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Trust-based relationship banking, and SME financing in the UK

Hans Degryse[a], Kent Matthews[b] and Tianshu Zhao[c]

[a]Faculty of Economics and Business, CESIfo, and CEPR, KU Leuven, Leuven, Belgium; [b]Cardiff Business School, and Nottingham University Business School, Nottingham, England; [c]School of Business, University of Leicester, Leicester, England

ABSTRACT

It is well recognized that relationship banking helps to relieve the credit constraints faced by SMEs to access bank finance. Trust is an important part of relationship banking. However, the term trust is nebulous, and relationship banking means different things to different banks and different borrowers. How trust enables the credit market for SMEs through relationship banking is largely unexplored. Using a unique primary dataset of SMEs in the UK, we construct a measure of trust-based relationship banking from the perspective of the borrower that places mutual trust centre stage. We show that trust-based relationship banking is enhanced by the organizational trust in the Relationship Manager, defined by the delegation of operational autonomy. Along with bank, firm, and market factors, trust-based relationship banking helped to reduce the credit constraints faced by SMEs in the decade following the global financial crisis.

1. Introduction

Small business lending decisions are typically based on a mix of hard, verifiable information and soft, non-verifiable information (Liberti and Petersen 2019). Banks also deploy a variety of 'arm's length' transaction lending technologies to SME financing. The question then arises, what is the unique value of relationship banking to the borrower? This question has been examined elsewhere in a different context.[1] Here we go further and study the role of mutual trust between the Relationship Manager (RM) and the SME-borrower for the value in relationship banking in easing the credit constraints faced by SMEs to access bank finance.

Relationship banking involves assigning a dedicated RM to an individual customer. The RM serves as the focal point for the bank's tailored products and services, acting as the human face of the bank and directly influencing customer experiences. In relationship banking, trust promotes communication, transparency, and collaboration, effectively mitigating the challenges posed by asymmetric information in SME business lending. We argue that mutual trust at the individual level – between SME borrowers and their relationship managers (RMs) – plays a foundational role in establishing broader organizational trust between banks and borrowing firms.[2]

This relationship raises three important questions. First, is the development of interpersonal trust between the RM and the SME an important element for the relationship banking of SME lending? Second, to what extent does trust-based relationship banking in the lending decision process depend on the operational autonomy of the RM? Third, how does trust-based relationship banking help ease the credit constraints faced by SMEs? We take these questions to the experience of UK SMEs in the post-2008 financial crisis, using a set of primary data gleaned from a sample survey of the Federation of Small Business (UK) members undertaken over the period 2015–2017. The continued tightening of credit conditions in the aftermath of the global banking crisis presents

an opportune setting to conduct this study in the context of relationship banking and the role of trust at a time of financial stress (Beck et al. 2018; Gobbi and Sette 2014).

Trust is a reciprocal relationship, requiring mutual commitment and engagement from both parties. In this paper, we focus on the importance of mutual trust between SME borrowers and their relationship managers (RMs) as a key aspect of the bank's pre-contract risk screening process. This contrasts with other studies that primarily examine the bank's trust in borrowing firms when making lending decisions. The merit of our approach lies in the justification that SMEs' perception of mutual trust with RMs influences their willingness to disclose financial information, seek funding, and engage in long-term banking relationships, which in turn enhances the bank's ability to make more informed lending decisions. Our paper contributes to the organizational economics literature by examining both inter-organizational trust (the trust between organizations, such as SMEs and banks) and intra-organizational trust (the trust within an organization, such as between RMs and ultimate decision-makers at the bank). We hypothesize that trust within the bank – in the form of operational autonomy granted to RMs – affects the quality of coordination and information sharing between RMs and SMEs. This, in turn, influences the relevance of soft information and the accuracy of risk assessments in the bank's decision-making process, potentially making it easier for SMEs to secure financing.

Our paper lies at the intersection of relationship banking, SME financing, and the trust literature in organizational science. We bring together the various strands of this literature and contribute in three ways.

First, we explore the notion that a trust-based relationship facilitates the formal financial contract between the lender and the borrower (Cao and Lumineau 2015). We construct a measure of trust-based relationship banking from the survey responses by SME managers[3] based on established research on trust measurement in the bank-borrower relationship (Moro and Fink 2013; and Hirsch, Nitzl, and Schoen 2018). Here, we differ by focussing on the recipient of credit – the SME manager, where the notion of mutual trust is explicit in the survey questionnaire regarding the criteria used by banks in the screening process. The factor analysis indicates that mutual trust loads strongly onto the relationship banking construct, highlighting its central role in defining relationship banking.

Second, we examine the effect of the perceived operational autonomy of the RM on the relevance of trust-based relationship banking in the bank's screening process. We find that the operational autonomy of the local RM contributes to the significance of trust-based relationship banking in the screening process. Furthermore, we explore whether the operational autonomy of local RMs incentivizes more frequent and personalized interactions, which facilitate information exchange and mutual trust-building, acting as mediation channels for stronger trust-based relationship banking. Our analysis confirms that operational autonomy positively impacts the efficiency of information exchange.

Third, we examine the impact of trust-based relationship banking on credit constraints faced by SMEs. Our finding points to the positive influence of trust-based relationship banking in easing SMEs' access to bank finance.

To be clear, interpersonal trust relates to the personal interaction between the SME manager and the RM that makes the customer-loan relationship work. The interpersonal trust between the SME manager and the bank RM is translated into an inter-organizational trust, where the RM is the human face of the bank and the SME manager is typically the owner manager of the enterprise. Intra-organizational trust is developed through operational delegation of the lending decision to the RM. The fewer layers of decision-making, the greater the intra-organizational trust.

The finding that relationship banking eases credit constraints for SMEs is not new (e.g. Beck et al. 2018). What is novel is our understanding of how this process works. Our principal contribution is to demonstrate that mutual trust is critical to relationship banking, which is enabled by the operational autonomy of the RM. Furthermore, the frequency and mode of communication between the RM and the SME borrower serve as mediation channels through which RM autonomy strengthens trust-based relationship banking, influencing the bank's risk assessment and decision-making.

This paper is organized in the following way. The next section reviews the literature of relationship banking, SME bank financing, and the role of trust. Section 3 describes the data. Section 4 presents the methodology, reports the results, and discusses various robustness tests. The discussion and conclusion are in the final section.

2. Literature review

SMEs have a shorter history and weaker collateral than other firms. They are subject to less strict information reporting requirements and are associated with more opaque information. Given the paucity of hard information from SMEs, relationship banking, rather than transactional lending is commonly used to underpin the borrower-bank relationship (Ferri and Murro 2015). Relationship banking emphasizes personalized attention, long-term trust, and communication between the SME and its relationship manager (RM), which helps banks assess the SME's creditworthiness despite the limited availability of hard information. Essentially, relationship banking enables the credit market for SMEs (Uzzi 1999). While small business lending decisions are based on a mix of hard, verifiable information and soft, non-verifiable information, the credit-screening and post-loan monitoring procedures have important implications for the easing of financial constraints faced by SMEs (Bartoli et al. 2013).

The importance of relationship banking for easing the credit constraints faced by SMEs is well known, but how this is done is obscure (Santikian 2014). The literature suggests that the utilization of the 'lending technology' is shaped not only by the competitive condition of the external environment in which the bank operates (Heider and Inderst 2012) but also by the organizational design of the bank (Stein 2002). With the latter, soft information transmission becomes more difficult in more hierarchical organizations (Liberti and Mian 2009).

An emerging area of scholarship is trust in banks. The Global Financial Crisis (GFC) was a significant event that marked a deterioration in the level of trust by bank customers (Knell and Stix 2015). Using survey data in December 2008 Sapienza and Zingales (2012) find that banks are trusted more than the government or large corporations, but lower than the public. Fungáčová, Hasan, and Weil (2019) use survey data covering 52 countries to show that trust in banks varies widely according to geography, but also according to individual economic characteristics, individual religious beliefs and attitudes to government and markets. Notably, trust deteriorates with the experience of a financial crisis.

However, the role of trust in the bank lending and relationship banking literature remains under-investigated. A recent study by Nicholas, Tarazi, and Danisman (2023) examines bank lending by a sample of banks in 34 countries over the period 2005–2015 in terms of measures of trust taken from the World Value Survey data. The study separates the measure of trust into trust in people who are known to each other (friends, family, neighbours) and general trust of people met for the first time. They find a positive association between bank lending and general trust but that this only holds in countries with relatively low levels of institutional and judicial development. The positive association between trust in people known to each other and bank lending is mitigated by the degree of informal lending in a country. While this study highlights the role of trust in bank lending, the measures of trust are indirect and not specific to banks.

The finding that the strength of the relationship between the small firm borrower and the bank aids access to credit and reduces the cost of credit to the former, is well-established in the relationship banking literature (for example Petersen and Rajan 1994). Measures of the strength of the relationship are typically indirect, given by the length of the firm-bank relationship, the exclusivity of the lending relationship, and the breadth of services provided by the creditor institution. Implicit in this literature is the role of trust. However, trust is not treated explicitly in the relationship banking literature. Excluding trust from relationship models weakens our understanding of the role of relationship banking in solving the asymmetric information problem of lending to SMEs. It is not the existence or non-existence of a relationship that matters, but rather the trust within that relationship. A firm is more likely to share sensitive information, work with the bank, and establish a lasting partnership if there is trust (Bromiley and Harris 2006). Why should a firm share proprietary information with a bank, which if leaked would damage its competitiveness (Bhattacharya and Chiesa 1995; Degryse and Ongena 2001; Howorth and Moro 2006)? Trust that the information shared and communicated is confidential is core to relationship banking (Berger and Udell 2006). Trust plays a key role in allowing the bank to consider soft information, such as management character, reputation, or resilience in evaluating the creditworthiness of the SME (Cao and Lumineau 2015). Also, mutual trust is critical for negotiating contingent loan agreements – loans that are flexible and can be adapted if the SME faces financial difficulty or stress (Uzzi 1999).

While the role of trust in easing SME access to bank finance has been studied extensively elsewhere (Hernandez-Canovas and Martınez-Solano 2010; Howorth and Moro 2012; Moro and Fink 2013), this literature does not view mutual trust as mitigating the asymmetric information issue that is core to the credit screening

as we do here. Indeed, if mutual trust enables the economic value of the bank-borrower relationship through the transference of information, we argue that it is fundamental to relationship banking. Without it, relationship banking is ineffective and has less economic value.

Trust is an interpersonal issue. While interpersonal trust and inter-organizational trust are inextricably linked, the former cannot always be transferred to the latter (Currall and Judge 1995). Inter-organizational trust is the collective trust held by the people in one organization with respect to another (Zaheer, McEvily, and Perrone 1998). But the connection between interpersonal and inter-organizational trust is based on the organizational structure and the incentives and behaviours of individuals within the organization. Banks that practice greater hierarchical decision-making, impose extra frictions on the communication of soft information up the decision chain, which can weaken the interpersonal trust between the RM and the SME manager.

The literature on relationship banking highlights the benefit of the geographical proximity of RMs to their borrowers. However, distance alone is not sufficient to enable either interpersonal trust or inter-organizational trust. We propose that a dominant condition for trust-based relationship banking is the delegation of operational autonomy to local relationship managers (RMs). The SME finance literature highlights that while soft information – such as managerial character, reputation, or resilience – is critical for assessing opaque firms, its usefulness depends on whether it can influence actual lending decisions (Berger 2002; Berger and Udell, 2006; Boot 2000). Because soft information is inherently tacit, subjective, and non-transferable, it can only be credibly collected and utilized by RMs who have built enduring relationships with SME clients. However, in hierarchical organizations, soft information tends to lose value as it is transmitted upwards, leading centralized structures to privilege hard, codifiable data (Stein 2002).

As Aghion and Tirole (1997) argue, delegation gives local agents both the incentive and the capacity to gather and use context-specific knowledge. When RMs are granted operational autonomy, they gain both the discretion and the incentive to engage in richer, repeated interactions with SME borrowers, fostering relational trust and facilitating the exchange of qualitative information that complements formal financial data. This mechanism aligns with theoretical predictions from organizational and financial intermediation research, which posit that decentralized decision structures allow local agents to act on contextual, trust-based information that cannot be easily transmitted to higher hierarchical levels (Aghion and Tirole 1997; Liberti and Mian 2009; Stein 2002).

Trust involves the sharing of private knowledge between the RM and the SME borrower, and the strength of the trust defines the quality of the information (Uzzi and Lancaster 2003). As such, the delegation of decision-making authority to the RM aids the development of mutual trust between local RMs and SMEs and reinforces the importance of trust-based relationship banking. Recognizing that trust works both ways, the construction of mutual trust between the SME manager and the RM underscores the value of relationship banking in reducing the asymmetric information problem in SME lending.

Empirical evidence strongly supports this mechanism: Liberti and Mian (2009) show that greater hierarchical distance reduces reliance on soft information, whereas local discretion enhances its role in screening; Canales and Nanda (2012) demonstrate that branch autonomy increases lending to informationally opaque SMEs; and Hertzberg, Liberti, and Paravisini (2010) find that reducing loan officer discretion through rotation weakens relationship-specific information production.[4] Collectively, these studies indicate that delegation to the RM is the necessary organizational condition for trust-based relationships to shape the screening process.

In this paper we argue that the structure of authority within a bank fundamentally shapes how credit information is generated and used. When banks delegate operational autonomy and adopt a more decentralized organizational design, local relationship managers (RMs) gain discretion to assess loan applications beyond standardized, quantitative criteria. This autonomy transforms the RM's role from that of a mere processor of hard financial data into an active relational intermediary tasked with understanding small and medium-sized enterprises (SMEs) as holistic, context-dependent entities (Berger and Udell 2006; Stein 2002). Delegation signals intra-organizational trust – the bank's headquarters demonstrates confidence that RMs possess the ability, benevolence, and integrity to exercise judgment responsibly (Mayer, Davis, and Schoorman 1995). Such trust reduces the need for extensive top-down monitoring (Aghion and Tirole 1997) and empowers RMs to take ownership of lending outcomes, thereby strengthening their motivation to invest in long-term borrower relationships (Davis, Schoorman, and Donaldson 1997).

Operational autonomy thus functions as both a structural and behavioural enabler of trust-based relationship banking. Structurally, it decentralizes decision rights to those closest to the borrower, reducing informational loss and allowing RMs to act on locally gathered insights (Stein 2002). Behaviourally, it promotes rich and repeated communication, which builds mutual trust between the RM and the SME borrower. Over time, this trust becomes reciprocal: the SME comes to trust the RM to represent its interests fairly within the bank, while the RM learns to trust the SME's honesty and reliability. This reciprocal trust generates relational reciprocity – SMEs disclose sensitive business information, while RMs make judgement about the credit riskiness of SMEs based on the qualitative, non-standardized tacit insights which cannot be captured through formal documentation. These dynamics align with Relational Banking Theory, which posits that sustained, trust-based interactions mitigate the limitations of transactional, arm's-length lending by facilitating the flow of private, soft information critical to assessing opaque borrowers (Berger and Udell 2006; Boot 2000).

Once established, mutual trust and soft information become integral inputs into the loan screening process. Screening processes that give greater weight to relational trust and soft information are better equipped to identify creditworthy but opaque SMEs, reducing false negatives and alleviating credit constraints (Berger and Udell 2006; Liberti and Mian 2009).

Because soft information is inherently tacit, subjective, and non-transferable, it can only be credibly collected and utilized by RMs who have built enduring relationships with SME clients. Delegation thus enables RMs not merely to gather soft information but to incorporate it directly into screening and credit decisions. Hence, delegation of operational autonomy emerges as the organizational precondition for trust-based relationship banking: by embedding intra-organizational trust in its governance structure, the bank creates the conditions for mutual trust and soft information to inform lending decisions at the RM – SME interface.

Based on the discussion above, we make one proposition and formulate two hypotheses:

Proposition: mutual trust between the local relationship manager and SME is fundamental to relationship banking.

H1: The delegation of operational autonomy to local relationship managers leads to a higher level of trust-based relationship banking in the bank's screening process.

H2: A higher level of trust-based relationship banking results in a lower level of credit constraints faced by SMEs.

3. Data

We survey a sample of small firms provided by the Research Community of the Federation of Small Business (UK). While the membership of the Federation of Small Business (UK) is 200,000, a median poll sample of 2000 is the norm in its regular surveys. The survey was conducted over 2015–2017, in 3 waves, spanning the same length of time interval, without replacement. In total, a response of 1903 was received. The range of annual turnover of the respondent firms was between GBP £1.5 million and £2.5 million. The sample included non-FSB member SMEs to act as a control against potential selection bias. Data were collected from questionnaires completed by the chief executive officers of the firms. The construction of the data follows in the footsteps of Moro and Fink (2013) where they extract the measure of trust[5] from a survey questionnaire from a vector of items. We differ in that our survey is toward the SME manager rather than the loan manager. It is arguable that the traditional ambivalence of SMEs to debt financing may be related to mistrust of the bank (Howorth 2001), and therefore mutual trust is central to the sharing of confidential information by the borrower with the bank. In keeping with the literature, questions on financial information, which is seen as an antecedent of trust and relationship banking (Palazuelos, Crespo, and del Corte 2018), and other hard information data consistent with SME financing surveys for Italy (Ferri and Murro 2015) and Japan are included.

Along with basic information on location, activity, size, and income, the survey gathered information on (1) the SMEs' experience of financial constraints and the nature of the constraints; (2) the name of the SMEs' main bank; (3) the characteristics of the firm's relationship with their main bank; (4) the communication mode and frequency between SMEs and their main bank; (5) the operational autonomy of the relationship manager of the SMEs' main bank; (6) the information and lending criteria considered by the bank in decision-making of the outcomes of the applications; (7) the operational performance of SMEs, and (8) the postcode area of the registration address of SMEs. The survey asks how important relationship banking is to the SME when choosing

the bank provider. These survey questions have been designed to understand several facets of the external and internal institutional environment in which the bank-borrower relationship is developed. It allows us to address the value or otherwise of relationship banking in the face of an increasing trend towards 'transactional banking' and SME financial constraints post-GFC.

The information from the survey helps us to focus on five areas of enquiry. First, the information on the underwriting criteria used by banks in their credit decision allows us to establish if relationship banking acts as the screening channel for the provision of bank credit to SMEs, and if mutual trust plays a central role in defining relationship banking in the screening process. Second, information on the operational autonomy of local loan officers allows us to examine the extent to which the organizational framework in which the RM operates contributes to the relevance of trust-based relationship banking in the bank's decision-making. Third, information about the characteristics of the bank-borrower relationship, and the mode and frequency of communication, helps us to identify the impact of the operational authority of local RMs on information sharing and knowledge transfer with the SME borrower, thereby enabling the importance of trust-based relationship banking in the bank's decision-making. Fourth, information on the address of the SMEs and data regarding the branch distribution of each bank in the locality allows us to isolate the effect of local market conditions and social capital factors on trust-based relationship banking of the bank. Finally, information about the operational performance of the borrower and the financial condition of the bank allows us to control for confounding factors in identifying the value of trust-based relationship banking on the credit constraints facing SMEs.

Of the 1903 respondents, 671 had applied for loans[6], of which 669 identified 27 different banks for their loan application. We use responses to the question 'What was your bank's initial response' to construct the measure of credit constraint experience (CONSTRAINT1). A value of zero if the answer is 'obtained all amount applied for and no problem with terms and conditions', and unity if the answer is one of, turned down, offered a smaller amount of facility than applied; there are some problems with terms and conditions (267 (YES, i.e. unity): 397 (NO, i.e. zero)). We use the responses to the question 'Have you experienced any difficulties in applying for bank finance for your business since 2008?' to construct a second measure of credit constraint (CONSTRAINT2) by assigning unity for 'Yes' and zero for 'No' (230 (YES): 426 (NO)) for a robustness test.

A comment on the representativeness of the sample is warranted. The survey was conducted by a professional company, and the sample was designed to be as representative as possible. The geographical distribution of the respondents from the survey is matched against the geographical distribution of the SME Business Population Estimates for the UK and Regions (2016). Figure 1 shows that, except in the case of London, the correspondence is close.[7]

4. Methodology, variables, and results

4.1. Trust-based relationship banking

In this section, we buttress our proposition that mutual trust is fundamental to relationship banking from the responses to the survey and go on to test our two hypotheses. We use the unique features of the survey, which asks the respondents to comment on the importance of the criteria banks use in their loan granting process. Out of 8 items covering the critical elements of the bank credit screening process, 7 relate to transactional hard information and relationship soft information lending technology.[8] The mutual trust between the local RMs and SMEs is one of these 7 items.

Respondents are asked to evaluate the 8 individual items on a five-point Likert scale from 'not at all important' to 'very important'.[9] We undertake a factor analysis on these 8 items to extract the factors characterizing the screening of a loan application. Factor analysis allows for the identification of the unobservable latent factors that banks evaluate in their screening process. It particularly suits our need since our purpose is to explore whether mutual trust is one of the facets of relationship banking.

Three common factors are extracted from the Factor Analysis.[10] The factor pattern matrix, the mean, and the standard deviation of factor scores of the three common factors are presented in Table 1 below. The Bartlett Test of Sphericity rejects the null hypothesis that the correlation matrix is an identity matrix and suggests it is appropriate to apply factor analysis to the data. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy
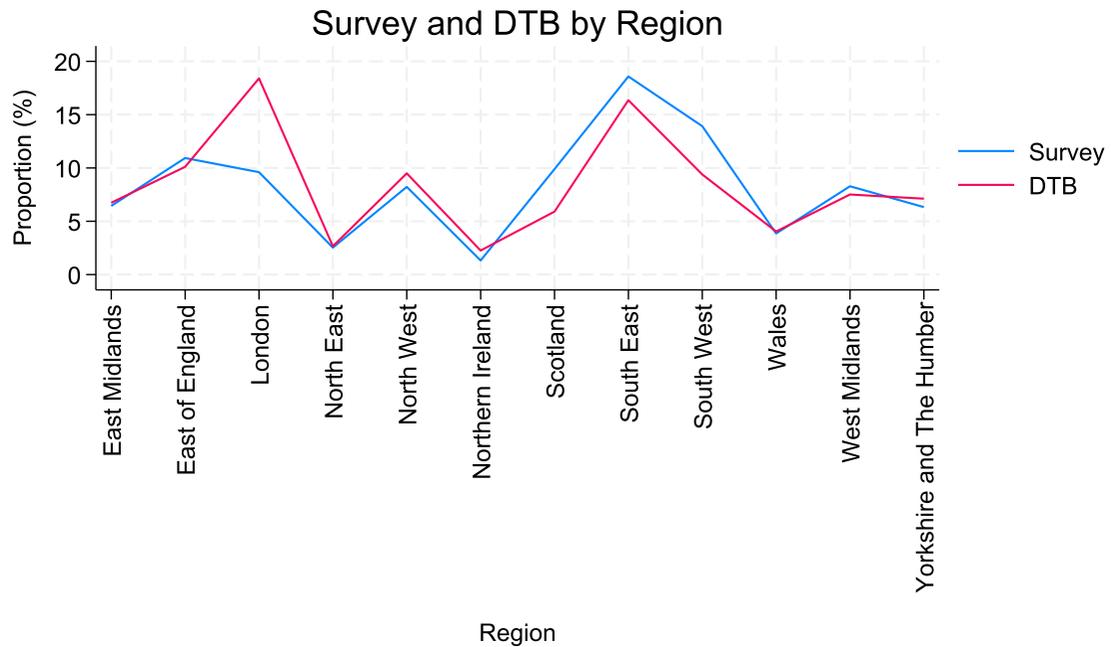
Figure 1. Geographical distribution of survey respondents and UK Business Population. Source: Our survey and *Department of Business and Trade (DTB)*.

Table 1. Factor analysis.

Items	Trust-based relationship banking (TRB)	Collateral (COLL)	Cross-selling (CROSS)	Uniqueness
1. Financial statement of my business	0.722			0.350
2. The position of my business in the market	0.466			0.369
3. My business's credit history and payment record with the bank	0.901			0.312
4. Confidential information regarding the quality of management, the development plan and business strategy	0.412			0.335
5. My ability to assure assets to support the loan		0.685		0.344
6. Guarantee(s) to act as security to support the loan		0.730		0.403
7. Mutual trust between my business and the bank's relationship manager	0.770			0.316
8. Cross-selling opportunities			0.638	0.509
Scale reliability coefficient	0.851			
Bartlett test of sphericity	0.000			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy	0.845			
Mean	4.205	3.382	3.679	
Std. Dev.	1.126	1.068	1.097	
No. Obs	409			

Note: to facilitate the presentation, the table shows loadings with absolute values larger than 0.41 only.

provides the support of sizeable sampling adequacy for an effective factor analysis. The scale reliability coefficient indicates the strength of internal consistency of individual items for each factor regarding the same underlying concept.

The first factor[11] contains the following elements: the position of my business in the market; financial statement of my business; my business's credit history and payment records with the bank; confidential information

regarding the quality of management; the development plans and business strategies; and mutual trust between my business and the bank's relationship manager.

We use Exploratory Factor Analysis, which means that the factors are 'data-driven' and not imposed *a priori*. The fact that the elements 'financial statements of my business', and 'my business's credit history and payment record', cluster with 'mutual trust between my business and the bank's relationship manager' lends support to the notion of calculative trust – a form of trust based on rational assessment rather than purely emotional or relational factors in most business dealings (Williamson 1993). Relationship banking aims to reduce asymmetric information by encouraging SMEs to share more data with the RMs. If mutual trust aligns with financial transparency, it implies that SMEs that trust their RMs are more willing to disclose their true financial situation.

In the standard literature of relationship banking, the following elements, 'the position of my business in the market', 'my business's credit history and payment record with the bank', and 'confidential information regarding the quality of management, the development plan and business strategy' are classified as private information confidential to the bank, while 'financial statement of my business' is viewed as one type of verifiable hard information. However, since the annual financial statements of SMEs are not typically required to be audited, it can be argued that the level of mutual trust between the two adds credence to the reliability of the financial information. The observed factor structure does not merely reflect statistical association but embodies a substantive behavioural pattern: delegation within the bank creates the organizational conditions under which trust-based, relational screening practices emerge and gain relevance in credit decision-making.

In sum, the composition of the first factor is consistent with the argument that mutual trust in a relationship at the individual level is a complementary facilitator in the contracting process, as in Yang, Su, and Fam (2012), and is the critical element in relationship banking on SME lending. To reflect the fundamental nature of the first factor, we label this as TRB (trust-based relationship banking).

The most important factor loadings in the second factor are the elements 'my ability to assure assets to support the loan', and 'guarantee(s) to act as security to support the loan'. These two elements pertain to the reliance of collateral and/or guarantees to screen loan applicants (Moro and Fink 2013; Uchida 2011). We label this factor as COLL (collateral factor). The third factor (labelled CROSS) is loaded by the element 'cross-selling opportunities'. This factor is in line with the product bundling practice by banks and bundled transfer pricing (Qi 2024; Zhao, Matthews, and Murinde 2013).

Mutual trust represents the relational quality that underpins the generation and transmission of soft information. In practice, trust and soft information are interdependent: trust facilitates the disclosure of soft information, and the repeated use of soft information reinforces trust. The finding that the mutual trust item loads strongly on the same factor as items of soft information used in the relationship banking literature indicates that SME respondents perceive these criteria as conceptually related dimensions of the same screening construct. It is both statistically coherent and theoretically meaningful to label that latent construct as 'trust-based relationship banking'.

The results align with SME lending decisions, which typically rely on a mix of hard, verifiable information and soft, non-verifiable information.

4.1.1. The base line model

We now turn to the first of our hypotheses, i.e. the delegation of operational autonomy to local relationship managers leads to a higher level of trust-based relationship banking in the bank's screening process. Arguably, the importance of trust-based relationship banking between the local RM and SME manager is influenced by the length and the scope of the bank-borrower relationship. A longer-duration relationship may create a higher frequency of information flow and tighter business tie-ups in terms of shared values and standards of behaviour (Dekker 2004). Banks may also use relationship lending as a local competitive strategy to attract SME consumers (Degryse, Matthews, and Zhao 2017; Zhao, Luintel, and Matthews 2021). Furthermore, the social context of the relationship is important since the quality of the social environment underpins the congruence of expectations and norms. Therefore, we must control for these counterfactuals to isolate the independent effect of operational autonomy on trust-based relationship banking.

We specify the following base line model:

$$TRB_{fbl} = \alpha + \rho OPEAUTO_{fb} + \pi LENGTH_{fb} + \delta SCOPE_{fb} + \gamma MARKETPOWER_{bl,2013} + \varepsilon_{fbl} \quad (1)$$

The dependent variable in Equation (1) is the trust-based relationship banking (TRB) measure derived from factor analysis. The subscript indicates f (SME firm), b (the bank to which the loan application was made), l (the postcode area where the registered address of the SME firm is located), and ε_{fbl} is an idiosyncratic error term. The main variable of interest, $OPEAUTO$, refers to the autonomy of the relationship manager in decision-making, which takes the value of 1 if the response to the survey question 'Does your relationship manager have the autonomy to approve or reject your loan application?' is 'yes', and 0 otherwise (which includes the answers of 'no' and 'do not know[12]'). Turning to the other independent variables, $LENGTH$ denotes the duration of the relationship between the SME and the bank to which the loan application was made, measured as the mid-point of the range given in the responses: 1–3 years, 4–6 years, 7–9 years, 10–15 years, 16–20 years, and capped at 20 if the answer is 'more than 20 years'. $SCOPE$ indicates the breadth of business ties between the SME and the bank and is proxied by the types of services the SMEs use at the bank. It is extracted from the average responses to the question 'What services does your business use at the bank?'. Whenever the response to a particular service is 'yes', it takes a value of 1 and 0 otherwise.

There is strong evidence that retail banking markets for SMEs are local in nature (Degryse and Ongena 2005). Higher branch penetration of the bank in the vicinity of SMEs suggests a greater physical proximity between local SMEs and the bank (Alessandrini, Presbitero, and Zazzaro 2009), which would facilitate the collection of soft information of SME borrowers by local relationship managers. The dominant position of the bank also implies a higher likelihood of a sustainable relationship between the SME and the bank (Presbitero and Zazzaro 2011). $MARKETPOWER$ represents the branch penetration of the bank in the postcode area of the registered address of the SME. It is measured by the number of branches of the bank divided by total number of branches of all banks in the postcode area. The information regarding the branches of banks is obtained from Experian's Shop∗Point data on the location of branches of bank records for England, Scotland & Wales up to 11/04/2013. Our market power measure is not time varying and is measured in 2013 (therefore subscript 2013), largely before the survey was implemented.

To test for the robustness of the estimated results from the baseline model (1), we enhance Equation (1) by introducing additional control variables:

$$TRB_{fbl} = \alpha + \rho OPEAUTO_{fb} + \pi LENGTH_{fb} + \delta SCOPE_{fb}$$
$$+ \gamma MARKETPOWER_{bl,2013} + \vartheta' CONTROLS + \varepsilon_{fbl} \quad (2)$$

The definition and statistical summary of the variables included in Equations (1) and (2) is shown in Table 2 below.

4.1.2. Results

The base line model is estimated using OLS. The estimated results are presented in Table 3. The first column presents results based on the full sample of responses to the question: 'Does the relationship manager have the autonomy to approve or reject loan applications?' In this specification, 'yes' responses are coded as 1, while both 'no' and 'do not know' responses are coded as 0.[13] To address potential bias introduced by this coding, the second column presents results from a restricted sample that excludes respondents who answered, 'do not know'.

The significance of operational autonomy (OPEAUTO) says that local RMs with the authority to decide the result of loan applications increase the relevance of trust-based relationship banking in the screening process compared to those without authority. The finding provides compelling support for the notion that delegation of decision-making authority to local relationship managers (RMs) is not only an organizational design choice but also a signal of intra-organizational trust. In line with Aghion and Tirole's (1997) distinction between formal and real authority, the delegation of operational autonomy indicates that headquarters places confidence in the ability, benevolence, and integrity of its front-line staff (Mayer, Davis, and Schoorman 1995). This intra-organizational trust empowers RMs to exercise judgment where hard information is incomplete or insufficient,

Table 2. Definition and statistical description of variables.

Name of variable	Definition and measure	Data source	Mean	Std. Dev.
Dependent variables				
TRB	Trust-based relationship banking derived from factor analysis.	Survey	4.240	1.115
CONSTRAINT1	SME credit constraint equals 0 if the firm obtained the full amount applied for and faced no problem with terms and conditions; equals 1 otherwise.	Survey	0.402	0.491
CONSTRAINT2	SME credit constraint. Equals 1 if the firm reported difficulties in applying for bank finance since 2008, and 0 otherwise.	Survey	0.351	0.478
Main variable of interest				
OPEAUTO	Operational autonomy of the relationship manager (RM). Equals 1 if the RM has autonomy to approve or reject the loan application, 0 otherwise.	Survey	0.395	0.490
Other independent variables in Equation (1)				
LENGTH	Duration of the bank – borrower relationship (years).	Survey	11.398	6.161
SCOPE	Breadth of business ties, calculated as the average number of services used by the SME at its main bank (10 possible services).	Survey	0.377	0.160
MARKETPOWER	Branch penetration of the main bank within each postcode area, calculated as the number of branches of the bank divided by the total number of all bank branches (in %).	Experian Shop∗Point, 2013	19.150	8.091
Additional control variables in Equation (2)				
Competition at the postcode-area level				
BRANCHDEN	Branch density for each postcode area = total number of bank branches divided by the population. (%)	Experian Shop∗Point, 2013	0.020	0.021
HHIFIS	Herfindahl – Hirschman Index (HHI) of the share of branches of financial institutions (including banks and building societies) within each postcode area. (%)	Experian Shop∗Point, 2013	7.217	5.853
Quality of social capital at the postcode-area level				
VOTE	General election turnout ratio = number of votes cast divided by total electorate.	General Election 2010	0.665	0.031
BLOODRATE	Blood donation rate per postcode area = blood donation registrations divided by total population. (%)	NHS Blood & Transplant, 2013	1.607	0.298
HHIREG	Diversification index of religious groups (HHI of Christian, Buddhist, Hindu, Jewish, Muslim, Sikh, Other, None, and Not Stated).	2011 Census	4346.095	722.106
HHIETH	Diversification index of ethnic groups (HHI of White, Mixed, Black, Asian, and Other).	2011 Census	7940.161	1748.627
Bank characteristics				
LNTA (thousands)	Natural logarithm of the bank's total assets at the time of the loan application.	Bankscope/Thomson One	21.028	0.927
DIST (miles)	Driving distance between the SME's postcode area and the bank's headquarters.	Experian Shop∗Point	4.892	1.142
COSTINC (%)	Cost-to-income ratio = total cost / total income.	Bankscope/Thomson One	83.592	23.580
LOSS (%)	Loan loss reserve / gross loans.	Bankscope/Thomson One	1.931	1.471
EQTA (%)	Equity / total assets.	Bankscope/Thomson One	5.971	1.237
LIQ (%)	Liquid assets / (deposits + short-term funding).	Bankscope/Thomson One	42.983	10.846

(continued).

Table 2. Continued.

Name of variable	Definition and measure	Data source	Mean	Std. Dev.
COLL	Collateral factor is derived from factor analysis.	Survey	3.679	1.097
CROSS	Cross-selling factor is derived from factor analysis.	Survey	3.382	1.068
DEMANDRELA	Equals 1 if relationship banking is an important criterion for choosing or switching a financial provider, 0 otherwise.	Survey	0.539	0.498
SME characteristics				
BORROW	Loan size dummies: below £25,000 (= 1); £25,000 – £249,999 (= 2); above £250,000 (= 3).	Survey	1.740	0.689
INTCOV	Interest coverage ratio considered healthy compared to industry peers (1 = Yes, 0 = No).	Survey	0.297	0.450
LEV	Leverage ratio considered healthy compared to industry peers (1 = Yes, 0 = No).	Survey	0.337	0.473
SALE	Annual turnover above £250,000 (1 = Yes, 0 = No).	Survey	0.682	0.466
SMETYPE	Legal status of the SME: (Categorical variable) Sole trader/partnership (0), Private Limited (1), Public Limited (2), or Other (3).	Survey	0.789	0.533
Variables used in the mediation analysis (Equation 3)				
METHOD	Method of communication with RM: 1 = face-to-face, 2 = phone/email, 3 = no communication.	Survey	1.798	0.498
FREQUENCY	Frequency of communication with RM: daily (1), weekly (2), monthly (3), every 2–3 months (4), every 4–6 months (5), annually (6), more than annually (7).	Survey	4.968	1.584
Instrumental variables for TRB				
SCOPE_place_excl	Average business scope of other SMEs with the same main bank in the same locality (leave-one-out mean).	Survey	0.294	0.043
TBR_place_excl	Average TRB reported by other SMEs in the same postcode area (leave-one-out mean).	Survey	4.215	0.615
TBR_bank_excl	Average TRB reported by other SMEs of the same main bank (leave-one-out mean).	Survey	4.215	0.201

Note: The statistical description is calculated using the sample of observations included in the regression analysis.

thereby reinforcing their incentives to cultivate and leverage relationship-specific knowledge, thus enabling the relevance of trust-based relationship banking in the screening process.

With the other explanatory variables in the baseline model, we find that the impact of LENGTH on the emphasis of trust-based relationship banking is not statistically significant, possibly due to the average length being relatively long in our dataset (11.3 years). Numerous empirical studies fail to find a significant effect of relationship duration on the interest rates charged for loans, especially beyond a certain duration length. Additionally, while potential lenders are more likely to extend credit to firms with which they have a pre-existing financial relationship, the length of this relationship appears to be unimportant (López-Espinosa, Mayordomo, and Moreno 2017). In the context of trust-based relationship banking, this finding suggests that relationship duration between the bank and the SME alone has limited implications for the accumulation of soft information and the development of mutual trust between local RMs and SMEs. Relationship banking emphasizes personalized attention, long-term trust, and continuous communication between SMEs and their relationship managers (RMs). The method of interaction matters for the quality of the relationship (Rockmann and Northcraft 2008) and the reliance on telephone interactions diminishes closeness and trust between partners (Przybylski and

Table 3. Baseline estimation: impact of operational autonomy on trust-based relationship banking (TRB).

Dependent variable: Trust-Based Relationship Banking (TRB)	1	2
Variables	Full sample	Excluding 'Do Not Know'
Operational Autonomy (OPEAUTO)	0.296***	0.249**
	(0.114)	(0.123)
LENGTH	−0.001	−0.009
	(0.010)	(0.011)
SCOPE	1.118***	1.180***
	(0.402)	(0.416)
MARKETPOWER	0.018**	0.010
	(0.007)	(0.008)
No. Obs	347	283
F-statistic	5.700	3.750
Prob > F	0.000	0.006
R⊃2	0.062	0.052

Note**:** This table presents OLS estimates of the effect of *Operational Autonomy (OPEAUTO)* on *Trust-Based Relationship Banking (TRB)*. Column 1 reports results from the full sample; Column 2 excludes respondents who answered '*do not know*' to the autonomy question ('Does your relationship manager have the autonomy to approve or reject your loan application?'). Across both samples, *Operational Autonomy* has a positive and statistically significant effect on TRB, while results are robust to the exclusion of uncertain responses. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

Weinstein 2013). It is reasonable to argue that the quality and frequency of interactions, rather than merely the passage of time, foster relationship development and mutual trust.

The variable SCOPE is positive and significant, consistent with the argument that the breadth of business cooperation improves economic exchange. The breadth of business exchange reflects the intention and the outcome of the iterative reciprocal testing process regarding shared values and standards of behaviour between the two parties. The variable MARKETPOWER is positive and significant in the full sample result, which suggests some evidence that the stronger physical presence of the bank could ease the collection of soft information of borrowers. This finding is also consistent with the bank signalling its willingness to engage in relationship lending at the local level.

We next conduct a series of robustness tests to confirm our main results derived from the baseline model (1). First, we enhance the model with variables proxying the degree of competition and the quality of social capital at the postcode area level as shown in Equation (2). Second, we control for the self-selection bias created by the choice of bank by the SME based on the importance of relationship banking.[14] We estimate these augmented models using pooled OLS and present the results in Table 4. We add the control variables sequentially and present the results for the full set of controls.

The degree of competition is proxied by two measures. We first use the total number of branches of banks divided by population (BRANCHDEN). We also use the Herfindahl-Hirschman Index based on the share of branches of financial institutions as the alternative measurement (HHIFIS). Both are defined at the postcode area level. The data regarding the branch location of banks is again derived from Experian's Shop∗Point data referring the information by 11/04/2013. The registered address of SME is gathered from the response in the survey.

The quality of social capital at the level of postcode area is measured in four alternative ways. First, we use the voter participation rate in the general election, calculated by the ratio of the number of turnouts over total electorates (VOTE). Second, we use the blood donation rate measured by blood donation registration divided by the total population (BLOODRATE). Third, we use the diversification index of religious groups (HHIREG).[15] Finally, we use the diversification index of ethnic groups (HHIETH). All data regarding the social capital environment are defined at the postcode level. We obtain data regarding religious and ethnic groups in each postcode area from the 2011 census, data on voter turnout in each postcode area from the general election in 2010, and data regarding blood registration in each postcode area from NHS Blood and Transplant in 2013.

Table 4. Impact of operational autonomy on trust-based relationship banking (TRB): robustness tests.

Dependent variable: Trust-Based Relationship Banking (TRB)	1	2
Specification	Full Sample	Excluding 'Do Not Know'
Baseline	0.296***	0.249**
	(0.114)	(0.123)
+ Wave dummies	0.298***	0.246**
	(0.117)	(0.127)
+ Branch Density (BRANCHDEN)	0.301***	0.257**
	(0.114)	(0.123)
+ Market Concentration (HHIFIS)	0.279**	0.238*
	(0.116)	(0.124)
+ Social Trust (VOTE)	0.289**	0.240*
	(0.115)	(0.124)
+ Blood Donation Rate (BLOODRATE)	0.301***	0.247**
	(0.113)	(0.122)
+ Religious Homogeneity (HHIREG)	0.298***	0.250**
	(0.113)	(0.122)
+ Ethnic Diversity (HHIETH)	0.296***	0.248**
	(0.114)	(0.123)
+ Demand for Relationship Banking (DEMANDRELA)	0.285***	0.236**
	(0.112)	(0.120)
+ All Controls Combined	0.294**	0.220*
	(0.112)	(0.127)
No. Obs	347	283
R^2	0.063–0.077	0.052–0.079
F-statistic range	4.56–5.70	2.06–3.75
Prob > F range	0.000–0.003	0.006–0.012

Note**:** This table reports the robustness of the estimated effect of *Operational Autonomy (OPEAUTO)* on *Trust-Based Relationship Banking (TRB)* under different model specifications. We sequentially introduce controls for categorical wave dummy, local financial structure, social capital, religious and ethnic diversity, and the importance of relationship banking in selecting the main bank, and then include all controls jointly in the final model. Column (1) and (2) contain the two samples, respectively: (1) the full sample and (2) a restricted sample excluding respondents who answered 'do not know' to the question of whether the relationship manager has the autonomy to approve or reject loan applications. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

Additional robustness tests, which include SME-specific variables, are reported in the appendix. Our main results of the baseline model hold in these robustness tests.

4.1.3. Auxiliary analysis of the channels through which operational autonomy affects trust-based relationship banking.

In discussing the non-significance of the duration of the bank-borrower relationship on trust-based relationship banking above, we conjectured that duration alone does not capture the full behaviour of the local RM in reciprocal trust building with the SME manager. We argue that the frequency and the method of interaction matter for the quality of the relationship and trust. Here, we investigate whether personal communication channels and the frequency of communication between the local RM and the SME manager serve as mechanisms through which operational autonomy enhances TRB. To do so, we estimate Equation (2) and compare the coefficient of operational autonomy across specifications – with and without controlling for these potential mediating mechanisms.

We first augment the baseline model (1) with the frequency and method of the communication:

$$TRB_{fbl} = \alpha + \rho OPEAUTO_{fb} + \tau FREQUENCY_{fb} + \beta METHOD_{fb} + \pi LENGTH_{fb}$$
$$+ \delta SCOPE_{fb} + \gamma MARKETPOWER_{bl,2013} + \varepsilon_{fbl} \qquad (3)$$

The measure of the frequency of the interaction is drawn from the following questions in the survey: How often do you and your relationship manager get in touch? The responses were one of daily, weekly, monthly, every

Table 5. Mediation analysis: operational autonomy, communication, and trust-based relationship banking (TRB).

Dependent variable: Trust-Based Relationship Banking (TRB)	1	2	3	4
Variables	Full sample + Length	Full sample	Excl. 'Don't know' + Length	Excl. 'Don't know'
Operational Autonomy (OPEAUTO)	0.178	0.178	0.129	0.132
	(0.116)	(0.116)	(0.124)	(0.124)
Frequency of communication (FREQUENCY)	−0.072*	−0.072*	−0.077**	−0.079**
	(0.038)	(0.038)	(0.039)	(0.040)
METHOD (reference category: Telephone/email)				
Communication method (channel = Face-face)	0.297**	0.297**	0.403***	0.407***
	(0.119)	(0.119)	(0.122)	(0.123)
Communication method (channel = No communication)	−0.826**	−0.828**	0.086	0.083
	(0.415)	(0.417)	(0.487)	(0.490)
LENGTH	0.001	–	−0.004	–
	(0.010)	–	(0.011)	–
SCOPE	0.799**	0.810**	1.004**	0.964**
	(0.407)	(0.389)	(0.411)	(0.388)
MARKETPOWER	0.017**	0.017**	0.010	0.010
	(0.007)	(0.007)	(0.007)	(0.007)
No. Obs	347	347	283	283
R⊃2	0.119	0.119	0.092	0.092
Prob > F	0.000	0.000	0.000	0.000

Note**:** This table presents OLS estimates examining whether the method and frequency of communication mediate the effect of *Operational Autonomy* on *Trust-Based Relationship Banking (TRB)*. Columns (1) – (2) use the full sample; Columns (3) – (4) exclude respondents who answered '*do not know*' to the autonomy question. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

2–3 months, every 4–6 months, annually, and more than annually. Each listed choice is converted to an integer response as 1, 2, 3, 4, 5, 6, 7, respectively. A higher magnitude is associated with a lower frequency. The measure of the method of communication is based on the question 'how do you and your relationship manager usually get in touch with each other?'. We generate three categorical variables representing the following communication methods: face-to-face; telephone and/or email; and no contact. If a higher level of frequency of interactions and more personal communication methods serve as the mediating channels through which operational autonomy influences trust-based relationship banking, we expect the estimated coefficient on the operational autonomy of local RMs (OPEAUTO) in Equation (3) to become insignificant and decrease in magnitude.

As a preliminary to the mediation analysis, we first compared the result of equation (3) with equation (1). Second, we used both the Sobel – Goodman mediation procedure[16] and a structural equation modelling (SEM) approach. We perform these analyses using both the full sample and a restricted sample that excludes respondents who answered 'do not know' to the question on the operational autonomy of the RMs.

The results are presented in Table 5 below; the results of the SEM are reported in the appendix. The inclusion of the variable proxying frequency and method of communication renders the measure of operational autonomy insignificant. We find that lower frequency of interactions is negatively related to trust-based relationship banking (at the 10% significant level). With the method of communication, relative to the interaction via telephone and email, face-to-face interaction is positively related to higher trust-based relationship banking (Turner 2002), while no communication results in a lower trust-based relationship banking. The estimated coefficient on the length of bank-borrower relationship remains insignificant. The results are consistent with the argument that the delegation of operational autonomy incentivises the local RM to conduct more frequent face-to-face interaction with the SME. Repeated personal interaction is effective in reinforcing the quantity and quality of information exchange and the development of mutual trust, leading to the higher importance of trust-based relationship banking in decision-making.

Looking at the estimated coefficient on SCOPE, we find that the magnitude is smaller compared with the result of Table 3. This result implies that the strength of business ties between the bank and the SME might

also influence the frequency and the method of interaction between the local RM and the SME. The effect of MARKETPOWER is largely unchanged, and robust to the model.

4.1.4. Trust-based relationship banking and SME credit constraints

In this section, we address H2, i.e. the effect of trust-based relationship banking on the credit constraint faced by SMEs. We specify a probit model, where the dependent variable *CONSTRAINT* indicates the experience of SME f and access to the credit from bank b:

$$CONSTRAINT_{fb} = \alpha + \varphi\, TRB_{fbt} + \mu' Bankcontrols_b + \omega' Firmcontrols_f + \gamma' COLL_{fb}$$
$$+ \tau' CROSS_{fb} + \sigma' WAVE + \varepsilon_{fb} \tag{4}$$

Equation (4) models the outcome of the loan application in terms of the characteristics of the borrowing firm, those of the bank, and the screening technology used by the bank. Bank controls capture the financial and non-financial characteristics of the bank associated with its business policy regarding financial intermediation and/or SME lending. Firm controls refer to the liquidity risk of the firm in honouring the repayment obligation. ε_{fb} is the random error term.

The dependent variable in Equation (4) is constructed from the survey results and defined as *CONSTRAINT1*. For robustness, we use an alternative measure shown as *CONSTRAINT2* and show the results in the appendix. As bank controls, we account for the following variables measured at the year the loan application was made: loan loss reserve ratio (LOSS), equity to total assets ratio (EQTA), liquid assets to liquid liability ratio (LIQ), the natural logarithm of total assets (LNTA), and the bank's branch penetration in the vicinity of the SME measured in 2013 (MARKETPOWER). These measures have been used widely in the banking literature to denote the risk-taking tendency of the bank (e.g. LOSS and EQTA), the capacity of the bank to diversify risk (e.g. LNTA), and the ability of the bank to exploit its position in the local credit market (MARKETPOWER). Firm controls relating to the liquidity risk and financial stress are measured by the self-judgement of SMEs on the status of their leverage ratio being healthy (compared to industry peers) when the loan application was made (LEV). We also consider an alternative measure which is based on the self-judgement of SMEs on the status of the interest coverage ratio being healthy (compared to industry peers) when the loan application was made (INTCOV).

The average marginal effects of the independent variables of the probit regression for Equation (4) are reported in Table 6. It shows that a stronger trust-based relationship banking reduces the likelihood of being credit constrained. The result supports the hypothesis regarding the value of trust-based relationship banking in easing the access of bank finance for SMEs. This result is consistent with other empirical evidence linking relationship banking to the firms' access to bank credit in the post-2008 crisis period (Degryse, Matthews, and Zhao 2017; Gobbi and Sette 2014). Additionally, the positive impact is numerically significant, as a one standard deviation increase of TBR will lead to a 16.73 percentage point decrease in the probability of credit constraint for SMEs. The results hold, both quantitatively and qualitatively, regardless of the use of the alternative measure of credit constraint and the alternative measure of the liquidity risk of the borrower (shown in the appendix).

Regarding the other independent variables in the Equation (4), we find that SMEs that applied for loans from a bank with higher capitalization have a higher likelihood of experiencing a credit constraint (EQTA). This is in line with the presumption that well-capitalized banks would be prudent in taking risks (Altunbas et al. 2019). Also, the result shows that SMEs with a healthy leverage ratio face a lower likelihood of being constrained (LEV), consistent with the findings of Cathcart et al. (2020). We also find that higher collateral consideration (COLL) in the bank's screening is associated with a higher likelihood of credit constraint. This accords with the Business Environment and Enterprise Performance Survey, which reveals that a collateral requirement is one of the main obstacles for SMEs when accessing finance (OECD 2017). It also echoes the empirical findings relating to the limitation of 'arm's length' transaction lending technologies in handling the asymmetric information problem associated with SME lending (Santikian 2014).

4.1.5. The problem of endogeneity

In this section, we address the potential problem of the endogeneity of operational autonomy and the endogeneity of trust-based relationships. The former relates to the investigation of the impact of operational autonomy

Table 6. Trust-based relationship banking and SME credit constraints.

Variable	(1)	(2)	(3)	(4)	(5)	(6)
TBR	−0.087***	−0.131***	−0.151***	−0.089***	−0.135***	−0.153***
	(0.020)	(0.028)	(0.027)	(0.020)	(0.028)	(0.027)
LEV	−0.208***	−0.196***	−0.225***			
	(0.049)	(0.048)	(0.046)			
INTCOV				−0.180***	−0.164***	−0.204***
				(0.051)	(0.051)	(0.047)
LOSS	0.012	0.013	0.003	0.010	0.011	0.002
	(0.018)	(0.017)	(0.016)	(0.018)	(0.017)	(0.016)
EQTA	0.055***	0.054***	0.043**	0.053**	0.051**	0.038**
	(0.021)	(0.021)	(0.020)	(0.022)	(0.020)	(0.020)
LIQ	0.002	0.002	0.001	0.002	0.003	0.002
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)
LNTA	−0.044	−0.039	−0.034	−0.046	−0.041	−0.036
	(0.034)	(0.032)	(0.027)	(0.035)	(0.032)	(0.028)
MARKETP	0.002	0.003	0.003	0.003	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
COLL		0.126***	0.098***		0.126***	0.097***
		(0.031)	(0.030)		(0.032)	(0.031)
CROSS		−0.038	0.022		−0.037	0.025
		(0.036)	(0.038)		(0.036)	(0.038)
No. Obs	361	361	361	361	361	361
Area under ROC curve	0.714	0.731	0.764	0.700	0.723	0.758
Hosmer – Lemeshow (p-value)	0.213	0.271	0.432	0.273	0.174	0.284

Notes**:** This table reports the marginal effects of independent variables estimated from a Probit model using *CONSTRAINT1* as the dependent variable. Categorical wave dummies are included in columns (3) and (6) but not reported. Figures in parentheses are robust (Delta-method) standard errors. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Variable definitions are provided in Table 2.

on the relevance of trust-based relationships banking, while the latter relates to the causative link between trust-based relationships banking and the loan application outcome.

Endogeneity concerns regarding operational autonomy arise because the autonomy granted to relationship managers (RMs) is not randomly assigned within banks but instead reflects internal organizational choices that are related to the expected usefulness of trust-based, relationship-oriented screening. Banks are more likely to delegate decision-making authority to RMs when they believe that relational screening and soft information add value to credit assessment, particularly in environments where rigid, rules-based lending is less effective. Because these organizational assessments of the value of soft information are largely unobservable to the researcher, operational autonomy may be correlated with the error term in the trust-based relationship banking equation. Similarly, trust-based relationship banking may itself be endogenous in the analysis of its impact on loan application outcomes. Unobserved bank – firm interactions can simultaneously influence the extent of trust-based relationship banking and the probability of loan approval, leading to a correlation between trust-based relationship banking and the error term in the loan approval equation.

We thus adopt an instrumental variable approach, provide economic reasoning for the choice of instruments, and formally test for their relevance, strength, and exogeneity, including examination of the exclusion restriction. We also apply the control function approach of Wooldridge (2015) to test for the exogeneity of RM operational autonomy. The insignificant coefficient on the generalized residual from the first-stage probit confirms that the autonomy variable can be treated as exogenous in the main specification.

Our instruments for the operational autonomy of relationship managers (RMs) are grounded in organizational and contextual factors: (1) the loan loss reserve ratio of the bank headquarters (LOSS), (2) the indicator of social trust in the locality where the bank branch is located (HHIREG and HHIETH), and (3) the HHI index of local financial institutions in the locality (HHIFIS). The loan loss reserve ratio captures the bank's overall risk management conservatism – banks with higher provisioning tend to centralize credit decisions, whereas more capital-sound institutions delegate greater autonomy to local RMs. Local trust indicators reflect the social capital and general trustworthiness in the community, which reduces perceived agency costs and supports greater

Table 7. Impact of operational autonomy on trust-based relationship banking (TRB): robustness tests (LIML IV Regression)

Dependent variable	First stage: operational autonomy	Second stage: trust-based relationship banking
LOSS	−0.041**	
	(0.018)	
HHIREG	0.000**	
	(0.000)	
HHIFIS	0.000**	
	(0.000)	
HHIETH	−0.000*	
	(0.000)	
OPEAUTO (instrumented)		1.455**
		(0.735)
SCOPE	0.222	0.889*
	(0.176)	(0.472)
MARKETPOWER	0.001	0.019**
	(0.003)	(0.008)
LENGTH	0.001	0.001
	(0.005)	(0.011)
No. Obs	346	346
Kleibergen – Paap LM (Under-ID)	13.063 ($p = 0.011$)	–
Kleibergen – Paap Wald F (Weak ID)	3.480	–
Hansen J (Over-ID)	–	0.563 ($p = 0.905$)
Weak-IV Robust Inference		
CLR (Conditional Likelihood Ratio) test p-value	–	0.074
AR (Anderson – Rubin) p-value	–	0.300
K (LM) p-value	–	0.045

Note: This table reports LIML instrumental variables (IV) regression estimates of the effect of *relationship manager (RM) operational autonomy* on *trust-based relationship banking (TRB)*. Operational autonomy is instrumented with LOSS, HHIREG, HHIFIS, and HHIETH. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. CLR = Conditional Likelihood Ratio test; AR = Anderson – Rubin test; ; Results are based on heteroskedasticity-robust standard errors. The definition of variables can be found in Table 2.

decentralization of decision rights (Guiso, Sapienza, and Zingales 2004). The HHIFIS index proxies local banking competition, and greater competition encourages headquarters to grant more autonomy to RMs to retain SME clients (Canales and Nanda 2012; Degryse and Ongena 2005). These instruments affect RM autonomy through organizational and contextual channels but should have no direct effect on the relational screening behaviour once bank and locality characteristics are controlled for, satisfying both the relevance and exclusion restrictions required for valid instrumentation.

Table 7 contains the first stage and second-stage estimation results, together with key diagnostic statistics. The Kleibergen – Paap LM statistic rejects under-identification. The Hansen J test for overidentifying restrictions yields $p = 0.90$, suggesting that the instruments are valid (i.e. uncorrelated with the error term). However, the first-stage Kleibergen-Paap F-statistic is 3.48, which falls below the Stock-Yogo critical threshold for 10% maximal LIML bias (5.44), indicating weak instruments. To assess inference validity under weak identification, we rely on weak-IV robust tests. More reliable in our setting is the Conditional Likelihood Ratio (CLR) test, which are robust to weak instruments, yields a p-value of 0.074, indicating marginal significance at the 10% level. The K-test confirms this with $p = 0.045$. The Anderson–Rubin test does not reject the null ($p = 0.300$), consistent with its lower power. Overall, we interpret the result as moderate evidence that operational autonomy has a positive effect on TRB but note that the significance is sensitive to the strength of the instruments and the choice of test.

To further assess the validity of the exclusion restriction, we re-estimate Equation (1) including the instrumental variables directly as additional control variables. If the instruments are valid, they should not have a statistically significant direct effect on the trust-based relationship banking in the screening process. The coefficients on the instruments are jointly insignificant. The absence of significant coefficients on the instruments

Table 8. Exclusion restriction robustness test.

Dep: Trust-Based Relationship Banking (TRB)	
Operational Autonomy (OPEAUTO)	0.254**
	(0.116)
SCOPE	1.140***
	(0.403)
MARKETPOWER	0.021***
	(0.008)
LENGTH	0.002
	(0.010)
HHIFIS	0.000
	(0.000)
LOSS	−0.046
	(0.042)
HHIREG	0.000
	(0.000)
HHIETH	−0.000
	(0.000)
Constant	3.265***
	(0.386)
No. Obs	346
R⊃2	0.073
Test of Excluded Instruments	$\chi^2(4) = 3.46$ ($p = 0.484$)

Note**:** This table reports OLS estimates of the trust-based relationship banking (TRB) equation (1) including all instrumental variables LOSS, HHIREG, HHIFIS, and HHIETH as additional regressors. None of the instruments are individually or jointly significant ($\chi^2(4) = 3.46, p = 0.484$), indicating that they do not have a direct effect on TRB once operational autonomy is controlled for. This supports the validity of the exclusion restriction for the instruments used in IV regression. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

supports the assumption that they affect the outcome only through the operational autonomy. The results are reported in Table 8.

To test whether the operational autonomy of relationship managers (RMs) is endogenous, we apply the control function approach of Wooldridge (2015). In the first stage, we estimate a probit model of autonomy using the identified instruments – the loan loss reserve ratio of the headquarters, local trust indicators, and HHIFIS. From this model, we compute the generalized residual and include it as an additional regressor in the equation for trust-based relationship banking (TRB). The estimated coefficient on the residual is statistically insignificant, indicating that the unobserved component of autonomy is uncorrelated with the error term. We therefore fail to reject the null hypothesis of exogeneity and conclude that RM autonomy can be treated as exogenous in the main specification. The results are presented in Table 9.

We next address the endogeneity concern over the trust-based relationship banking in the analysis of its impact on the outcomes of the loan application. Here, we instrument TRB using the SME – bank communication channel to account for opportunities for interpersonal trust formation and soft-information acquisition. The additional instruments for TRB are exogenous sources of contextual or behavioural variation that reflects the behaviour of other firms in the same financial environment, not the focal SME's characteristics, which are averaged across other firms (leave-one-out). By construction, the leave-one-out mean eliminates mechanical correlation of trust-based relationship banking with the SME's own characteristics, and with firm-, bank- and bank-locality-level controls included.

We use the average business scope of other SMEs with its main bank in the same locality (leave-one-out) as the instrument to capture the intensity and depth of local bank – SME interactions. In areas where firms generally maintain broader relationships with banks, financial institutions have greater exposure to soft information and are more likely to apply trust-based screening practices. Hence, local average business scope is a strong predictor of relational lending intensity.

Table 9. Control function test for the exogeneity of operational autonomy

Dep: trust-based relationship banking (TRB)	
LENGTH	−0.002
	(0.010)
SCOPE	1.139**
	(0.408)
MARKETPOWER	0.018**
	(0.008)
Operational Autonomy (OPEAUTO)	0.239
	(0.241)
Residual (p_resid)	0.028
	(0.106)
Constant	3.300***
	(0.348)
No. Obs	346
F-statistic	4.430
Prob > F	0.001
Endogeneity test (p_resid = 0)	F(1, 340) = 0.07 (p = 0.791)
R⊃2	0.062

Note**:** This table reports the results of the control function test for endogeneity of the *Operational Autonomy* variable (*OPEAUTO*) in the Trust-Based Relationship Banking (TRB) regression. In the first stage, a probit model was estimated for *OPEAUTO* using *LOSS, HHIREG, HHIFIS, HHIETH, LENGTH, SCOPE*, and *MARKETPOWER*. The generalized residual from this probit (*p_resid*) was then included in the TRB regression. The coefficient on the residual is not statistically significant, indicating no evidence of endogeneity. Therefore, *OPEAUTO* can be treated as exogenous in the TRB equation. Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

Another instrument for the trust-based relationship banking (TRB) is the average TRB reported by other SMEs in the same locality, computed in the same leave-one-out manner. This variable captures the prevailing relational banking culture and local trust environment in which firms and bank branches operate. In areas where other SMEs experience high trust and reliance on soft information during bank screening, relationship managers are more likely to adopt similar practices toward all SME clients in that locality, making the instrument a strong predictor of an individual firm's own TRB.

A further instrument is the average TRB reported by other SMEs that borrow from the same main bank, computed using a leave-one-out approach. This variable captures the bank's organizational and relational culture – reflecting how each institution structures its lending operations and promotes the use of soft information by relationship managers. We expect the average TRB among other clients of the same bank to be a strong predictor of an individual firm's own TRB. Because it reflects institutional culture rather than the focal SME's financial condition, and because it is calculated excluding the firm itself, the instrument is plausibly exogenous to the credit constraint outcome.

In Table 10 we report both the first stage and second-stage estimation results, together with key diagnostic statistics. The Kleibergen – Paap LM statistic rejects under-identification. The Kleibergen – Paap rk Wald F statistic exceeds the Yogo critical threshold for 10% maximal LIML bias (5.44). The Hansen J test fails to reject the null of joint exogeneity, supporting the validity of the instruments. In the second stage, the coefficient on TRB is negative and marginally significant (p-value < 0.10), implying that greater reliance on trust and soft information in bank screening reduces the likelihood of SMEs facing credit constraints. The direction and significance of this effect are consistent with the theoretical expectation that relational trust alleviates informational frictions in SME lending.

In addition, we re-estimate Equation (4) including the instrumental variables directly as additional control variables. If the exclusion restriction of instruments is valid, they should not have a statistically significant direct effect on the outcome of loan applications. The coefficients on the instruments are jointly insignificant, supporting the assumption that they affect the outcome only through the trust-based relationship banking in screening.

Table 10. LIML IV estimation of the effect of trust-based relationship banking on loan constraints.

	1	2	3	4
Dependent variable	First stage: TRB	Second stage: constraint1	OLS with instruments (Exclusion test)	Linear probability model
TRB (instrumented)	–	−0.180*	−0.157***	−0.155***
		(0.098)	(0.030)	(0.027)
METHOD	−0.249***	–	0.101**	
	(0.075)		(0.048)	
SCOPE_place_excl	−0.889	–	−0.142	
	(0.846)		(0.538)	
TBR_place_excl	0.420***	–	0.034	
	(0.065)		(0.045)	
TBR_bank_excl	0.133	–	0.047	
	(0.284)		(0.205)	
LEV	0.181**	−0.201***	−0.202***	−0.225***
	(0.084)	(0.053)	(0.048)	(0.047)
LOSS	−0.042	0.004	0.005	0.005
	(0.035)	(0.019)	(0.021)	(0.017)
EQTA	−0.048	0.037	0.042	0.046**
	(0.038)	(0.024)	(0.026)	(0.019)
LIQ	−0.007*	0.001	0.001	0.002
	(0.004)	(0.003)	(0.003)	(0.002)
LNTA	0.114	−0.011	−0.027	−0.037
	(0.084)	(0.048)	(0.060)	(0.025)
MARKETPOWER	0.007	0.001	0.001	0.003
	(0.006)	(0.003)	(0.004)	(0.003)
COLL	0.046	0.105***	0.101***	0.099***
	(0.068)	(0.030)	(0.029)	(0.028)
CROSS	0.670***	0.042	0.028	0.023
	(0.073)	(0.082)	(0.039)	(0.037)
No. Obs	340	340	340	361
R2		0.183	0.196	0.203
Kleibergen – Paap LM (Under-ID)	29.574 ($p = 0.000$)			
Kleibergen – Paap Wald F (Weak-ID)	14.190			
Hansen J (Over-ID)	–	4.782 ($p = 0.189$)		
Weak-IV Robust Inference (TRB)				
CLR (Conditional Likelihood Ratio) test p-value	0.078			
AR (Anderson – Rubin) p-value	0.081			
K (LM) test p-value	0.092			
Test of Excluded Instruments			$\chi^2(4) = 5.28, p = 0.260$	

Notes**:** Column (1) and (2) report the first and the second stage of LIML instrumental variables (IV) regression estimates of the effect of trust-based relationship banking (TRB) on credit constraint. TRB is instrumented with METHOD, SCOPE_place_excl, TBR_place_excl, and TBR_bank_excl. Column (3) reports the test of the exclusion restriction of the instrumental variables. Column (4) reports the LPM estimates of equation (4). Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The definition of variables can be found in Table 2.

Although the leave-one-out approach addresses the mechanical correlation between trust-based relationship banking and the SME's own characteristics, firm-, bank-, and bank-locality-level controls, it remains vulnerable to unobserved heterogeneity at the bank or locality level (e.g. credit supply conditions or regional cycles).[17] We therefore apply the same instrumental variable approach to address the endogeneity of trust-based relationship banking in Equation (4), augmenting the specification with bank and regional dummies as additional controls, while keeping the set of instrumental variables unchanged. We report the result in Appendix Table A9. Diagnostic tests of the instrumental variables indicate that the instruments are valid, and additional tests of the exclusion restriction support the assumption that the instruments affect loan application outcomes only through trust-based relationship banking in screening. Our finding that a higher degree of trust-based relationship banking mitigates the credit constraints faced by SMEs remains robust.

Selection bias is always a concern in research of this nature. In the appendix we report the Heckman selection correction estimates of Equation (4). Again, the main results remain strong.

5. Conclusion

The importance of relationship banking for easing SME credit constraints is well-recognized in the literature. But the empirical analysis of the origin, development, and evolution of the information-value of the bank-borrower relationship is limited (Santikian 2014). While a few papers focus on trust in relationships between banks and SMEs, trust is typically not viewed as part of the bank-borrower relationship that mitigates the asymmetric information problem in bank s' decision-making. Moreover, there is little effort to distinguish the interpersonal trust between the local RM and the SME manager, and the inter-organizational trust between the bank and the borrowing firm. The critical link is the local RM who translates interpersonal trust with the SME manager into inter-organizational trust between the firm and the bank through intra-organizational trust within the bank. This link remains largely unexplored.

Our contribution is to explore this link. We start by proposing that mutual interpersonal trust between the RM and the SME is a critical element to relationship banking. Using a set of primary data from sample-survey relating to the experience of UK SMEs in accessing bank finance after the global financial crisis, we conduct factor analysis and present validating evidence showing that the mutual trust between the local RM and SME plays a central role in defining relationship banking in the screening of loan applications. We report that 'mutual trust' is clustered with other elements typically associated with the strength of relationship banking. We construct a measure of trust-based relationship banking.

We examine whether delegating operational autonomy to RMs – a proxy for intra-organizational trust in local RMs – enhances trust-based relationship banking. Our findings indicate that greater operational autonomy for local RMs increases the relevance of trust-based relationship banking in the screening of SME borrowers. Furthermore, we demonstrate that operational autonomy incentivizes more frequent interactions and greater use of personal communication between local RMs and SMEs. This highlights the critical role of operational autonomy in facilitating information exchange and fostering mutual trust between local RMs and SMEs, thereby reinforcing the significance of trust-based relationship banking in banks' decision-making.

We investigate whether the higher level of trust-based relationship banking in bank s' decision-making leads to lower levels of credit constraints for SMEs. We show that trust-based relationship banking relaxes credit constraints of SMEs. These results are robust to several tests, including different methods of extracting trust-based relationship banking, different measures of credit constraints, as well as different specifications. The empirical model survives a rigorous programme of tests for the potential problem of endogeneity. Drawing the evidence together, our findings show that the informational value of relationship banking is embedded in the mutual trust between the local relationship manager and the SME, and the operational autonomy granted to the local RM is the enabling organizational arrangement through which interpersonal mutual trust can develop, be incorporated into the lending process, and eventually materialize as easing the credit constraints faced by SMEs.

What does this tell us about relationship banking in the UK? That relationship banking eases the credit constraints of SME borrowers is not in question. This paper is concerned with the type of relationship in relationship banking. A traditional measure of the strength of a relationship in relationship banking is the length of the relationship. It is supposed that the longer the duration of the relationship, the easier it is for the RM to access and translate soft information critical to SME lending. We scrutinize this supposition and argue that mutual trust is the critical element. Moreover, it is the operational autonomy of local RMs that breeds mutual trust, via frequency and personal methods of communication. While the greater application of information technology will naturally reduce the costs of information production to banks, the bottom line is that relationship banking remains a personal business that involves interpersonal interaction and complements decision making at the ground level.

Notes

1. This was a question examined in Degryse, Matthews, and Zhao (2017) in a small-scale study for Wales. Beck et al. (2018) and Bolton et al. (2016) examine the role of relationship banking across the business cycle.
2. For a wider critical review of trust in the entrepreneurship literature see Welter (2012).

3. We refer to the SME Manager and the SME interchangeably as the survey in this paper targeted the owner-manager, CEO or CFO. It is assumed that the top management effectively overlaps with the organization itself enabling the translation of interpersonal trust between the SME Manager and the RM and the interorganizational trust between the SME and the Bank.

4. Escalating decision-making to higher levels within the organization weakens trust in the bank-borrower relationship, as the information value of interpersonal trust between local RMs and SMEs diminishes in centralized decision-making. This, in turn, leads to poorer loan decisions, as reported in Marthon-Vik (2014).

5. It can be argued that the survey data collected from SME owner-managers, raises the concern that the construct of mutual trust reflects only one side of the bank–borrower relationship. While the survey captures only SME perceptions, the item explicitly refers to mutual trust ('mutual trust between the SME business and the relationship manager'), requiring the respondent to assess reciprocity rather than unilateral feelings. This approach aligns with established practices in the inter-organizational trust literature, where perceived reciprocity is treated as a valid proxy for mutual trust because it emerges from repeated, bidirectional interaction (Mayer, Davis, and Schoorman 1995; Zaheer, McEvily, and Perrone 1998). We thank an anonymous referee for raising this point.

6. The proportion applying for bank credit in the sample was 35.2%. This figure is comparable with the data from the quarterly SME Finance Monitor which shows a consistent fall in the number of SMEs using external finance over 2011–2014. The use of any external finance declined from 44% in 2011 to 37% in 2014 and then remained stable to 2018 at 36-38%. A quarter of SME Finance Monitor data indicate that 4–10 percentage of SMEs had the type 1 'borrowing event' (including new or renewed facilities) in a 12-month period during Q2 2015 and Q2 2017. The proportion of SMEs applying for a new debt facility was less than 3% for each of loans and overdrafts. Only 7% of SMEs were classified as 'Would-be Seekers' of bank finance. The proportion reporting a borrowing event (including Type 1 (new application or renewal), Type 2 (bank sought cancelation/renegotiation), Type 3 (SME sought cancellation/reduction)) declined from 23% in 2012 to 13% in 2016 and stabilized at 13–16%.

7. A similar matching of the distribution of the survey respondents by SIC group classification against population figures from NOMIS 2016, Office for National Statistics shows a close correspondence. Figures available on request.

8. These 7 items encompass the considerations in an analogous SME financing survey run in Japan and the Tenth Survey on Italian Manufacturing Firms (SIMF), (Ferri and Murro 2015).

9. The point is that this data are borrower perceptions. While this is imperfect, it may be sufficient for the purpose of reflecting bank standards, processes, and procedures. If there is a self-selection bias, we argue is a concern only if it is systematically related to the variables which have been excluded in our analysis

10. The factor rotation uses the oblique rotation with Horst normalization. Tabachnick and Fidell (2019) recommend using oblique rotation in the case of .32 or higher inter-factor correlations. The average inter-factor correlation here is 0.55.

11. The first factor has the largest eigenvalue and explains 89.6% of the total variation.

12. The U.K, the Banking Code Standards Board (BCSB) set up the voluntary codes with universal coverage of retail banking in their dealings with small business in the UK. The code requires participating banks to provide clear information of how an account or service works. It also requires banks to commit to train their staff to put the codes into practice. The codes were included in the Standards of Lending Practice for business customers in 2017. The answer of 'do not know' (together with the answer of 'no') as the counterfactual of the answer of 'yes' is to reflect the idea that the Relationship Manager with operational autonomy would clearly reveal autonomy (Vik 2014).

13. The results for Tables 3 and 5 exclude the Wave dummies as these were statistically insignificant. The main results were unaffected by their inclusion. The results are available on request.

14. DEMANDRELA is a binary variable that identifies the importance of relationship banking from the Survey. YES = 1, Otherwise = 0.

15. Calculated as the HHI of the following groups: Christian, Buddhist, Hindu, Jewish, Muslim, Sikh, Other Religion, No Religion, and Religion Not Stated

16. The Sobel-Goodman mediation test examines if the frequency and face-to-face interaction carries the influence of operational autonomy onto trust-based relationship banking in the screening stage. The test was conducted for the frequency and the mode of interaction, separately. The mode of interaction is coded face-to-face = 1; email and telephone = 2; and no communication = 3 and treated as a continuous variable. The p-value of the indirect effect of the frequency of interaction is p(0.027), and mode of interaction is p(0.006). The hypothesized causal chain of operational autonomy affecting the frequency/method of interaction, in turn, affecting trust-based relationship banking, holds. The results are available on request.

17. We are grateful to an anonymous reviewer for pointing this out.

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Notes on contributors

Hans Degryse Professor of Finance, Faculty of Economics and Business, Katholieke University of Leuven, Belgium ; CESIfo, CEPR.

Kent Matthews Sir Julian Hodge Professor of Banking & Finance, Cardiff Business School, Cardiff University ; Visiting Professor of Banking, Nottingham University Business School, University of Nottingham Ningbo, China

Tianshu Zhao Professor of Finance, School of Economics, University of Leicester.

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