rural (17.3%) and Urban with Significant rural (17.8%) LADs report significant growth in turnover, which is consistent with generally

Table 7
Results of inverse probability weighting at the LAD level without London.

Inverse Probability Weighting	Observations		Turnover	Observations		Profit
	Raw	Weighted	ATET SE)	Raw	Weighted	ATET (SE)
Mainly Rural versus Urban with Significant Rural	1631	1559.0	−0.0965 (0.067)	1762	1678.9	0.012 (0.012
Largely Rural versus Urban with Significant Rural	1662	1558.9	−0.107* (0.064)	1777	1678.8	−0.005 (0.012)
Urban with Significant Rural	1384	1559.1	4.398*** (0.075)	1497	1678.4	0.849*** (0.009)
Total observations	**4677**			**5036**		
Variance ratio	**No significant difference**			**No significant difference**		

Notes: *, *** denote significance at 10% and 1% level respectively, SE is standard error. ATET is average treatment effect on the treated.

Table 8
Plans over the next three years at National and LAD levels.

Business Plans	England		Local Authority Urban/Rural Classification		
	Urban	Rural	Urban with Significant Rural	Largely Rural	Mainly Rural
Increase the skills of the workforce	46.9%	46.1%	43.6%	47.9%	44.7%
Increase the leadership capability of managers	22.5%	23.8%	19.5%	25.0%	22.8%
Capital investment (in premises, machinery etc.)	25.5%	30.7%	23.2%	30.6%	29.2%
Develop and launch new products/services	34.6%	34.9%	33.0%	37.7%	31.6%
Introduce new working practices	32.1%	31.7%	29.9%	34.0%	32.0%
None of these	37.3%	35.8%	40.7%	32.1%	36.6%
Total	8189	3667	2221	2055	1771

Note: *Weighted percentages are given.*
Shading denotes statistically significant response using Chi-square test ($\chi^2 < 0.05$).

brighter economic prospects in these locations.

SMEs face a set of potential obstacles which may hamper their performance and ability to implement their business and growth plans. At the national level, the obstacles most frequently identified by rural firms are *Regulations/Red tape* (45.6%), *Competition in the market* (40.2%), *Tax/NI/Rates* (31.6%) and *Staff recruitment and skills of employees* (19.6%). *Competition in the market* was the most prevalent obstacle cited by urban firms (46.3%).

Obtaining finance is not perceived as a leading barrier for either rural or urban firms. However, firms in Mainly Rural LADs are significantly more likely to report this obstacle as a barrier to business success, than firms in Largely Rural and Urban with Significant Rural LADs (21.3% compared with 16.8% for Largely Rural and 14.1% for Urban with Significant Rural). This may reflect their generally greater isolation from potential funders particularly after widespread closures have left many rural communities without a bank or building society branch office (Leyshon et al., 2008). Firms in Mainly Rural LADs are also significantly more likely to describe *Regulations/red tape* and *Staff recruitment and skills* as major obstacles to business success. However, more firms in Urban with Significant Rural, than firms in Largely Rural and Mainly Rural LADs describe *Competition in market* as a major obstacle. These results are in line with the literature that firms located in more rural areas face, in general, fewer competitors but confront greater difficulties in accessing finance, staff recruitment and regulatory burdens.

4.3. Exporting

Increasing exports and stimulating business innovation can be important drivers for enhancing turnover and profitability (Westhead et al., 2004). Table 10 compares the export and innovation profile of urban and rural firms as well by LAD category. It shows that in 2015 a statistically higher proportion of rural than urban firms in England exported goods (6.6% of rural firms compared to 5.1% of urban firms) and services (7.9% of rural firms compared to 7.1% of urban firms). The findings therefore support research by North and Smallbone (1996) and Keeble (1998) which found that rural businesses in the UK were more likely to be export orientated compared to urban businesses. However, the table also highlights differences between rural areas. Thus firms in Mainly Rural areas were more likely to be exporters of goods than those in Largely Rural and Urban with Significant Rural LADs, whilst the reverse pattern was found in the case of service exports. This is consistent with the structural differences in rural economies reported in Tables 2 and 3 England's rural firms are also more likely to be a *potential* exporter than urban firms with 18.3% and 15.0% believing they have goods or services suitable for exporting respectively. However, additional analysis revealed that potential rural exporters were less likely to be aware of UK Trade and Investment (UKTI), a leading provider of information and support for exporting in England, than potential exporters located in urban areas.

Table 9
Turnover growth and Major Obstacles Faced at the National and LAD levels.

	England		Local Authority Urban/Rural Classification		
	Urban	Rural	Urban with Significant Rural	Largely Rural	Mainly Rural
Growth status (*Summary of turnover growth in last year*)					
Significant/substantial growth	18.3%	20.1%	17.8%	20.6%	17.3%
Growth	9.5%	10.4%	8.4%	10.0%	12.4%
No change	51.1%	47.2%	51.1%	48.0%	49.3%
Shrinkage	4.7%	4.6%	5.3%	4.3%	4.3%
Significant/substantial shrinkage	16.4%	17.7%	17.4%	17.1%	16.7%
Total	8044	3609	2221	2055	1771
Major obstacles faced by the business					
Obtaining finance	16.8%	18.1%	14.1%	16.8%	21.3%
Taxation, VAT, PAYE, National Insurance, business rates	28.0%	31.6%	28.3%	30.7%	31.0%
Staff recruitment and skills	16.5%	19.6%	15.2%	17.9%	20.3%
Regulations/red tape	34.7%	45.6%	35.7%	42.4%	44.5%
Availability/cost of suitable premises	15.8%	14.6%	13.6%	14.8%	15.8%
Competition in the market	46.3%	40.3%	44.5%	41.7%	39.5%
Workplace pensions	11.0%	11.2%	10.2%	11.5%	11.5%
Late payment	27.3%	28.3%	27.3%	24.9%	26.3%
Any other major issues or obstacles	11.5%	13.1%	11.5%	11.7%	14.6%
None of these	20.0%	16.2%	18.2%	18.2%	17.6%

Note: *Weighted percentages are given.*
Shading denotes statistically significant response using Chi-square test ($\chi^2 < 0.05$).

Table 10
Export and Innovation Status at the National and LAD levels.

	England		Local Authority Urban/Rural Classification		
	Urban	Rural	Urban with Significant Rural	Largely Rural	Mainly Rural
Export status (*Businesses export goods or services in the last year or have potential to export*)					
Export goods	5.1%	6.6%	4.6%	6.4%	7.2%
Export services	7.1%	7.9%	8.6%	7.3%	6.5%
Any goods or services that are suitable for exporting	15.0%	18.3%	16.5%	18.5%	15.3%
Innovation status (*Business innovations in the Previous 3 Years*)					
New or significantly improved goods	16.5%	18.8%	15.3%	21.3%	16.8%
New or significantly improved services	30.2%	30.2%	29.6%	30.0%	31.3%
New or significantly improved processes for producing goods or services	17.7%	19.2%	17.2%	20.5%	17.7%
At least some goods or services new to the market	31.4%	31.6%	33.0%	28.7%	26.4%

Notes: *Weighted percentages are reported.*
Shading denotes statistically significant response using Chi-square test ($\chi^2 < 0.05$).

4.4. Innovation

Across England, similar percentages of rural (30.2%) and urban SMEs (30.2%) introduced new or improved services in the last three years (Table 9). However, rural firms introduced more new or improved goods during this period than urban firms (18.8% compared to 16.5%). At the LAD level, more firms in Largely Rural areas than those in Mainly Rural and Urban with Significant Rural LADs introduced new or improved goods (21.3% compared to 16.8% and 15.3% respectively). In contrast, firms in Mainly Rural areas were found to be more likely to have introduced new or improved services than those in Largely Rural and Urban with Significant Rural LADs.

Firms in the LSBS reported whether their businesses had introduced any new or improved processes for producing or supplying good or services. No statistically significant rural-urban differences were identified at the national level, with approximately 18% of urban firms having introduced new or improved processes compared to 19% of rural firms. However, statistically significant differences were apparent at the LAD level. Approximately 21% of firms located in Largely Rural LADs have introduced new or improved processes compared to 17.7% and 17.2% of firms in Mainly Rural and Urban with Significant Rural LADs respectively.

To capture more disruptive innovations, respondents recounted whether they had introduced goods, services or processes that are new to the market or industry. Across England there are no significant differences between rural and urban businesses and the results underline that there is no evidence to support the notion that as a whole rural firms are less innovative than their urban counterparts. However, significantly fewer enterprises in Mainly Rural LADs report 'new to the world' innovation in the form of goods or services new to the market, which suggests that enterprises in the 'most rural' areas may face greater difficulties in realising the commercial development of 'breakthrough' innovations.

5. Conclusions

This paper provides a rural-urban analysis of responses to the UK Government's LSBS, to analyse, compare and contrast rural and urban businesses' performance, aspirations and obstacles encountered. The analysis draws on records for 13,403 SMEs in England, including 3555 rural firms, conducted in 2015 at a time of modest macroeconomic growth and preceding the UK's referendum on membership of the EU. Based on an application of PSM, the paper highlights that these urban-rural variations cannot be explained or attributed to oft-rehearsed differences between rural and urban economies, as this analytical approach controls for differences in sector, size, age and other profile characteristics. Compared to their urban-based counterparts, England's rural firms have similar levels of turnover to their urban counterparts,

but they are significantly more likely to report a profit.

Although rural and urban firms share many similar plans and expectations for future growth, rural firms are significantly more likely to be exporters of goods and services, and are more likely to have introduced new or improved goods in their businesses than their counterparts in urban England. Export orientation and product innovation are therefore additional indicators of the important contribution that rural firms make to national economies. Nevertheless, the analysis offers clear evidence of untapped rural potential which requires nurturing in future support and policy delivery. For example, more rural firms have goods or services suitable for exporting than urban firms and potential exporters far outnumber current exporters. However, some weaknesses are also evident; for example, rural firms are less likely to create products or services that are new to the market rather than new to the firm, and some obstacles to business success, particularly regulations or red tape, staff recruitment and skills, taxes, rates and NI concern significantly more rural than urban firms.

However, rural areas are heterogeneous, extending from sparse, remote localities to more densely populated countryside bordering urban conurbations. Thus, we analysed responses using the three rural categories within the Local Authority District Rural: Urban Classification. When examined using LAD categories, firms located in the most rural districts (Mainly Rural LADs) were significantly more likely to have exported goods but were less likely than firms in other rural LADs to have exported services or introduced goods or services new to the market. This reflects both structural differences (with rural areas having a higher relative share of businesses operating in the primary, production and construction sectors and less in business services) as well some additional challenges in bringing 'breakthrough' innovations to market. Understanding how best to provide specialist support services (e.g. UKTI) and improve access to finance in the remotest rural areas is an important policy concern, particularly given the Industrial Strategy's objective of realising growth across the UK.

Moreover, the analysis demonstrates marked variations in activities and plans across differing types of LADs. For example, firms in the most rural districts, whilst facing less local competition, experience greater challenges linked to regulation, staff recruitment and skills, and obtaining finance as major obstacles to business success. Enterprises in the most remote rural areas typically confront thinner local labour markets, which hinders staff recruitment and poorer physical access to banks and other lenders. In contrast, SMEs in Largely Rural LADs were found to be more likely to be planning to increase the leadership capability of their managers, to develop and launch new products/services, and to introduce new working practices. Largely Rural LADs include some of the most prosperous rural localities in the south of England with relatively high levels of disposable income. Relatively more firms located in these areas had also introduced new or improved processes and reported turnover growth. These findings highlight the importance of local or

regional economic agencies targeting interventions of support at rural (and/or urban) places and businesses, which simpler rural-urban comparisons alone may not facilitate or justify.

The paper's findings have wider international resonance for central and local government agencies and business support providers planning to achieve spatially-balanced, inclusive and equitable economic growth. By demonstrating urban-rural variations in enterprise needs and performance, our research confirms the need for, and importance of, appropriately tailored industrial and small business strategies, plans and support mechanisms to acknowledge and address different obstacles, strengths and aspirations that might relate to rurally-located firms, rather than assuming that location has little effect on firm performance and its drivers. Furthermore, the significance of intra-rural variations in outcomes highlights the value of effective evidence that drills down below headline countrywide results and aggregate rural-urban comparisons to underpin locally- and regionally-differentiated approaches to economic development.

Taken together, the findings confirm the need to overcome perceptions of rural areas as lacking dynamism and tendencies to design and target enterprise support and infrastructural provision on cities and urban areas. Specifically, LSBS evidence indicates that the widespread assumption in policy initiatives that rural areas are innovation laggards lacks justification. Rather, realising untapped economic potential, and ensuring future strategies are fit for purpose in serving all places, will depend on an inclusive response that takes into account rural economies, recognising their important contribution, whilst also addressing longstanding obstacles.

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References

Abadie, A., Imbens, G.W., 2012. A martingale representation for matching estimators. J. Am. Stat. Assoc. 107, 833–843.

Anderson, D., Tyler, P., McCallion, T., 2005. Developing the rural dimension of business-support policy. Environ. Plann. C Govern. Pol. 23, 519–536.

Arrow, K.J., 2000. Knowledge as a factor of production. In: Pleskovic, B., Stiglitz, J.E. (Eds.), Annual World Bank Conference on Development Economics 1999. World Bank, Washington, DC, pp. 15–20.

Atterton, J., Affleck, A., 2010. Rural Businesses in the North East of England: Final Survey Results. Centre for Rural Economy, Newcastle upon Tyne.

Austin, P.C., 2011. Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. Pharmaceut. Stat. 10, 150–161.

Bennett, R., 2008. SME policy support in Britain since the 1990s: what have we learnt? Environ. Plann. C Govern. Pol. 26, 375–397.

Bennett, R.J., Smith, C., 2002. Competitive conditions, competitive advantage and the location of SMEs. J. Small Bus. Enterprise Dev. 9, 73–86.

BIS, 2016. Longitudinal Small Business Survey Year 1 (2015): Technical Appendix. Department for Business, Innovation and Skills, London.

Bosworth, G., 2012. Characterising rural businesses – tales from the paperman. J. Rural Stud. 28, 499–506.

Bosworth, G., Newbery, R., 2015. Home-based businesses in rural England. Regions Magazine 299 (1), 6–9.

Bosworth, G., Turner, R., 2018. Interrogating the meaning of a rural business through a rural capitals framework. J. Rural Stud. 60, 1–10.

Caliendo, M., Kopeinig, S., 2005. Some Practical Guidance for the Implementation of Propensity Score Matching. IZA Discussion Paper NO.1588. The Institute for the Study of Labor (IZA).

Cattaneo, M.D., 2010. Efficient semiparametric estimation of multi-valued treatment effects under ignorability. J. Econom. 155, 138–154.

Cepeda, M.S., Boston, R., Farrar, J.T., Strom, B.L., 2003. Comparison of logistic regression versus propensity score when the number of events is low and there are multiple confounders. Am. J. Epidemiol. 158, 280–287.

Copus, A.K., 2010. Dispelling Stylised Fallacies and Turning Diversity into Strength: Appropriate Generalisations to Underpin 21st Century Rural Cohesion Policy. ESPON Scientific Report, ESPON Coordination Unit, Luxembourg.

Curran, J., Storey, D., 1993. The location of small and medium enterprises: are there urban-rural differences? In: Curran, J., Storey, D. (Eds.), Small Firms in Urban and Rural Locations. Routledge, London, pp. 1–16.

Curtis, L.H., Hammill, B.G., Eisenstein, E.L., Kramer, J.M., Anstrom, K.J., 2007. Using inverse probability-weighted estimators in comparative effectiveness analyses with observational databases. Med. Care 45, S103–S107.

Defra, 2013. Guide to Rural Proofing: National Guidelines. Defra, London.

Defra, 2016. 2011 Rural-urban Classification of Local Authorities and Other Geographies. Defra, London.

Defra, 2018. Statistical Digest of Rural England. Defra, London.

Dehejia, R.H., Wahba, S., 2002. Propensity score-matching methods for nonexperimental causal studies. Rev. Econ. Stat. 84, 151–161.

de Hoyos, M., Green, A., 2011. Recruitment and retention issues in rural labour markets. J. Rural Stud. 27, 171–180.

Freshwater, D., 2016. Economic Transformations: understanding the determinants of rural growth. In: Shucksmith, M., Brown, D.L. (Eds.), Routledge International Handbook of Rural Studies. Routledge, Abingdon, pp. 99–107.

Frontier Economics, 2014. Drivers of Rural Business Growth, Decline and Stability. Frontier Economics, London.

Gale, H.F., 1998. Labor productivity and wages in rural and urban manufacturing plants. Rev. Reg. Stud. 28, 13–26.

Garrod, G., Liddon, A., Phillipson, J., Rowe, F., Shortall, S., Shucksmith, M., 2017. After Brexit: 10 Key Questions for Rural Policy. Centre for Rural Economy, Newcastle University.

Gkartzios, M., Shucksmith, M., 2015. Spatial anarchy' versus 'spatial apartheid': rural housing ironies in Ireland and England. Town Plann. Rev. 86, 53–72.

Glynn, R.J., Schneeweiss, S., Stürmer, T., 2006. Indications for propensity scores and review of their use in pharmacoepidemiology. Basic Clin. Pharmacol. Toxicol. 98, 253–259.

Gorton, M., 1999. Spatial variations in markets served by UK-based small and medium-sized enterprises (SMEs). Enterpren. Reg. Dev. 11, 39–55.

HM Government, 2017. Industrial Strategy: Building a Britain Fit for the Future. Department for Business, Energy and Industrial Strategy, London.

Huggins, R., Clifton, N., 2011. Competitiveness, creativity, and place-based development. Environ. Plann. 43, 1341–1362.

Hodge, I., Dunn, J., Monk, S., Fitzgerald, M., 2002. Barriers to participation in residual rural labour markets. Work. Employ. Soc. 16, 457–476.

Hoffman, K., Parejo, M., Bessant, J., Perren, L., 1998. Small firms, R&D, technology and innovation in the UK: a literature review. Technovation 18, 39–55.

House of Lords, 2018. The Countryside at a Crossroads: Is the Natural Environment and Rural Communities Act 2006 Still Fit for Purpose? Select Committee Report of Session 2017–19. HL Paper 99.

Keeble, D., 1998. Urban Economic Regeneration, SMEs and the Urban–rural Shift in the United Kingdom. ESRC Centre for Business Research, University of Cambridge, Cambridge.

Keeble, D., Tyler, P., Broom, G., Lewis, J., 1992. Business Success in the Countryside: the Performance of Rural Enterprise. HMSO, London.

Keeble, D., Walker, S., 1994. New firms, small firms and dead firms: spatial patterns and determinants in the United Kingdom. Reg. Stud. 28, 411–427.

Lee, N., Cowling, M., 2015. Do rural firms perceive different problems? Geography, sorting, and barriers to growth in UK SMEs. Environ. Plann. C 33, 25–42.

Leyshon, A., French, S., Signoretta, P., 2008. Financial exclusion and the geography of bank and building society branch closure in Britain. Trans. Inst. Br. Geogr. 33, 447–465.

Loughran, T., Schultz, P., 2005. Liquidity: urban versus rural firms. J. Financ. Econ. 78, 341–374.

Lowe, P., Talbot, H., 2000. Policy for small business support in rural areas: a critical assessment of the proposals for the small business service. Reg. Stud. 34, 479–487.

Mason, C.M., Carter, S., Tagg, S., 2011. Invisible businesses: the characteristics of home-based businesses in the United Kingdom. Reg. Stud. 45, 625–639.

Mills, A., Smith, J., Love, P., 2012. Barriers to the development of SME's in the Australian construction industry. Construction Economics and Building 2, 71–79.

Mole, K.F., Hart, M., Roper, S., Saal, D.S., 2011. Broader or deeper? Exploring the most effective intervention profile for public small business support. Environ. Plann. 43, 87–105.

North, D., Smallbone, D., 1996. Small business development in remote rural areas: the example of mature manufacturing firms in Northern England. J. Rural Stud. 12, 151–167.

North, D., Smallbone, D., 2000. The innovativeness and growth of rural SMEs during the 1990s. Reg. Stud. 34, 145–157.

OECD, 2011. OECD Rural Policy Reviews: England, United Kingdom 2011. OECD Publishing, Paris.

OECD, 2014. Innovation and Modernising the Rural Economy. OECD Publishing, Paris.

OECD, 2016. OECD Economic Outlook. OECD Publishing, Paris.

OECD, 2018. Rural 3.0: a Framework for Rural Development. OECD, Paris.

ONS, 2013. 2011 Rural/urban Classification. Office of National Statistics, London.

Paddison, A., Calderwood, E., 2007. Rural retailing: a sector in decline? Int. J. Retail Distrib. Manag. 35, 136–155.

Pan, W., Bai, H., 2015. Propensity Score Analysis: Fundamentals and Developments. Guilford Publications, London.

Phillipson, J., Gorton, M., Raley, M., Moxey, A., 2004. Treating farms as firms? The evolution of farm business support from productionist to entrepreneurial models. Environ. Plann. C Govern. Pol. 22, 31–54.

Raley, M., Moxey, A., 2000. Rural Microbusinesses in the North East of England: Final Survey Results. Centre for Rural Economy, Department of Agricultural Economics and Food Marketing, University of Newcastle upon Tyne.

Roberts, E., Beel, D., Philip, L., Townsend, L., 2017. Rural resilience in a digital society:

Editorial. J. Rural Stud. 54, 355–359.

Rosenbaum, P.R., Rubin, D.B., 1983. The central role of the propensity score in observational studies for causal effects. Biometrika 70, 41–55.

Rubin, D.B., 2004. Multiple Imputation for Nonresponse in Surveys. John Wiley & Sons, Chichester.

Schröder, C., Rahmann, S., 2017. A hybrid parameter estimation algorithm for beta mixtures and applications to methylation state classification. Algorithm Mol. Biol. 12, 1–12.

Schwartz, M., Leifels, A., 2016. Demographic Change Bolsters Private Consumption and SME Growth. Focus on Economics No. 128. KfW Research, Frankfurt am Main.

Serwicka, I., Swinney, P., 2016. Trading Places: Why Firms Locate where They Do. Centre for Cities, London.

Shucksmith, M., Brown, D.L., 2016. Framing rural studies in the global north. In: Shucksmith, M., Brown, D.L. (Eds.), Routledge International Handbook of Rural Studies. Routledge, Abingdon, pp. 1–27.

Smallbone, D., Baldock, R., North, D., 2003. Policy support for small firms in rural areas: the English experience. Environ. Plann. C Govern. Pol. 21, 825–841.

Smallbone, D., North, D., 1999. Innovation and new technology in rural small and medium-sized enterprises: some policy issues. Environ. Plann. C Govern. Pol. 17, 549–566.

Smallbone, D., North, D.J., Baldock, R., Ekanem, I., 2002. Encouraging and Supporting Enterprise in Rural Areas. Centre for Enterprise and Economic Development Research, Middlesex University Business School, London.

Smallbone, D., North, D., Leigh, R., 1993. The growth and survival of mature manufacturing small and medium sized enterprises in the 1980s: an urban-rural comparison. In: Curran, J., Storey, D. (Eds.), Small Firms in Urban and Rural Locations. Routledge, London, pp. 79–131.

Ward, N., 2006. Rural development and the economies of rural areas. In: Midgely, J. (Ed.), A New Rural Agenda. IPPR, London, pp. 46–67.

Westhead, P., Wright, M., Ucbasaran, D., 2004. Internationalization of private firms: environmental turbulence and organizational strategies and resources. Enterpren. Reg. Dev. 16, 501–522.