Ethnicity and bank lending before and during COVID-19

Ethnicity and bank lending

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Abstract

Purpose – Using ethnicity as our point of focus, the authors consider the dynamics of the demand for bank loans, and the willingness of banks to supply them, as the UK economy entered the COVID-19 pandemic in early 2020 with a particular focus on potential behavioural differences on the demand-side and discrimination on the supply-side. In doing so we directly address crisis induced financial concerns and how they played out in the context of ethnicity.

Design/methodology/approach – Using the most recent ten quarterly waves of the UK SME Finance Monitor survey the authors consider whether ethnicity of the business owner impacts on the decision to apply for bank loans in the first instance. The authors then question whether ethnicity influences the banks decision to meet or reject the request for a bank loan.

Findings – The authors' pre-COVID-19 results show that there were no ethnic differences in loan application and success rates. During COVID-19, both white and ethnic business loan application rates rose significantly, but the scale of this increase was greater for ethnic businesses. The presence of government 100% guaranteed lending also increased general loan success rates, but again the scale of this improvement was greater for ethnic businesses.

Research limitations/implications – The authors show very clearly that differences in the willingness of banks to supply loans to SMEs relate very explicitly to firm specific characteristics and ethnicity either plays no additional role or actually leads to improved loan outcomes. The data is for the UK and for a very unique COVID time which may mean that wider generalisability is unwise.

Practical implications – Ethnic business owners should not worry about lending discrimination or be discouraged from applying for loans.

Social implications – The authors identify at worst no lending discrimination and at best positive ethnic discrimination.

Originality/value – This is one of the largest COVID-19 period studies into the financing of ethnic businesses. **Keywords** Financial risk, SMEs, Financing, Ethnic groups

Paper type Research paper

1. Introduction

The COVID-19 crisis has severely impacted on all businesses who face restricted trading conditions, reduced income and cash-flow problems. It follows that certain types of businesses who have been historically identified as facing more problems accessing finance might find that these problems are exacerbated given an increasing need for external capital to support operations through this difficult time. This might be particularly so for ethnic minority businesses (EMB) who have been identified as a group that make fewer funding applications due to perceived discrimination in capital markets. This reluctance to apply for funds, primarily from banks, has been associated with the theory of the discouraged borrower (Kon and Storey, 2003), defined as a business that needs external capital but is unwilling to make an application as it perceives that it will have a low chance of success. In this paper, we build on this theoretical work and a wider body of theory around credit rationing to question whether or not ethnic minority businesses were still more reluctant to make funding applications even during the most severe crisis of modern times. Our study



International Journal of Entrepreneurial Behavior & Research © Emerald Publishing Limited 1355-2554 DOI 10.1108/IJEBR-02-2021-0157 also builds on the empirical work of Fraser (2009) who identified higher discouragement for particular ethnic groups but found no evidence of discriminatory practices leading to higher loan denial. On this, we question whether there is any evidence that EMB funding proposals were received more or less favourably than those put forward by white business owners. In this sense our new research adds value in terms of understanding the state of the art picture of the state of EMB financing in crisis periods, tests established theories of capital rationing and discouragement, and provides a comparative basis for understanding how the world might have changed for EMBs over the last decade. We also add value by examining the COVID-19 context in detail which explicitly led to the UK government offering three new loan guarantee schemes with the most generous guarantee levels ever observed in the UK.

Research interest in ethnic differences in the financing of small businesses has a long and rich tradition (Curran and Blackburn, 1993; Jones *et al.*, 1994; Blanchflower *et al.*, 2003). This is wrapped up in a wider set of concerns about more general access to finance for small businesses and the potential for credit constraints to inhibit their activities and limit their growth potential (Beck and Demirguc-Kunt, 2006). Linking the two, it has been a longstanding concern that whilst credit rationing is a persistent feature of small business capital markets, ethnic minority business (EMB) owners face more severe rationing and capital constraints than the wider population of small businesses (Ram *et al.*, 2003). But this concern is not strictly limited to the willingness of banks to offer loans to ethnic minority business of EMB owners to put forward loan applications (a demand constraint). In this paper we add a further novel dimension to these wider debates by analysing the impact of the 2020 COVID-19 crisis upon bank lending behaviours towards EMBs in the UK.

This is a particularly important extension to the recent body of work on the financing of EMBs given the important lessons from the Global Financial Crisis in 2008–2009 which clearly established the huge and negative impacts on small firms across the world (Cowling *et al.*, 2012; Vermoesen *et al.*, 2013; Lee *et al.*, 2015; Demirgüç-Kunt *et al.*, 2020), and specifically the tightening of general credit conditions and lending standards (Piacentini, 2013; Duarte *et al.*, 2017). While the COVID-19 period body of work is still emerging and expanding, it is evident in general that capital market problems have re-emerged as an issue (Lu *et al.*, 2020; Cowling *et al.*, 2020b) on both the debt and equity sides (Brown *et al.*, 2020). Once again small businesses are front and centre of this fall-out (Juergensen *et al.*, 2020) which strengthens our case for seeking to understand whether or not potentially deep-rooted behaviours and practices on both sides of the market for bank loans have become more or less entrenched in this unique global pandemic.

Our new research directly contributes new knowledge to our understanding of how the COVID-19 crisis impacted on the ability of ethnic businesses to manage their finances through this unprecedented period, and we derive specific hypotheses relating to our overarching aim which is to establish how ethnicity might influence patterns in loan application rates and also the willingness of banks to meet the loan demands put to them. Our approach initially focuses on the demand-side of the lending market and then moves on to consider key aspects relating to the supply-side, and both strands are considered through the lens of ethnicity of the business owner.

The paper is structured as follows. In the next section we outline our theoretical framing regarding ethnicity and its impact upon entrepreneurial activity with a focus upon capital market and access to debt constraints. We then report our empirical data and the descriptive statistics. This is followed by a set of regression models for loan demand and loan supply. We finish by discussing the implications of our findings and how COVID-19 changed the environment for ethnic business and their financing.

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2. Literature review and theoretical framework

Research has found that ethnic businesses have some unique behavioural characteristics that influence and shape the capital structures of their businesses at start-up and beyond (Hussain and Matlay, 2007; Howell, 2019). In general, these behavioural preferences have been found to reduce the demand for bank loans, as indeed all other forms of external capital, and an important aspect of our demand-side empirical analysis will test whether the COVID-19 crisis exacerbated these deep-rooted behaviours or in any way began to erode them. Our supply-side analysis will help establish whether ethnic businesses have equal (or unequal) access to bank loans when they put forward an application and, whatever the pre-COVID-19 starting point, identify whether loan-supply conditions have improved – stayed the same – or worsened for ethnic businesses.

2.1 Ethnic small business demand for credit

Research has identified some very specific factors that influence patterns in how ethnic businesses configure their finances and how they capitalise their operational requirements for cash and also their formal investment activities. Hussain *et al.* (2008) find evidence that ethnic business owners have lower educational attainment on average and argues that this results in a lower demand for loans. This corresponds to a growing body of work that identifies a very specific gap in terms of borrowing behaviour and financial literacy (Eniola and Enteberg, 2016), but also a broader body of work, much of it in developing countries, that focuses on developing financial literacy (Abubakar, 2015) and embedding it into entrepreneurship courses (Saptono, 2018) to improve the quality of entrepreneurship *per se* (see Calcagno *et al.*, 2019; for an excellent review). This has empirical support in a Canadian study (Wise, 2013), who found that new venture survival rates were enhanced by financial literacy which improved loan repayment rates and generally the quality of financial reporting, thus simultaneously improving credit scores and reducing information asymmetries, both of which are at the heart of the SME credit rationing and financial constraints literature.

There are other very nuanced and important features that distinguish ethnic businesses in the context of their financing. For example, Hussain and Matlay (2007), in their UK study, identified a stronger preference for using informal sources of capital. This finding was reinforced in a Chinese study by (Howell, 2019) who compared financing patterns for Han and non-Han ethnic businesses and found that minority ethnic businesses had a clearer preference for internal finance and that when they had exhausted all their internal resources their first choice was to seek external capital but from informal sources rather than traditional finance providers (e.g. banks). Further evidence from China (Yano and Shiraishi, 2015) reported that within the EMB sector there was a marked reluctance to extend trade credit to each other.

The dependency upon informal funding is consistent with a lower tolerance for risk although this has not been formally established in the context of ethnic businesses in the same way it has been in relation to gender (Cowling *et al.*, 2020a). However, it has been identified in wider studies which found evidence that ethnic minorities were less likely to invest in pension plans and in stocks and shares (Brown, 2007), and in hypothetical risk aversion games where indigenous black people and immigrants to the US were found to have a lower tolerance for risk taking (Fang *et al.*, 2013). Risk is central to entrepreneurship *per se*, but specifically in the context of the financing of entrepreneurship. This would imply that certain ethnic and immigrant groups, when they are business owners, have a lower demand for formal sources of finance such as bank loans which derives from their risk-aversion.

However, there is one other form of demand-side constraints where credit-worthy businesses with a latent demand for capital may choose not to apply, and hence become discouraged from borrowing (Kon and Storey, 2003). As shown in a series of recent empirical

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studies, discouraged borrowers may self-select out of the capital market based on their perception of the true capital supply, determined by factors including the riskiness of the firm (Han *et al.*, 2009; Cole and Sololyk, 2016), entrepreneurial human capital (Kon and Storey, 2003; Cowling *et al.*, 2016), and firm-bank relationships (Chakravarty and Yilmazer, 2009; Berger and Black, 2011). In a study of UK SMEs, Cowling *et al.* (2016) find that while the level of discouragement is quite low (2.7% of the total UK small business population), more than half of them (56%) would have got loans if they had applied. Therefore, their inherent higher business risk and reliance on informal rather than formal business banking relationships mean that EMBs are likely to *a priori* have higher incidence of discouragement, or lower application rate.

A particularly informative paper which shaped our thinking in this regard is that of Fraser (2009) who studied the entire process of how EMB engage (or not) with capital markets, elements of historical risk that might shape the banks decision to lend (or not) and aspects of the loan contracting process including the price of loans and the willingness of banks to supply them. Importantly, this study also used a fine grained ethnic classification, supported by an ethnic booster sample) and teased out some insightful findings. His detailed work established several features apparent for different ethnic groups including a higher rate of historical financial delinguency amongst black African business owners, which would be a red flag to a lending bank, However, this "bad" track record did not explicitly result in higher loan denial, but rather an upwardly risk-adjusted interest rate offer to compensate the bank for lending to higher risk classes of business. On borrower discouragement *per se*, the author found that Indian and Black Caribbean business owners had a higher rate of discouragement than all other white and non-white ethnic groups. What makes these findings particularly intriguing is that the general result was that there was no bank discrimination in terms of their willingness to offer loans to those that applied across any ethnic (white or non-white) groups of businesses. These implies that this self-exclusion from the market for loans is driven by erroneous assumptions.

Thus, we are able to put forward two hypotheses which relate to the potential for relative risk-aversion to impact on lending behaviour and also the potential for borrower discouragement to reduce loan application rates. We also consider the unique context that is the Covid-19 crisis which may reduce the availability of internal and informal funding and hence increase the demand for formal lending.

- *H1a.* Ethnic business owners will have a lower demand for bank loans due to relatively lower risk tolerance.
- *H1b.* Ethnic business owners will have a lower demand for bank loans due to borrower discouragement.

2.2 Ethnic small business supply of credit

It is well documented in the theoretical and empirical literature that banks make their lending decisions with less than perfect information (Stiglitz and Weiss, 1981) or under conditions of asymmetric information typically assumed to favour the business rather than the bank (Sharpe, 1990) in terms of determining the true underlying quality of the funding proposal and the business. It follows that banks use easily verifiable information to inform their lending decisions, and indeed all of the large banking groups and new Internet based banks have invested billions in developing IT infrastructure to support this hard information based decision-making process (Dandapani *et al.*, 2018). However, this shift away from relational banking conducted at a local level has meant that the ability to transfer detailed soft information from business customer to bank has diminished (Hasan *et al.*, 2017) which may particularly impact on smaller, more informationally opaque businesses.

The efficiency of the loan decision process thus relies on easily observable and verifiable characteristics related to the risk of default such as business age, size, and length of the relationship, and incidences of financial misconduct (Cowling *et al.*, 2012; Fraser, 2009). Where the bank observes additional lending risk is where businesses are smaller, younger, have a shorter banking relationship, and incidences of financial delinquency. In these cases the requirement for collateral to mitigate against identifiable risk increases (Coco, 2000). Typically this requirement favours entrepreneurs with greater personal and business assets which is not a particularly useful measure of true underlying entrepreneurial ability and may disadvantage certain types of entrepreneurs including those from ethnic minority backgrounds. These features of banking lending behaviours have led to the propagation of loan guarantee schemes throughout the world (Cowling, 2010) and are explicitly designed to prevent credit rationing of "good" businesses who lack collateral or track record.

In the unique context of the COVID-19 crisis, if banking behaviours followed normal crisis patterns then we would expect that lending standards increase leading to fewer loan applications that meet the new higher benchmark (Lown and Morgan, 2006). Equally, in a normal economic recession we would also observe a reduction in the demand for loans (Cowling *et al.*, 2015). But the COVID-19 crisis is unique in the sense that for a large part of the period since 17 March 2020 the UK economy has been in a full-lockdown (extremely limited trading activity) or at least a partial lockdown (some sectors of the economy were allowed to trade and some were not).

It is clear that the COVID-19 crisis has created huge uncertainty which is separate from more general risk although both would lead banks to adopt a more cautious approach to lending. In particular, the requirement for collateral to secure loans against would be a typical crisis response. If any subjective discrimination on the supply-side of the loan market exists than it should manifest itself even more in crises. However, in the context of observable and explicit empirical evidence of any form of discrimination *per se*, the empirical evidence is sparse in studies that use large data sets and robust methodologies. For example, Cheng (2015) in the US and Fraser (2009) in the UK found no evidence of ethnic bias in lending. This does contrast with a German study (Bruder *et al.*, 2011) which examined ethnicity and financing in the start-up period and found that ethnic entrepreneurs were more likely to be denied loans and even if they got offered them they would be smaller loans. However, even this study suggested that rather than evidence of explicit discrimination it reflected to a large degree by differences in length of banking relationships, lack of assets and collateral, and lower language and financial literacy.

Regarding loan supply, we propose three hypotheses;

- *H2a.* Ethnic business owners will have a higher loan rejection rate due the presence of more personal characteristics that are viewed as high-risk indicators by banks.
- *H2b.* Ethnic business owners will have a higher loan rejection rate due the presence of more firm characteristics that are viewed as high-risk indicators by banks.
- *H2c.* Ethnic business owners will have higher loan rejection rates due to discrimination in the loan approval process.

2.3 The effect of COVID-19 pandemic

The COVID-19 crisis began to unfold in late 2019 but really accelerated in the first few months of 2020. National and international responses to the crisis were quite different with Sweden adopting a laissez faire approach whilst South Korea, Germany, and the UK took a more restrictive approach with tight lockdowns and closure of non-essential business activities. Our initial consideration of how ethnicity impacts on the demand for bank loans and the willingness of banks to meet loan requests remains valid but the specific UK government response to the crisis must be considered in this context.

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Within one month of the crisis a new UK government Business Impact of Coronavirus survey was launched and found that nearly half of all UK businesses reported lower than normal sales. Further problems relating to access to raw materials and unavailability of workers due to COVID-19 were also identified alongside a lack of confidence that businesses had the financial resources to manage their way through the crisis. On this, Cowling *et al.* (2020b) estimated that 8.6% of UK businesses entered the crisis with no cash savings and predicted that around 125,000 and 1.2m jobs were at risk of immediate closure. The UK government response was to design and implement three separate but related loan guarantee schemes with specific intended target groups. Within six months more than £60bn of lending to more than 1.4m UK businesses was being supported through three guarantee schemes. The three schemes are detailed in Table 1.

These guarantee schemes, particularly the BBL which has a 100% guarantee and CBILs (SME version) which has an 80% guarantee, as well as interest rate offset for 12 months, are unprecedented in terms of the scale of the guarantee and the zero first year interest payments. Given these schemes are estimated to account for more than 93% of all bank lending during the Covid-19 crisis to SMEs their presence appears to have fundamentally changed the banks appetite for crisis lending through their de-risking guarantee coverage. In the light of this we propose one additional hypothesis.

- *H3.* Ethnic business owners will have a higher demand for formal bank loans due to their inability to finance their businesses from internal and informal sources in the COVID-19 pandemic.
- *H4.* The use of CBILS and BBL schemes will increase the share of total lending accounted for by EMBs during the COVID-19 pandemic.

3. Data and variables

3.1 Sample

We collect our data from the UK SME Finance Monitor (UKSMEFM) surveys dataset, conducted by BDRC Continental. Our data covers ten waves of the UKSMEFM, the first survey wave being Quarter 2 of 2018, with subsequent waves undertaken quarterly until Quarter 3 of 2020. In total this represents 45,018 completed surveys. In order to qualify for interview, firms had to meet the following criteria in addition to the quotas by size, sector, and region:

- (1) not 50% + owned by another company
- (2) not run as a social enterprise or as a not for profit organisation
- (3) turnover of less than £25m
- (4) The respondent was the person in charge of managing the business's finances. No changes have been made to the screening criteria in any of the waves conducted to date.

Quotas were set by size of business and by number of employees. The classic B2B sample structure over-samples the larger firms compared to their natural representation in the small firm population. In order to generate robust sub-samples of larger firms, fewer interviews were conducted with zero employee ventures. Each quarter's sample matched that of the previous quarter results as closely as possible. Quotas were set to reflect the natural profile by sector, but with some amendments to ensure that a robust sub-sample was available for each sector. Thus, fewer interviews were conducted in Construction and Property/Business Services to allow for interviews in other sectors to be increased, in particular for Agriculture

	Bounce back loan scheme	Coronavirus business interruption loan scheme	Coronavirus large business interruption loan scheme	Ethnicity and bank lending
Launch Date Eligibility	4 May 2020 No business size restrictions	23 March 2020 Maximum turnover £45 million	20 April 2020 Minimum turnover £45 million	
	Must not be in a restricted- sector ¹	Must not be in a restricted sector	Must not be in a restricted sector	
	Businesses self-certify that they were not a "business in difficulty" on 31 December 2019; not-bankrupt; in liquidation; or in a similar situation	Must have a borrowing proposal that the lender would consider viable under normal circumstances	Must have a borrowing proposal that the lender would consider viable under normal-circumstances	
	Applicant must be carrying on-business on 1 March 2020 Companies can only access one of the schemes	Companies can only access one of the schemes	Companies can only access one of the schemes	
Use of proceeds	Businesses self-certify that they will use the loan only to provide economic benefit to the business, and not for personal purposes	Lenders check that the loan is for a suitable business purpose	Applicants provide a "borrowing proposal" for which lenders believe the finance will enable the business to trade out of any short-to medium-term difficulty Companies borrowing more than £50 million will be subject to further restrictions on dividend payments, senior pay and share huwbacks	
Support offered per company	Up to 25% of turnover or a maximum loan of £50,000 (minimum of £2,000) ²	$\pounds 50,001$ to $\pounds 5$ million	Up to £200 million	
Interest rate	Government pays first year of-interest ³	Interest rate varies by lender Government pays first year of interest and fees	Interest rate varies by lender	
Repayment period	Six years, starting after the first year; option to extend to 10 years	Up to six years	Up to three years	
Finance Type	Term loans	Term loans, overdrafts, invoice finance and asset finance	Term loans, overdrafts, invoice finance and asset finance	
Early Repayment	Free of charge	Varies by lender	Varies by lender	
Government Guarantee	100%	80%	80%	
Closure Date	31 March 2021	31 March 2021	31 March 2021	

Note(s): ¹ Restricted sectors are banks, building societies, insurance companies, public-sector organisations and state-funded primary and secondary schools. Lenders may apply additional business sector restrictions if-part-of-their overall business strategy ² From 10 November, it was announced participating lenders in the scheme are able to offer smaller businesses

² From 10 November, it was announced participating lenders in the scheme are able to offer smaller businesses across the UK a "top-up" to their existing Bounce Back Loan if they originally borrowed less than the maximum amount available to them

³ On 24 September, the Chancellor of the Exchequer announced changes to the Bounce Back Loan Scheme terms, including the end date of the Scheme. Changes also include flexibility for the borrowers in difficulty to take payment holidays, temporarily pay only the interest on the loans, or extend the repayment period

Table 1. COVID-19 business loan support scheme design features IJEBR and Hotels. The weighting regime was initially applied separately to each quarter. The ten quarters were then combined and grossed to the total of 5,002,010 SMEs, based on BIS 2015 SME data. This ensured that each individual wave is representative of all firms whilst the total interviews conducted are also weighted to the total of all firms. After eliminating missing values, our data set contains 35,446 observations.

3.2 Dependent variables

Table 2. Variable definitions Panel A of Table 2 shows the definition of dependent variables, which capture demand for, and bank supply of, external finance. Both variables are binary and static in nature. Demand for finance is defined as whether entrepreneurs reported having sought/applied for finance for their ventures in the previous twelve months. We only focused on new loan applications and thus excluded early repayment or automatic renewal of loans. Supply of finance is defined as whether the firm obtained (all or part of) the finance required. However, we are particularly interested in SME access to finance *during* the COVID-19 pandemic, and the original 12-month trailing demand and supply measures may also cover non-pandemic periods. Therefore, for Q2 and Q3 2020 surveys, we use the additional pandemic-related

Panel A: Dependent	t variables Variable	
Group	Name	Definition
Demand for finance	APPLY	= 1 if firm applied for finance in the past 12 months (=1 if applying for extra funding related to COVID-19 pandemic if $COVID = 1$); 0 otherwise
Supply of finance	GOT	= 1 if firm received at least part of the finance applied for; 0 otherwise
Panel B: Independe Group	nt variables Variable Name	Definition
<i>Firm-characteristics</i> Ethnic background	MINORITY	= 1 if owner ethnic background is non-white; 0 otherwise
Time indicator Size	COVID EMP	= 1 if survey wave $= Q2$ or Q3 2020; 0 otherwise Number of employees including the owner
Legal status	LEGAL	1 = Sole Proprietor, 2 = Partnership, 3 = Limited Liability Partnership, 4 = Limited Liability
Industry sector	SECTOR	1 = Primary, 2 = Manufacturing, 3 = Construction, 4 = Wholesale/ Retail, 5 = Hotels/Catering, 6 = Transport and Communications, 7 = Business Services, 8 = Health, 9 = Other Community
Age	FIRM_AGE	1 = <12 months, $2 = 1-2$ years, $3 = 2-5$ years, $4 = 6-9$ years, $5 = 10-15$ years, $6 = >15$ years
Region	REGION	1 = Scotland; 2 = North/North East; 3 = Yorkshire/Humberside; 4 = North West; 5 = West Midlands; 6 = East Midlands; 7 = East of England; 8 = Wales; 9 = South West; 10 = London; 11 = South East: 12 = Northern Ireland
Performance	PROFIT FAST_GROW	 = 1 if firm made a surplus over the past 12 months; 0 otherwise TH = 1 if firm grew by 20% or more by two consecutive years; 0 otherwise
<i>Other controls</i> Growth intention	AIMGROW	= 1 if firm aimed to grow the business in the next 12 months; 0 otherwise
Financial constraints	FINPROBLEM	f = 1 if firm saw cash flow and/or external finance as main growth obstacle; 0 otherwise

questions to gauge the financing activities during the pandemic. Specifically, the survey asked whether or not the firm had requested extra external funding because of the impact of the pandemic, and the outcome of the request. On average between Q2 2018 and Q3 2020, 4% SMEs made an application for external finance, around three-quarters of which (73%) have got at least part of the finance sought.

3.3 Explanatory variables

Our primary explanatory variables capture the ethnicity of the SME owner-managers and the timing of the financing activity. A firm is defined as an ethnic-minority business (*MINORITY*) if the ethnic background of the owner-manager does not fall into any of the three categories: "white-British", "white-Irish" or "any other white background". The pandemic time indicator (*COVID*) is defined as a dummy variable equal to one for Q2 and Q3 2020 surveys, and zero otherwise.

We also include a series of firm-level control variables for the supply for and demand of finance that are generally related to the development stage of the venture and the degree of information opacity between the venture and finance suppliers, which have been shown to be significant by prior studies. Panel B of Table 2 reports the detailed definitions of those explanatory variables, which measure venture size, legal status, sector, region, age and performance. Size is measured by number of employees. Legal status is defined by four categories including sole trader, partnership, limited-liability partnership and limited-liability companies. Sector is defined as nine one-digit SIC codes. Age is defined in six categories from less than 12 months old to more than 15 years old. We have two measures of performance available; first, the annual profit/loss of the firm and second, a fast-growth identifier variable.

We further consider two additional control variables regarding the manager's selfperceptions on business growth and external financing needs. The former measures the entrepreneurial growth objective, proxied by a dummy variable indicating whether or not the owner-manager aims to grow the business over the next year. The latter is an indicator variable equal to one if the survey respondent reported cash flow or accessing external finance as one of the main obstacles to business growth, and zero otherwise.

3.4 Descriptive statistics

Figure 1 demonstrates the dynamics of loan demand and supply over ten waves of the Finance Monitor data. The first observation is the notable thin market for external finance over the two years leading to the pandemic, compared to an average of 5% in 2017 (BDRC, 2018). There is a substantial surge in finance demand as the UK entered into the pandemic, with the proportion of SMEs applying for external funding increased by more than ten-fold since the first national lockdown in March 2020. The supply of finance, measured by the percentage of successful SME applicants, is relatively stable over time, albeit a clear upward trend since 2020. Of course, this could be due to the increase in the finance applications and approvals for non-commercial funding such as government COVID subsidies or grants, which we are not able to separate from the pandemic-related finance measures. However, even if we use the original 12-month trailing finance demand measure, finance application has increased by over four times for the last two waves of the survey. Moreover, as reported in the online Appendix, our regression results are very similar using the alternative measure, suggesting the robustness of our empirical methodology.

Table 3 reports the descriptive statistics of dependent and independent variables for the full sample, and by owner ethnic background. All statistics are weighted so that the figures are representative of the UK small business population. It is shown that only 6% of UK SMEs are owned by ethnic minorities. The proportion of loan applications is more than two percentage-points higher for SMEs run by ethnic minority owners, and the difference is



significant at 5% level. Further decomposing the credit demand by ethnic group and over time suggests a universal higher proportion of loan application by minority-owned SMEs, particularly during the pandemic (Figure 2). The difference in the likelihood of successful application though, is statistically insignificant between minority- and non-minority-owned businesses. The temporal trend in credit supply between minority- and non-minority-owned businesses is less obvious (Figure 3). Here we observe a relatively stable loan approval rate over time by non-minority-owned SMEs, consistent with general supply dynamics. However, given the small number of ethnic minority applicants in each survey waves (e.g. only one applicant in Q1 2020 which was rejected), there is unsurprisingly a higher volatility in credit supply for minority-owned firms. On average, minority-owned businesses are smaller and younger, and more likely to be financially constrained, as seen in their lower profitability and larger growth obstacle caused by cash flow shortage or difficulties in accessing external capital. These characteristics suggest a higher degree of business risk for minority-owned firms with a greater possibility of financial delinquency.

4. Empirical results

Since both dependent variables are binary variables, probit models are used to examine the external finance demand and supply. In all cases, we first look at the individual effect of owner ethnic background and the COVID-19 pandemic, then by breaking the sample by minority-background before and during the pandemic (Table 4).

Models I and II reports the coefficient estimates for the probability of firm applying for external finance. In line with the pecking order theory, SMEs will only turn to external finance if all internal sources have been exhausted. Here firms with cash flow problems or insufficient internal capital to support growth (*FINPROBLEM*) are more likely to apply for finance

Variable name	Full (N = Mean	sample 34,496) Std dev	MINO (N = Mean	(1) RITY = 0 32,835) Std dev	MINO (N = Mean	(2) RITY = 1 : 1,661) Std dev	t-test (1)=(2)	Ethnicity and bank lending
Dependent Variables								
APPLY GOT	$0.040 \\ 0.727$	$0.197 \\ 0.446$	0.039 0.726	$0.193 \\ 0.446$	0.062 0.741	$0.241 \\ 0.440$	**	
Independent Variables MINORITY	0.064	0.244						
COVID	0.177	0.382	0.175	0.380	0.205	0.404		
EMP LEGAL	3.704	10.046	3.727	10.155	3.360	8.281	***	
Sole proprietorship	0.612	0.487	0.618	0.486	0.527	0.499	**	
Partnership	0.036	0.186	0.036	0.187	0.030	0.170	**	
Limited liability partnership (LLP)	0.017	0.128	0.016	0.127	0.022	0.145		
Limited liability (LTD)	0.335	0.472	0.329	0.470	0.422	0.494		
SECTOR								
Primary	0.032	0.175	0.033	0.180	0.004	0.062	***	
Manufacturing	0.055	0.228	0.056	0.230	0.039	0.194	***	
Construction	0.186	0.389	0.192	0.394	0.095	0.294	***	
Wholesale/retail	0.103	0.305	0.098	0.297	0.184	0.387	***	
Hotels/catering	0.037	0.188	0.036	0.187	0.043	0.203	***	
Transport and communications	0.119	0.324	0.117	0.322	0.149	0.357	***	
Business services	0.274	0.446	0.272	0.445	0.303	0.460		
Health	0.075	0.264	0.075	0.264	0.074	0.262	***	
Other community	0.118	0.323	0.119	0.324	0.108	0.311		
FIRM AGE								
<12 months	0.051	0.220	0.048	0.213	0.097	0.296	***	
1–2 years	0.157	0.364	0.154	0.361	0.195	0.397	***	
2–5 years	0.143	0.350	0.138	0.345	0.214	0.410	***	
6–9 years	0.133	0.339	0.132	0.338	0.145	0.353	***	
10–15 years	0.152	0.359	0.152	0.359	0.151	0.358		
15+ years	0.365	0.481	0.377	0.485	0.198	0.399	***	
REGION								
Scotland	0.062	0 240	0.064	0 245	0.026	0 159	***	
North/North Fast	0.031	0.172	0.032	0.175	0.013	0.100	***	
Yorkshire/Humberside	0.071	0.257	0.071	0.258	0.064	0.245	**	
North West	0.099	0.299	0102	0.302	0.061	0.239	***	
West Midlands	0.070	0.255	0.069	0.253	0.082	0.275	***	
East Midlands	0.072	0.258	0.072	0.259	0.059	0.236		
East of England	0.099	0.299	0.101	0.301	0.073	0.260	**	
Wales	0.040	0.197	0.042	0.200	0.019	0.138	***	
South West	0.103	0.304	0.108	0.311	0.023	0.151	***	
London	0.170	0.376	0.150	0.357	0.473	0.499	***	
South East	0.163	0.369	0.167	0.373	0.103	0.304	***	
Northern Ireland	0.022	0.146	0.023	0.150	0.003	0.055	***	
PROFIT	0.746	0.436	0.756	0.430	0.597	0.491	***	
FAST_GROWTH	0.042	0.202	0.042	0.200	0.051	0.219		
AIMGROW	0.471	0.499	0.467	0.499	0.530	0.499	***	Table 9
FINPROBLEM	0.122	0.327	0.117	0.322	0.193	0.395	***	Variable descriptive
Note(s) : Except for $GOT(N = 1,960)$ businesses, respectively), where dat	6 for full a is only	sample, an collected f	d 1,839 a or firms t	nd 127 for i that applied	non-mino d for fina	rity- and m nce	ninority-owned	statistics (sample weight applied)



	Model I Probit	Model II Probit	Model III Probit	Model IV Probit	Model V Prob	it with selection	Model VI Probi	t with selection
Variable name	(APPLY)	Prob (APPLY)	Prob (GOT)	Prob (GOT)	(APPLY)	APPLY	APPLY)	Prob(GOI APPLY)
MINORITY	0.083		0.070		0.073	0.172		
COVID	1.533*** 0.050		0.325**		1.528***	1.329*** 1.0000		
Non-MINORITY (COVID)	(000.0)	1.537***	(ect.0)	0.317**	(100.0)	(000.0)	1.533 * * *	1.321^{***}
MINORITY		(0.059) 0.110		(0.159) 0.010			(0.058) 0.106	(0.091) 0.090
MINORITY (COVID)		(0.174) 1.602***		(0.470) 0.405			(0.172) 1.582***	(0.275) 1.513*** 0.1777)
<i>Control variables</i> In <i>(EMP)</i>	0.096***	(nct.u)	-0.083	(0.270) —0.082	0.098***	0.037	(17T.0)	(7770)
Partnership	(0.021) -0.393***	(0.021) -0.393***	(0.054) -0.709**	(0.054) -0.708**	(0.021) -0.384***	(0.035) -0.612***	(0.021) -0.383***	(0.035) -0.609***
Ltd liability partnership	(0.124) -0.281**	(0.124) - 0.281 **	(0.283) -0.755***	(0.283) -0.753***	(0.124) -0.279**	-0.606***	(0.124) -0.279**	(76170) (76170)
Ltd liability	(0.112) -0.130	(0.113) -0.130	(0.240) -0.511**	(0.239) -0.510**	(0.112) -0.123	(0.174) -0.353**	(0.112) -0.124	(0.174) -0.348**
Manufacturing	(0.109) -0.151 (0.107)	(0.110) -0.151 (0.167)	(0.233) -0.514**	(0.234) -0.513**	(0.109) -0.150	(0.165) -0.370**	(0.109) -0.150 (0.167)	(0.164) -0.366** (0.162)
Construction	(701.0) (001.0)	(101.0)	-0.658***	(0.241) -0.657*** (0.955)	(701.0) -0.011 (001.0)	-0.336^{*}	-0.012	(0.100) -0.331* (0.105)
Wholesale/retail	-0.305*** -0.305***	-0.305^{***}	(0.204) 0.559** (0.999)	(0.233) 0.557** (0.333)	(0.120) -0.303*** (0.100)	-0.501*** -0.501***	(0.120) -0.304*** (0.108)	-0.495*** -0.495***
Hotels/catering	(0.109) -0.261^{*}	-0.260*	(0.22.0) 0.568*	-0.570 -0.570	-0.257^{*}	(101.0) 0.471**	(0.100) 0.257*	0.100) -0.473**
								(continued)
Cr								Et ba
, edit den supply								hnicit ank le
Fable 4 nand and by ethnic groups								y and nding
1 3							•	ļ

IJEBR	ion –	*			ť										*	(pəm
	it with select Prob(GO3 APPLY	(0.198) -0.619**	(0.193) 0.140	(0.138) -0.082	(0.208) 0.282**	0.332	0.274	(0.198) 0.249 (0.202)	(0.207) 0.283 0.209	0.109	(0.192)	(0.086) 0.162 0.165)	(001.0)		-1.974^{**}	(contin
	Model VI Prob Prob (<i>APPLY</i>)	(0.142) -0.204*	0.120)	(0.095) -0.056	(0.131) 0.215*** 0.066)	0.216*	0.339***	(0.129) 0.204 (0.124)	(0.134) 0.207 (0.122)	(0010) (0010)	-0.074	(0.059) 0.292*** 0.102)	0.032	(0.047) 0.495*** 0.079)	-2.537***	
	$\begin{array}{l} \text{with selection} \\ \text{Prob}(GOT \mid \\ APPLY) \end{array}$	(0.199) -0.632***	(0.194) 0.144	(0.140) -0.090	(0.212) 0.284*** 0.000	0.337	0.275	(0.200) 0.256	(0.208) 0.284 0.202)	0.114	-0.016	(0.087) 0.158 0.124)	(+01.0)		-1.972^{***}	
	Model V Probit Prob (<i>APPLY</i>)	(0.142) -0.202*	0.120)	(0.094) -0.055	(0.132) 0.215^{**}	0.216*	0.340***	(0.129) 0.205	0.208 0.208 0.124)	(FCT.0)	(0.123)	(0.059) 0.292*** 0.1020	0.032	(0.047) 0.495*** 0.071)	-2.535^{***}	
	Model IV Probit Prob (GOT)	(0.297) -0.974***	0.068	(622.0) 190.0–	(0.348) 0.202 (0.158)	0.326	060.0	(0.308) 0.173	(0.320) 0.283 0.204)	0.201	(0.280) 0.164 0.100	(0.139) 0.233 40.957)	(1070)		0.811^{**}	
	Model III Probit Prob (GOT)	(0.297) -0.979***	0.070	(0.226) -0.093	(0.348) 0.203 (0.150)	0.328	0.090	(0.308) 0.176 (0.200)	0.283 0.283 0.201)	0.203	(0.280) 0.165 (0.100)	(0.139) -0.234 (0.956)	(007.0)		0.805**	
	Model II Probit Prob (APPLY)	(0.142) -0.207*	(0.121)	(0.09) -0.059	(0.130) 0.212*** (0.065)	0.220*	0.339***	(0.129) 0.218 (0.155)	(0.131) 0.221* 0.121)	0.085	(0.123) -0.074 (0.070)	(0.059) 0.296*** 0.105)	0.064	(0.000) 0.503*** 0.064)	-2.562^{***}	
	Model I Probit Prob (<i>APPLY</i>)	(0.142) -0.206*	0.105	(0.095) -0.059 201	(0.131) 0.212*** 0.065)	0.221*	0.340	(0.129) 0.219 6.1953	(0.135) 0.222* 0.125)	(0.010) 0.086 0.086	(0.123) -0.074 0.070	(0.059) 0.296*** 0.105)	0.064	(0.000) 0.502*** 0.064)	-2.560^{***}	
Table 4.	Variable name	Transport and com	Business services	Health	Other community	1–2 years	2–5 years	6–9 years	10–15 years	15+ years	PROFIT	FAST_GROWTH	AIMGROW	FINPROBLEM	CONSTANT	

election (GOT PLY)	51) ietorship;	Ethnicity and bank lending
robit with s Prob <i>AP</i>	(0.3 Sole propr	
Model VI P Prob (<i>APPLY</i>)	$\begin{array}{l} (0.172) \\ \mathrm{Yes} \\ 34,496 \\ 1,966 \\ 1,966 \\ -551,737 \\ 16.97^{***} \\ 16.97^{****} \end{array}$	
bit with selection Prob(GOT APPLY)	(0.351) plied. Base categories	
Model V Pro Prob (<i>APPLY</i>)	(0.172) Yes 34,496 1,966 1,966 -551.799 17.72***	
Model IV Probit Prob (GOT)	(0.411) Yes 1,966 0.058 53.00*** -87.178 ard errors reported	
Model III Probit Prob (GOT)	(0.409) Yes 1,966 0.058 52.87** -87.181 : robust stand	
Model II Probit Prob (<i>APPLY</i>)	(0.173) Yes 34,496 0.292 1,008.11**** -468.180 -468.180 c 0.01. Asymptoti	
Model I Probit Prob (<i>APPLY</i>)	$\begin{array}{l} (0.173) \\ \text{Yes} \\ 34,496 \\ 0.292 \\ 1,007.73*** \\ -468.190 \\ b < 0.05; ***p \\ RM_AGE = 0-1 \end{array}$	
Variable name	Region effect N Obs Uncensored Obs Adjusted R^2 Wald χ^2 Log-likelihood γ^2 (rho = 0) Note(s): * $p < 0.10; **_1$ SECTOR = Primary; FI	Table 4.

 $(\beta = 0.50, p < 0.01)$. As a proxy for internal fund availability, profitability is also negatively related to finance-seeking, but the coefficient is statistically insignificant. A possible explanation is the large variations in the profitability of SMEs and its ability to satisfy the financing needs, which are not captured in our data set. Our findings regarding the effect of the key business characteristics conform to the previous research, that larger and older businesses have a higher chance of application. Fast growing SMEs also exhibit higher external capital demand (($\beta = 0.30, p < 0.01$), in order to fund the businesses' need for sustainable growth.

In contrast to the univariate analysis, there is no evidence of differing financing demand between minority-owned businesses and their counterparts, as shown in Model I. However, there is a positive and significant effect of the pandemic on finance demand ($\beta = 1.53$, p < 0.01). In marginal terms, the likelihood of finance application increases by ten percentage points during the pandemic. The finding is re-enforced when we further categorise the sample by both owner ethnic background and the timing of the financing activity. Here we find an increase in capital demand for both non-minority-owned ($\beta = 1.54$, p < 0.01) and minority-owned ($\beta = 1.60$, p < 0.01) businesses, with similar marginal effect.

Models III to VI report the coefficient estimates on the probability of successful finance application. Models III and IV serve as the benchmark specifications using the unconditional probit model. It can be seen that whilst the supply of finance increased significantly during the pandemic, there is still little evidence of discriminating treatment of minority-owned businesses when banks made lending decisions. However, the coefficient estimates from the unconditional probit model can be subject to selection bias because naturally, the outcome of a finance application is non-random and only recorded if a firm actually sought finance (Cosh et al., 2009). As both dependent variables are binary, a Heckman style, probit model with selection is used and the maximum likelihood coefficient estimates are reported in Models V and VI. For the identification to be valid, the model requires that the selection (i.e. Prob(APPLY) equation includes at least one variable that is not included in the main probit (i.e. Prob(GOT)) equation. In our case, the owner-manager's self-reported growth intention and perception on financial constraint are used as the exclusion restrictions, as defined in the previous section. Such choice is theoretically justified, because both variables are unobservable by the lenders but found to be significant in explaining the finance-seeking behaviour by individual businesses (Michaelas et al., 1999; Psillaki and Daskalakis, 2009). Therefore, the variables are valid determinants of credit demand, but should be irrelevant to the credit supply function by construction.

For both specifications, the chi-test of independence between the selection and main equations is rejected at 1% level, indicating the existence of selection bias and the validity of our model. Therefore, our discussions on credit supply will be based on the coefficient estimates from the last two models in Table 3. Not surprisingly, the coefficient estimates on the selection equations are nearly identical to those reported in Models I and II. However, those on the outcome equations are substantially different from the unconditional models, again suggesting the necessity of the Heckman style treatment to eliminate the selection bias. Both models confirm the absence of ethnic differences in banks loan decisions and amid an increase in credit demand during the pandemic, there is a similar increase in loan approval rate ($\beta = 1.33, p < 0.01$), as shown in Model V. In marginal terms, loan approval is increased by three percentage-points compared to pre-pandemic periods. Model VI further shows that the increase in credit supply is seen for both minority- ($\beta = 1.32, p < 0.01$) and non-minorityowned businesses ($\beta = 1.51, p < 0.01$) during the pandemic, and the difference in coefficient estimates are statistically insignificant. A further investigation of other variables shows that credit supply is generally unrelated with the risk indicators of a firm such as size, age and performance, but exclusively driven by macroeconomic conditions.

So far, we have presented the aggregate effect of ethnicity on pre- and within-COVID-19 access to finance. Given the diversity in scope and characteristics of EMBs, several earlier studies have documented some variation of concern in credit acceptance rates when further breaking down EMBs into sub-groups (Fraser, 2009; Asiedu et al., 2012). Following those studies, we divide all EMBs into sub-categories and examine whether any variation regarding loan approval rate arises between different minority groups (Table 5). Because of the low general loan application rate and the low percentage of EMBs in our sample, we first divide all EMBs into three general categories: Black, Asian and Mixed. It can be seen that there is still no individual ethnicity effect on loan approval, even after controlling for variable firm and owner characteristics (Model I). Consistent with our main findings, there is an increase in credit supply during the pandemic with credit equally available to all three EMB groups, and between minority- and white-owned businesses (Model II). Even if we supper-impose the most refined minority definition provided by the SME Finance Monitor data, into 16 ethnic groups, our main findings still hold (Models III and IV). Consistent with previous studies, we find that certain EMBs, such as those with Chinese or Pakistani origins, are more likely to be disadvantaged than other minorities, however still in a general sense throughout the entire sample period (Model III). When it comes to the ethnicity-COVID-19 interaction, most of the minority groups experienced an increase in credit supply during the pandemic, perhaps with better access to finance than for non-white SMEs. To summarise, our findings are consistent regarding different classifications of EMBs, and there is little evidence of disaggregated effects of ethnicity on credit rationing during the pandemic.

5. Discussion and conclusions

We set out to explore key questions about the financing of ethnic businesses as the UK economy entered the COVID-19 crisis. Using two points of reference, the pre-COVID-19 period and non-ethnic businesses, we sought to understand more about patterns in the demand for bank loans and also the willingness of banks to meet firms demand for loans. Drawing on a wide ranging literature we generated testable hypotheses relating to the demand and supplysides of the market for loans. These were then tested on large UK data set covering eightquarters leading up to COVID-19 and the first two-quarters of the crisis when the UK was locked down and the government introduced three loan guarantee schemes, two which were explicitly targeted at SMEs.

Our first focus of investigation was whether there was any evidence of difference in demand for loans driven by ethnic differences in behaviour towards risk and also in terms of financing preferences, which both played a prominent role in the literature. On this found no supporting evidence that ethnic businesses had a lower demand for loans *per se* (compared to non-ethnic businesses). Importantly, this result was stable across the pre-COVID-19 and in-COVID-19 period, even though the latter period was characterised by a general increase in loan demand from *all* businesses regardless of ethnicity. In fact the main drivers of the demand for bank loans were whether or not a firm was oriented towards fast-growth and whether it faced more general financial constraints.

We then turned our attention to the supply-side. Here if any discrimination was present it would be here and manifest itself though lower loan acceptance rates for ethnic businesses. In the pre-COVID-19 period white and ethnic businesses had identical loan acceptance rates suggesting no discrimination. In the COVID-19 period, when loan demand, supported by widespread government guarantee programmes, rose significantly, we find that loan approval rates rose significantly for all businesses. Further, we also found evidence that ethnic businesses in general were more likely to have their loans approved than their white peers. This is particularly interesting given that we established equality in pre-COVID-19

IJEBR	lodel IV Prob(<i>GOT</i> <i>APPLY</i>)		(continued)
	N Prob (APPLY)		
	$\begin{array}{c} \text{fel III} \\ \text{Prob}(GOT \mid \\ APPLY) \end{array}$	1.533**** (0.057) (0.057) (0.208) (0.208) (0.208) (0.208) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.498) (0.370) (0.370) (0.355) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.356) (0.357) (0.356) (0.357) (0.356) (0.357) (0.356) (0.357) (0.356) (0.357) (0.356) (0.356) (0.357) (0.356) (0.356) (0.376) (0.377) (0.356) (0.376) (0.377) (0.356) (0.377) (0.356) (0.377) (0.377) (0.356) (0.377) (0.356) (0.377) (0.356) (0.377) (0.356) (0.377) (0.356) (0.377) (0.376) (0.376) (0.377) (0.376) (0.376) (0.376) (0.377) (0.377) (0.376) (0.376) (0.377) (0.376) (0.3	
	Mod Prob (APPLY)	$\begin{array}{c} 1.338^{****}\\ (0.096)\\ -0.234\\ (0.372)\\ -0.033\\ (0.372)\\ -0.033\\ (0.153)\\ 2.575^{***}\\ (0.153)\\ 2.569^{****}\\ (0.470)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.47)\\ 0.288\\ (0.47)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ 0.288\\ (0.274)\\ (0.272)\\ (0.272$	
	Variable name	COVID White-Irish White-Irish Any other uthite background Mixed-White and Black African Mixed-White and African Mixed-White and Asian Mixed-White and Asian Mixed-White and Asian Mixed-White and Asian Asian or Asian British- Pakistani Asian or Asian British- Bangladeshi	
	$el \mathrm{II} \\ \mathrm{Prob}(GOT \mid APPLY)$	1.534**** 1.534**** (0.058) 0.124 (0.283) 1.699**** (0.219) 1.445**** (0.219) 1.445**** (0.219) 1.445****	
	Mod Prob (APPLY)	1.298*** (0.099) -0.865** (0.380) 2.127*** (0.381) 0.377 (0.366) 1.183**** (0.238) -1.266**** (0.362)	
	lel I Prob(GOT APPLY)	1.528**** (0.057) 0.153 (0.221) 0.015 0.158 (0.143) 0.158 (0.169)	
	Moo Prob (APPLY)	1.327**** (0.088) 0.397 (0.245) 0.052 0.316 (0.221) (0.221)	
Table 5. Probit model with selection: Credit supply by EMB sub-groups	Variable name	COVID Mixed Asian Black White (COVID) Mixed (pre-COVID) Mixed (cOVID) Asian (pre-COVID) Asian (pre-COVID) Black (pre-COVID) Black (pre-COVID)	

$GOT \mid $	46*** 661) 08** 08** 833 41 1 11 11 11 11 11 11 11 11 11 11 11 1	Ethnicity a: bank lendi
lodel IV Prob(APPL	$\begin{array}{ccc} & & 1.2 \\ & & -0.0 \\ & & 0.0 \\ & & 0.0 \\ \end{array}$	
M Prob (APPLY)	1.330**** (0.108) 0.451 0.451 0.461 0.204	
el III Prob($GOT \mid$ APPLY)	-0.481^{*} (0.290) -0.347 (0.273) 0.375* (0.477) -0.646^{**} (0.468) (0.468) (0.468)	
Mod Prob (APPLY)	-0.170 (0.454) 1.733**** (0.623) 0.377 (0.291) 0.529 (0.624) -0.719* (0.414) -7.206**** (0.352)	
Variable name	Asian or Asian British- Any other Asian background Black or Black British- Caribbean African Any other Black British- Any other Black background Chinese or ethnic group-Other ethnic group-Other ethnic group-Other ethnic group White-Irish (pre-COVID) White-Irish (COVID) White-Irish (COVID) Any other white background (pre-COVID)	
$\frac{1}{Prob(GOT}$	1.835**** (0.253)	
Mode Prob (APPLY)	1.929**** (0.309)	
$[e] I \\ Prob(GOT \\ APPLY)$		
Mod Prob (<i>APPLY</i>)		
Variable name	(COVID)	Tabl

IJEBR	el IV Prob(GOT APPLY)	(0.128) 1.135***	(0.148) -0.728**	(0.349) 2.062***	(0.528) 0.676	(0.454) 1.639***	(0.401) 0.290	(0.264) 1.579***	(0.192) -0.462	(0.350) 1.079**	(0.430)	(continued)
	Mod Prob (APPLY)	(0.214) 1.165***	(0.198) 2.842**	(1.265) 5.312***	(1.213) -5.836***	(0.248) 5.022***	(1.120) 0.522	(0.439) 1.479***	(0.280) -7.191***	(0.277) 0.057	(0.470)	
	Model III Prob Prob(<i>GOT</i> (<i>APPLY</i>) APPLY											
	Variable name	Any other white background (COVID)	Mixed-White and Asian (pre-COVID)	Mixed-White and Asian (COVID)	Mixed-Any other mixed background (hre-COVID)	Mixed-Any other mixed	Asian or Asian British- Listion Asian COUTD	Asian or Asian British- Lodino (COVIII)	Asian or Asian British-	Patastan (pre-UUVID) Asian or Asian British-	Pakistani (CUVID)	
	Model II Prob Prob(<i>GOT</i> (<i>APPLY</i>) APPLY											
	Model I Prob Prob(GOT (APPLY) APPLY)											
Table 5.	Variable name											

il IV Prob(GOT APPLY)	-0.280	(0.417) 1.107**	(0.498) 0.054	(0.283)	0.539*	(01c.0)	-0.954***	(0.314) 1.267***	(0.321) 0.080	(0.234) 2.209***	(0.380)	(continued)
Prob (<i>APPLY</i>)	-7.327***	(0.349) 1.044	(0.662) 3.577***	(1.218)	0.079	(0.443)	1.706	(1.166) 4.674***	(1.131) -7.076***	(0.230) 2.153***	(0.436)	
$\begin{array}{c} \text{lel III} \\ \text{Prob}(GOT \mid \\ APPLY) \end{array}$												
Mod Prob (APPLY)												
Variable name	Asian or Asian British- Bangladeshi (pre-COVID)	Asian or Asian British- Bangladeshi (COVID)	Asian or Asian British-	Any other Asian background (bre-COVID)	Asian or Asian British- Ann Abox Asian	Ary other Astan background (COVID)	Black or Black British- Caribbean (hre-COVID)	Black or Black British- Corribtoon (COVID)	Black or Black British- A frigme Are-COVID)	Black or Black British-	AJncan (UU VID)	
$\begin{array}{c} \text{lel II} \\ \text{Prob}(GOT \mid \\ APPLY) \end{array}$												
Mod Prob (<i>APPLY</i>)												
$\begin{array}{c} \text{lel I} \\ \text{Prob}(GOT \mid \\ APPLY) \end{array}$												
Moć Prob (<i>APPLY</i>)												
Variable name												

Ethnicity and bank lending

Table 5.

IJEBR	$\begin{array}{c} \operatorname{del IV} \\ \operatorname{Prob}(GOT \mid \\ APPLY) \end{array}$	Yes proprietorship; (ck British-Any
	Mo Prob (APPLY)	Yes 34.261 1,950 26,461 *** -540.507 10.92*** 10.92*** 36AL = Sole m, Black or Bla
	$\begin{array}{c} \text{lel III} \\ \text{Prob}(GOT \mid \\ APPLY \end{array}$	Yes categories: <i>LL</i> nd Black Africe e to collinearity
	Mod Prob (APPLY)	Yes 34,496 1,966 4,923*** -547.710 12.45*** s applied. Base , Mixed-White ar
	Variable name	errors reported. Weight Anite and Black Carribbear oup-Other ethnic group w
	$\begin{array}{c} \operatorname{fel} \Pi\\ \operatorname{Prob}(GOT \mid\\ APPLY) \end{array}$	Yes obust standard groups Mixed-W
	Moo Prob (APPLY)	Yes 34,496 1,966 467.05*** -550.315 17.36*** 17.36*** 17.36***
	$[e] I \\ Prob(GOT \\ APPLY)$	Yes $5; ****_{p} < 0.01$ E = 0.1 year. If e or ethnic grou
	Moc Prob (<i>APPLY</i>)	Yes 34,496 1,966 421,27*** -551,591 17,50*** 0.10; *** <i>p</i> < 0.0 mary; <i>FIRM_AG</i> kground, Chines
Table 5.	Variable name	Controls N Obs Uncensored Obs Wald- χ^2 Log- Log- Log- Nitelihood χ^2 (rho = 0) Note(s): * $p <$ SECTOR = Prii

times in terms of similar loan application rates and approval rates and merits further consideration.

We suggest that within the general increase in the need for bank loans as firms were facing liquidity crises due to the reduced trading environment the presence of huge and unprecedented loan guarantee schemes may provide the answer. The fundamental use of a loan guarantee is to encourage banks to lend where firms have no collateral. The guarantee derisks lending for the bank. The BBL had a 100% guarantee rate thus lending was risk-free and the CBIL had an 80% rate so risk sharing was 1:4 with the government. The second part of the story relates to the respective distributions of wealth and collaterisable assets amongst white and ethnic businesses. In normal times loan demand is modest and only those with assets apply and receive loans. Business owners know this so only the asset rich apply which is a subset of the total populations. But in COVID-19 there was a huge expansion in the need for loans and applications rates rose dramatically. Thus asset (collateral) poor businesses were making applications which were only accepted because of the high guarantee rates on the government guarantee schemes. Thus if the relative wealth (asset) distribution amongst ethnic businesses is more unequal (a few with a lot and a lot with a little) then the presence of very generous loan guarantee schemes may have unconstrained a greater proportion of ethnic businesses.

6. Implications

We now discuss the potential implications of our findings for bank managers, EMBs and policymakers. For bank managers, it is clear that they can only respond when businesses put forward a loan application. Some EMBs have shown a historical reluctance to do this hence overall lending was reduced and a market gap was evident. Our new evidence suggests that this is not the case now which is an indicator of progress as a reluctance to apply is likely to reduce business investment in growth enhancing activities. But we question whether the high recent loan application rates was influenced by the severity of the COVID-19 crisis or whether it reflects a longer-term, more deep rooted, shift in the willingness of EMBs to engage with banks. This is a potentially fruitful avenue for new research. As a minimum, we suggest that banks should continue to engage with EMB groups to consolidate this improved situation for the benefit of both parties.

The implications for policy-makers are important, particularly as the UK has a new "Recovery Loan" guarantee offer to replace the Covid-19 guarantee schemes. Firstly, the public policy response in providing a suite of loan guarantee schemes was appropriate. In short, they directly addressed the problems with cash-flows that many businesses faced. This offer also pre-empted the usual crisis reaction from banks which is to ration lending by increasing lending standards. The widespread use of COVID-19 guarantee schemes across all types of business does however, suggest that offering 100% and 80% guarantees transfers risk from the bank to the government to such a degree that banks could safely relax their standards and scrutiny of loan applications. As we move towards loan repayment and recovery more evidence may come to light about who defaults and the losses associated with those defaults and this may add more insight into the relative risks of different types of business. It may be that guarantee rates at this high level are unsustainable and unrealistic for future schemes.

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Further reading

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Appendix	2														
t with selection $Prob(GOT APPI V)$	ALLLI			0.723***	(0.068) 0.055	(0.172) 0.863^{***} (0.153)	(001.0)	0.080**	-0.551^{***}	-0.714***	(0.183) -0.236	(0.177) -0.699***	(0.204) -0.117	(0.186) -0.238 (0.174)	(continued)
Model VI Probi Prob				0.963***	(0.097) -0.025	(0.259) 1.005*** (0 200)	(007-0)	0.085***	-0.491^{***}	-0.442***	(0.120) -0.306***	(0.113) -0.396***	(0.117) -0.130	(0.127) -0.405*** (0.115)	(011.0)
with selection Prob(GOT A PPI VI	ALTLI)	0.007 (0.168)	0.970*** (0.096)	(0000)				0.080**	-0.551^{***}	(0.714***	(0.183) -0.236	(0.177) -0.700***	(0.204) -0.118	(0.187) -0.239 (0.174)	(£1770)
Model V Probit Prob (A PPI V)	(ALTLLI)	0.097 (0.122)	0.731^{***}					0.084*** 0.023)	-0.490***	-0.442***	(0.121) -0.306***	(0.113) -0.396***	(0.117) -0.131	(0.127) -0.406^{***}	(011.0)
Model IV Probit Prob (COT)	LI00 (GO1)			0.814***	(0.193) -0.025	(0.524) 0.219 (0.383)	(000.0)	0.059	-0.796*	-1.127***	(0.351) -0.349	(0.339) -0.909**	-0.308	(0.393) -0.146	(1100)
Model III Probit Prob (GOT)	L100 (GO1)	-0.358 (0.333)	0.742*** (0.185)	(00110)				0.071	-0.831*	(1.118***)	(0.350) -0.356	(0.335) -0.914^{**}	(0.406) -0.318	(0.395) -0.137 (0.314)	(1100)
Model II Probit Prob	(ALTLLI)			0.722***	(0.069) 0.055	(0.174) 0.875^{***} (0.157)	(1010)	0.082*** 0.023)	-0.484^{***}	-0.436^{***}	(0.121) -0.305***	(0.113) -0.402^{***}	(0.118) -0.125	(0.127) -0.405*** (0.115)	(011:0)
Model IProbit Prob (A PPI V)	(ALTLLI)	0.103 (0.123)	0.732*** 0.067)					0.082***	-0.483^{***}	-0.436***	(0.121) -0.306***	(0.113) -0.403***	-0.126	(0.127) -0.405*** (0.115)	(011:0)
Variable name		MINORITY	COVID	Non-MINORITY (COVID)	MINORITY (Pro-COVID)	MINORITY (COVID)	Control variables	ln (<i>EMP</i>)	Partnership	Ltd liability partnership	Ltd liability	Manufacturing	Construction	Wholesale/retail	

Ethnicity and bank lending

Table A1.Alternative assess tofinance measures: 12-month trailing demandand supply for allfinance monitor waves

$ \begin{array}{llllllllllllllllllllllllllllllllllll$	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $						-	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Prob (COT) Prob (COT) (APPLY) (APPLY)	Model IProbit Probit Prob Prob	Model III Probit	Model IV Probit	Model V Probi Prob	: with selection Prob(GOT	Model VI Probi Prob	it with selection Prob(GOT
$ \begin{array}{llllllllllllllllllllllllllllllllllll$	$ \begin{array}{llllllllllllllllllllllllllllllllllll$	(APPLY) $(APPLY)$	Prob (GOT)	Prob (GOT)	(APPLY)	APPLY	(APPLY)	APPLY
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	-0.323** -0.324** 0.146) 0.146)	-0.869*	-0.853*	-0.327**	-0.498** (0.212)	-0.328**	-0.498**
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	-0.330^{***} -0.328^{***} (0.125) (0.124)	-0.974^{**}	-1.031^{***}	-0.330^{***}	-0.558*** -0.193)	-0.328^{***}	-0.557*** -0.557***
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	0.145 0.143	-0.272	-0.231	0.141	0.129	0.139	0.127
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	-0.047 -0.046	-0.519	-0.526	-0.048	-0.125	-0.048	-0.126
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccc} (0.134) & (0.134) \\ 0.065 & 0.063 \end{array}$	(0.425) -0.048	(0.431) -0.012	(0.135) 0.063	(0.205) 0.098	(0.135) 0.061	(0.205) 0.096
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(0.077) (0.077) 0.015 0.017	(0.240) 0.804	(0.247) 0.824	(0.076) 0.021	(0.113) 0.441	(0.076) 0.023	(0.114) 0.442
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{ccc} (0.159) & (0.160) \\ -0.034 & -0.031 \end{array}$	(0.513) 0.225	(0.512) 0.215	(0.159) -0.026	(0.269) 0.130	(0.159) -0.024	(0.270) 0.131
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{ccc} (0.159) & (0.159) \\ -0.034 & -0.033 \end{array}$	(0.503) 0.008	(0.498) 0.049	(0.159) -0.032	(0.244) 0.077	(0.159) -0.031	(0.244) 0.078
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	(0.163) (0.163) 0.062 0.065	(0.498) 0.696	(0.494) 0.677	(0.163)	(0.239) 0.409	(0.163) 0.073	(0.240) 0.411
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} (0.165) \\ -0.081 \\ -0.079 \end{array}$	(0.512) 0.278	(0.493) 0.289	(0.165) -0.072	(0.260)	(0.165) -0.071	(0.259)
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} (0.152) \\ 0.151 \\ 0.141 \\ \end{array} $	(0.476) 0.389*	(0.470) 0 208**	0.153)	(0.241)	(0.153)	(0.241)
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccc} -0.313 & -0.330 & 0.445^{****} & 0.276^{**} & 0.445^{****} & 0.276 \\ (0.339) & (0.118) & (0.167) & (0.118) & (0.168) \\ 0.035 & (0.035 & 0.035 & (0.168) \\ 0.035 & 0.035 & (0.168) & 0.035 & (0.168) \\ 0.055 & 0.035 & 0.035 & (0.168) & (0.168) \\ 0.055 & 0.035 & 0.035 & (0.168) & (0.168) & (0.168) \\ 0.578^{****} & 0.578^{****} & 0.578^{****} & (0.070) & (0.070) \\ (continued) \end{array} $	(0.067)	(0.199)	(0.194)	(0.066)	(660:0)	(0.066)	(660.0)
0.070) 0.070) 0.070) 0.070) 0.070)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	0.458*** 0.458*** (0.120) (0.120)	-0.313 (0.339)	-0.330 (0.339)	0.445*** (0.118)	0.276* (0.167)	0.445*** (0.118)	0.276 (0.168)
(cc0.0) (cc0.0) (cc0.0) (cc0.0) (0.070) (0.070)	$\begin{array}{ccccccc} (0.053) & (0.053) \\ 0.578^{****} & 0.578^{****} \\ (0.070) & (0.070) \end{array} \\ (continued) \end{array}$	0.028 0.028	(2000)	(2000)	0.035	(10110)	0.035	(00110)
	(continued)	0.006/) (0.006/) (0.006/) (0.070) (0.071) (0.070)			(cc0.0) 0.578*** (0.070)		(cc0.0) 0.578*** (0.070)	

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Table A1.

	Model IProbit Prob	Model II Probit Prob	Model III Probit	Model IV Probit	Model V Probit Prob	with selection Prob(GOT	Model VI Probit Prob	t with selection Prob(GOT
Variable name	(APPLY)	(APPLY)	Prob (GOT)	Prob (GOT)	(APPLY)	APPLY	(APPLY)	APPLY
CONSTANT	-2.302***	-2.299***	0.334	0.290	-2.314^{***}	-2.344^{***}	-2.311^{***}	-2.341^{***}
	(0.196)	(0.196)	(0.688)	(0.692)	(0.196)	(0.314)	(0.196)	(0.314)
Region effect	Yes	Yes	Yes	Yes	Yes		Yes	
N Obs	35,446	35,446	795	795	35,446		35,446	
Uncensored Obs					795		795	
Adjusted R^2	0.137	0.137	0.206	0.209				
Wald- χ^2	289.76^{***}	292.82***	88.14***	94.22***	172.31^{***}		177.48^{***}	
Log-likelihood	-303.924	-303.886	-32.191	-32.067	-330.116		330.087	
χ (rno = U)					00.00		~~~CC.10	
Note(s): $*p < 0.10$; $*n$ SECTOR = Primary; I	p < 0.05; ***p < 0.07 TRM_AGE = 0-1	0.01. Asymptoti year	c robust standa	rd errors reporte	d. Weights applie	d. Base categorie	s: $LEGAL = Sole$	proprietorship;

Table A1.