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How does a small firm end up with a more expensive loan guarantee when a cheaper and safer one was on offer? The intriguing case of two UK Covid-19 guarantee schemes

Marc Cowling [a,*], Nick Wilson [b], Weixi Liu [c]

[a] Oxford Brookes Business School, UK
[b] Leeds University Business School, UK
[c] University of Bath Management School, UK

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ABSTRACT

Most countries introduced loan guarantee schemes in the Covid-19 pandemic, and the UK offered two schemes. The BBL scheme had a cap of £50,000, a 100 % guarantee, and a fixed interest rate of 2.5 %. The CBILS scheme had a cap of £5 m, an 80 % guarantee and lenders set interest rates. We exploit a behavioural anomaly that led to 9,989 firms taking a CBILS loan for a cash amount below the BBL loan cap. Larger and older firms were more likely to be in this loan class and this is caused by lender sorting of firms by risk.

1. Introduction

Credit guarantee schemes are the most commonly used risk transfer tool to overcome SME finance constraints throughout the world. However, guarantee schemes vary in practice due to the different economic and historical backgrounds and legal contexts that exist in different countries (Corredera-Catalan, di Pietro, and Trujiuo-Ponce, 2021). In this paper, we consider a strange anomaly in the CBILS guarantee programme whereby 9989 firms took out a CBILS loan that was below the BBL loan cap of £50,000. This is an anomaly because the BBL scheme had a fixed interest rate of only 2.5 %, no arrangement fees, and a guarantee coverage rate of 100 %. This compares to CBILS which had a loan cap of £5 m and a guarantee coverage rate of only 80 % and allowed banks to follow their normal credit risk pricing processes in respect of loan interest rate setting. The 100 % guarantee rate was high by historic international standards whilst the 80 % guarantee was in line with European pandemic schemes, yet the consequences of such public largesse to support SMEs during the pandemic are not well explored to date (Gobbi et al., 2020).

Using a large and rich data set covering 1048,006 loan contracts across the BBL and CBILS loan guarantee schemes we exploit this anomaly by first considering what's different about borrowers who accessed loans under the BBL cap of £50,000. We then consider what's different about this unique CBILS borrower class and their BBL peers. Using a propensity score matching process, we then

* Corresponding author.
E-mail address: mcowling@brookes.ac.uk (M. Cowling).

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estimate the average treatment effects for *ex post* default.

2. Why do loan guarantee schemes exist?

Limited access to financial resources is widely regarded as a major obstacle to the growth of small businesses (Berger and Udell, 1992; Freel, 2007) and capital constraints are likely to be worsened in economic shocks (Cowling, Liu, and Ledger, 2012; Calabrese, Cowling and Liu, 2022). The objective of government-backed guarantees is to increase banks' willingness to supply loans by underwriting potential losses in the event of a default (Cowling, 2010). During the COVID-19 pandemic, they became an even more important policy tool in tackling liquidity constraints faced by smaller firms, to counter the economic slowdown due to lockdowns and social restrictions on movement and trade (Granja et al., 2022). Yet we tend to assume that lenders are passive in their delivery of loan guarantees even when faced with competing options. The international evidence suggests that they are not and concerns have been expressed about zombie lending in Germany during the pandemic (Dorr, Licht, and Murman, 2022), during the Japanese 1990s crisis (Kwon, Narita, and Narita, 2015), and the wider consequences for lenders and governments (Gobbi, Palazzo, and Segura, 2020).

3. The UK Covid-19 loan guarantee schemes

In total, there were three large-scale UK government guaranteed loan schemes in operation during COVID-19, the Bounce Back Loan Scheme (BBL), the Coronavirus Business Interruption Loan Scheme (CBILS), and the Coronavirus Large Business Interruption Loan Scheme (CLBILS) for large. In this paper we exclude the CLBILS scheme from our analysis as it was not relevant to SMEs. We have

Table 1
Sample Statistics for BBL, CBILS Under £50,000 loan, and CBILS Over £50,000 Loan.

	BBL		CBILS Under £50,000		CBILS Over £50,000	
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev
Loan Contracts						
Loan interest rate%	2.500	0.000	6.291	3.111	6.112	3.466
Loan fees £s	0.000	0.000	122.51	1570.13	3481.48	48,975.17
Loan Amount £s	32,754.09	17,122.72	27,252.98	14,208.85	300,001.00	482,784.00
Firm Characteristics						
Firm age	8.337	8.217	13.572	12.363	17.479	14.478
Firm Sales £000s	294.411	971.627	2177.579	4727.717	4037.149	5859.990
SIC Industry Code						
Agriculture	2.52		0.79		0.76	
Mining	0.10		0.43		0.28	
Manufacturing	5.82		10.60		14.85	
Utilities	0.16		0.22		0.18	
Water	0.50		2.24		1.43	
Construction	16.38		18.56		14.37	
Wholesale & Retail	15.24		13.40		17.11	
Transport	5.23		6.40		5.31	
Hotels & Catering	7.81		6.90		6.05	
Info& Comms	5.23		3.68		4.55	
Finance	7.81		0.76		1.62	
Real Estate	5.32		1.58		2.23	
Prof Scientific	0.88		6.82		9.96	
Admin Services	6.32		16.02		11.82	
Public Admin	12.04		0.00		0.04	
Education	7.35		1.46		1.22	
Health	0.10		3.07		3.81	
Arts & Entertainment	2.01		2.43		2.31	
Other Services	4.22		4.59		2.05	
Household	2.53		0.00		0.01	
Lender Type						
Asset finance house	0.01		20.93		8.87	
Big bank	88.18		63.05		51.32	
Invoice financier	0.03		10.80		7.49	
Alternative financier	0.22		0.30		6.36	
Responsible finance	0.02		1.11		0.63	
Small bank	11.53		3.81		25.34	
Legal Status						
Limited liability partnership	0.60		0.69		1.71	
Other legal form	0.39		0.12		0.25	
Partnership	4.15		1.36		0.80	
Limited Liability	77.23		93.79		96.16	
PLC	0.04		0.28		0.35	
Sole trader	17.58		3.76		0.73	
Number of Observations	971,302		9985		66,705	

Table 2
Covid-19 Guaranteed Loans Under the £50,000 BBL Cap.

	Loan Guarantee Under £50,001 [0,1]			
	Coefficient	S.E	z stat	Pr>z
Firm Characteristics				
Ln Real age	−0.273	0.003	−81.95	0.000
Ln Sales	−0.584	0.002	−301.06	0.000
SIC Industry Code				
Agriculture				
Mining	−0.466	0.068	−6.88	0.000
Manufacturing	−0.457	0.028	−16.49	0.000
Utilities	−0.360	0.064	−5.58	0.000
Water	−0.396	0.036	−10.89	0.000
Construction	−0.191	0.027	−6.93	0.000
Wholesale & Retail	−0.175	0.027	−6.39	0.000
Transport	−0.423	0.029	−14.45	0.000
Hotels & Catering	−0.323	0.028	−11.38	0.000
Info & Comms	−0.365	0.029	−12.56	0.000
Finance	−0.560	0.034	−16.39	0.000
Real Estate	−0.073	0.030	−2.42	0.015
Prof Scientific	−0.431	0.028	−15.50	0.000
Admin Services	−0.520	0.028	−18.62	0.000
Public Admin	0.072	0.123	0.58	0.562
Education	−0.253	0.034	−7.35	0.000
Health	−0.450	0.029	−15.28	0.000
Arts & Entertainment	−0.528	0.031	−16.86	0.000
Other Services	−0.317	0.031	−10.16	0.000
Household	−0.389	0.186	−2.09	0.037
Geography				
Black Country				
Buckinghamshire Thames Valley	−0.114	0.031	−3.65	0.000
Channel Islands	−1.482	0.352	−4.21	0.000
Cheshire and Warrington	−0.064	0.029	−2.17	0.030
Coast to Capital	−0.064	0.026	−2.46	0.014
Cornwall and Isles of Scilly	−0.104	0.037	−2.79	0.005
Coventry and Warwickshire	−0.166	0.030	−5.61	0.000
Cumbria	−0.145	0.038	−3.82	0.000
Derby, Derbyshire, Nottingham and Nottinghamshire	−0.114	0.026	−4.38	0.000
Dorset	−0.065	0.031	−2.11	0.035
Enterprise M3	−0.070	0.026	−2.69	0.007
Gloucestershire	−0.151	0.033	−4.57	0.000
Greater Birmingham and Solihull	−0.046	0.026	−1.79	0.073
Greater Cambridge and Greater Peterborough	−0.094	0.031	−3.06	0.002
Greater Lincolnshire	−0.061	0.031	−1.98	0.048
Greater Manchester	−0.039	0.024	−1.62	0.105
Heart of the South West	−0.114	0.027	−4.23	0.000
Hertfordshire	−0.080	0.026	−3.03	0.002
Humber	−0.081	0.036	−2.23	0.026
Isle of Man	−1.800	0.400	−4.50	0.000
Lancashire	−0.060	0.027	−2.21	0.027
Leeds City Region	−0.067	0.025	−2.74	0.006
Leicester and Leicestershire	−0.067	0.028	−2.35	0.019
Liverpool City Region	−0.048	0.028	−1.68	0.093
London	−0.038	0.022	−1.76	0.078
New Anglia	−0.088	0.027	−3.22	0.001
North East	−0.118	0.028	−4.26	0.000
Northern Ireland	0.042	0.027	1.52	0.129
Oxfordshire	−0.196	0.032	−6.14	0.000
Scotland	−0.052	0.024	−2.20	0.028
Sheffield City Region	−0.011	0.029	−0.37	0.711
Solent	−0.040	0.029	−1.38	0.167
South East	−0.004	0.023	−0.18	0.855
South East Midlands	−0.046	0.026	−1.75	0.081
Stoke-on-Trent and Staffordshire	−0.025	0.035	−0.70	0.482
Swindon and Wiltshire	−0.062	0.034	−1.80	0.072
Tees Valley	−0.077	0.038	−2.03	0.043
Thames Valley Berkshire	−0.057	0.029	−1.96	0.050
The Marches	−0.022	0.034	−0.64	0.521
Unknown	−0.361	0.057	−6.29	0.000
Wales	0.003	0.026	0.13	0.900
West of England	−0.128	0.029	−4.47	0.000

(*continued on next page*)

Table 2 (*continued*)

	Loan Guarantee Under £50,001 [0,1]			
	Coefficient	S.E	z stat	Pr>z
Worcestershire	−0.147	0.042	−3.49	0.000
York, North Yorkshire and East Riding	−0.078	0.043	−1.78	0.075
Constant	10.038	0.043	234.45	0.000
Number of Observations	833,810			
Pr>χ2	0.00001			
Pseudo R2	0.3849			

loan level data for 1048,006 loans across the two schemes. The BBL has issued 971,302 loans totalling £32.7 billion and CBILS has issued 76,704 loans totalling £26.5 billion. The average loan sizes across the two schemes are £32,754 and £264,496 over the period March 2020–July 2021.

The BBL has a fixed interest rate of 2.5 % and a 100 % guarantee coverage, making it a much lower risk loan for firms and banks who had zero exposure to BBL. The BBL was designed to support the smallest firms with modest funding requirements through the pandemic and had very light touch due diligence requirements and firms could borrow up to 25 % of their pre-Covid-19 annual trading income. The Coronavirus Business Interruption Loan Scheme (CBILS) had a higher ceiling of £5 million and was designed to support lending to all SMEs. It guaranteed coverage of 80 % of the outstanding loan and allowed lenders to take firm collateral to cover their remaining 20 % exposure to default. The lender was able to conduct formal due diligence and set its own loan interest rate and fees according to its assessment of risk. On both schemes, loans were available for a maturity of up to six years initially. For context, the average EU guarantee rate during the pandemic was 80 %.

4. Data and methodology

We have loan level data for 1048,006 loans issued under a BBL or CBILS guarantee between March 2020 and July 2021. The BBL has issued 971,302 loans totalling £32.7 billion and CBILS has issued 76,704 loans totalling £26.5 billion. Table 1 reports the basic sample statistics for three classes of loan, BBL loans, CBILS loans under the BBL loan amount cap of £50,000, and CBILS loans over the £50,000 threshold. The numbers of loans issued on each class of loan are 971,602 for BBL, 9989 for CBILS under £50,000, and 66,719 for CBILS loans over £50,000.

From Table 1 we observe that average guaranteed loans were largest on CBILS over £50k loans at £300,001 and smallest on CBILS under £50k at £27,253 compared to £32,754 on the BBL scheme. Total guaranteed lending was dominated by loans to construction, wholesale & retail and administrative services firms, although take-up by manufacturing firms was high on CBILS too. The big multinational UK banks had a large share of BBL loans at 88.2 %, but their share diminished to 63.1 % for under £50k CBILS and down to 51.3 % on over £50k CBILS loans. This reflects the ability of large banks to use their existing small business customer bases to issue guaranteed loans with urgency. Legal form was also an area of difference across the schemes with higher shares of limited liability firms being issued CBILS loans than BBL loans.

Our analysis is split into three phases. First, we estimate a probit model for the probability that a firm will demand a loan under guarantee for up to £50,000 using the full sample. Here loans issued for up to £50,000 are coded 1 and loans that exceed this threshold 0. We then estimate a second probit model for the probability that a loan issued at or under the £50,000 BBL cap will be issued through the BBL scheme itself or the CBILS scheme. Here a CBILS under £50,001 loan is coded 1 and a BBL loan (by definition under £50,001) coded 0. We use a rich vector of firm characteristics including firm age, firm size measured by annual sales turnover, legal status, 22 standard industry codes, 44 geographical identifiers measured as Local Enterprise Partnership (LEP) areas which are above a county class, but below a region. We also include a lender classification for the loan issuer (which in the UK is a commercial lender) and this includes asset finance houses, large banks, invoice financiers, small banks, alternative financiers, and responsible finance providers (i.e. local not-for-profit development agencies).

5. Results

Here we report on the three distinct phases of econometric modelling including (a) loans under £50,000, the BBL - CBILS scheme decision for loans below the £50,000 threshold cap for BBL, and finally loan default.

From Table 2, which shows our model distinguishing between loans above the BBL threshold cap of £50,000 and loans above this threshold we observe that firm age and size both exert negative effects on the probability that a firm will have a loan of £50,000 or less. This age effect is interesting as one might *a priori* expect that more established firms might have greater financial reserves and have less extra demand for debt even in a crisis. However, older firms with a stronger track record are also able to borrow more and are less likely to face credit rationing. There are some large and significant industry effects apparent and this may reflect the differential impact on certain industry sectors of the formal pandemic lockdowns.

From Table 3, which reports our BBL - CBILS guarantee scheme model for loans of £50,000 or under, we find that firm age and size both played a role in the choice of guarantee scheme used by firms. Here we observe that both firm age and size was associated with a greater usage of the CBILS guarantee scheme. These findings are consistent with banks being more favourable to older and larger firms

Table 3
Covid-19 Loan Guarantees Under the £50,000 BBL Cap Issued through BBL or CBILS.

	BBL - CBILS Loan Under £50,000 [0,1]			
	Coefficient	S.E	z stat	Pr>z
Firm Characteristics				
Ln Real age	0.153	0.009	16.59	0.000
Ln Sales	0.088	0.006	15.56	0.000
SIC Industry Code				
Agriculture				
Mining	0.068	0.325	0.21	0.835
Manufacturing	0.459	0.095	4.82	0.000
Utilities	0.386	0.194	1.99	0.046
Water	0.186	0.145	1.29	0.197
Construction	0.355	0.094	3.77	0.000
Wholesale & Retail	0.414	0.094	4.41	0.000
Transport	0.281	0.101	2.79	0.005
Hotels & Catering	0.622	0.095	6.56	0.000
Info & Comms	0.324	0.098	3.31	0.001
Finance	0.339	0.119	2.84	0.005
Real Estate	0.118	0.101	1.16	0.245
Prof Scientific	0.335	0.095	3.52	0.000
Admin Services	0.512	0.095	5.37	0.000
Public Admin				
Education	0.365	0.107	3.41	0.001
Health	0.469	0.098	4.79	0.000
Arts & Entertainment	0.556	0.100	5.54	0.000
Other Services	0.540	0.098	5.51	0.000
Household				
Geography				
Black Country				
Buckinghamshire Thames Valley				
Channel Islands	0.034	0.084	0.40	0.686
Cheshire and Warrington				
Coast to Capital	−0.022	0.079	−0.28	0.782
Cornwall and Isles of Scilly	0.141	0.065	2.18	0.029
Coventry and Warwickshire	0.170	0.087	1.95	0.051
Cumbria	−0.019	0.081	−0.24	0.811
Derby, Derbyshire, Nottingham and Nottinghamshire	0.102	0.095	1.07	0.285
Dorset	−0.017	0.069	−0.24	0.807
Enterprise M3	0.130	0.075	1.74	0.082
Gloucestershire	0.023	0.068	0.33	0.738
Greater Birmingham and Solihull	0.130	0.083	1.58	0.115
Greater Cambridge and Greater Peterborough	−0.001	0.067	−0.01	0.993
Greater Lincolnshire	0.073	0.079	0.92	0.356
Greater Manchester	0.031	0.080	0.38	0.700
Heart of the South West	−0.165	0.067	−2.46	0.014
Hertfordshire	0.127	0.068	1.88	0.061
Humber	−0.008	0.070	−0.11	0.911
Isle of Man	0.099	0.090	1.10	0.271
Lancashire				
Leeds City Region	−0.128	0.077	−1.67	0.095
Leicester and Leicestershire	0.042	0.064	0.67	0.504
Liverpool City Region	0.041	0.074	0.55	0.583
London	−0.084	0.077	−1.09	0.275
New Anglia	−0.150	0.057	−2.62	0.009
North East	0.042	0.071	0.59	0.555
Northern Ireland	0.031	0.072	0.44	0.663
Oxfordshire	−0.037	0.084	−0.44	0.661
Scotland	−0.042	0.092	−0.46	0.647
Sheffield City Region	−0.042	0.062	−0.68	0.496
Solent	0.069	0.074	0.93	0.351
South East	0.042	0.074	0.57	0.568
South East Midlands	0.008	0.060	0.14	0.892
Stoke-on-Trent and Staffordshire	−0.173	0.075	−2.32	0.020
Swindon and Wiltshire	0.070	0.088	0.80	0.426
Tees Valley	−0.170	0.105	−1.62	0.105
Thames Valley Berkshire	−0.135	0.110	−1.22	0.221
The Marches	−0.065	0.081	−0.81	0.418
Unknown	0.126	0.083	1.52	0.129
Wales	0.219	0.153	1.44	0.150
West of England	−0.013	0.067	−0.20	0.841

(*continued on next page*)

Table 3 (*continued*)

	BBL - CBILS Loan Under £50,000 [0,1]			
	Coefficient	S.E	z stat	Pr>z
Worcestershire	0.066	0.074	0.89	0.374
York, North Yorkshire and East Riding	−0.123	0.131	−0.94	0.346
Lender Type				
Asset finance house				
Big bank	−1.554	0.150	−10.35	0.000
Invoice financier	−0.395	0.193	−2.04	0.041
Alternative financier	−2.001	0.326	−6.14	0.000
Responsible finance	−0.175	0.258	−0.68	0.497
Small bank	−2.044	0.158	−12.98	0.000
Legal Status				
Limited liability partnership				
Other legal form	0.107	0.223	0.48	0.630
Partnership	0.819	0.098	8.39	0.000
Limited Liability	−0.063	0.074	−0.85	0.396
PLC	0.522	0.186	2.81	0.005
Sole trader	1.917	0.096	19.92	0.000
Constant	−2.893	0.210	−13.76	0.000
Number of Observations	752,552			
Pr>χ2	0.00001			
Pseudo R2	0.083			

due to their relative lower lending risk given that on the CBILS scheme they had a 20 % exposure in the event of default. However, on the firm side it is not clear why a firm would take a loan with a higher interest rate, averaging 6.29 % and a fee, averaging £123, associated with it rather than a fixed rate loan at a 2.5 % rate of interest and no fee.

It was also evident that the type of lender that issued the guaranteed loan influenced the choice of BBL or CBILS. Here we observe that big multinational banking groups were more likely to use the BBL scheme. We also find that alternative financiers, invoice discounters, and small banks favoured BBL lending over CBILS lending and this may relate to the presence of the 100 % guarantee coverage. In contrast, asset finance houses and responsible finance providers tended to favour CBILS lending.

For default, we build a control group that will allow us to provide a consistent estimate of the average treatment effect (ATT) of the guarantee schemes on firms with a BBL or CBILS guaranteed loan that has an ATT component and a selection bias component. The latter adjusts for the fact that non-BBL borrowers may not be a fair representation of the counterfactual for firms that accessed CBILS scheme support. Our approach is to minimise selection bias by using propensity score matching (PSM) by exploiting a rich data set of individual firm and scheme characteristics (a vector x) that ensure independence between the probability of a firm taking a CBILS guaranteed loan (treatment) and the control (BBL) responses. We also impose a common support that firms with x values have a positive and equal opportunity of being assigned to the treatment (CBILS) and control (BBL) groups. We then estimate the ATT by selecting firms with the same propensity score $\Pr(d_i=1)jx) = p(x)$, and then comparing mean changes in default outcomes for CBILS and BBL. The treatment effect on CBILS firms is now conditional on the propensity score. The vector x includes key firm and loan contract variables such as firm age size, legal status, and lender type.

After propensity score matching, our results (Table 4) show that the Average Treatment Effect for CBILS compared to BBL was such that the default rate was 1.27 % lower. This shows a residual higher default rate for BBL loans even after matching on key firm characteristics. This is consistent with lenders sorting by observed firm risk.

6. Conclusions

We set out to investigate an anomaly in the UK Covid-19 loan guarantee schemes whereby 9989 firms took out an expensive CBILS loan with an 80 % guarantee coverage rate for a cash amount that was below the maximum loan threshold for the BBL scheme which offered fixed rate loans at 2.5 % and a 100 % guarantee coverage rate. In terms of the BBL - CBILS scheme choice, we find that older and larger firms were routed on to the CBILS option.

In terms of the relative impact of choosing a guaranteed loan through the BBL or CBILS scheme (the treatment effect), we find that CBILS borrowers had a 1.27 % lower default rate. This is evidence that less risky firms tended to use the CBILS scheme which is

Table 4
Treatment Effects Model with PSM Matching: BBL=0, CBILS=1.

Overall Default	Coefficient	S.E	Z	Pr>z
ATE (1 versus 0)	−0.01267	0.000989	−12.81	0.0001
Number of Observations	755,479			
Treatment Model	Logit			
Minimum Matches	1			
Maximum Matches	6929			

consistent with the lower guarantee coverage rate. We are drawn to conclude that there is evidence of lenders sorting in the sense that higher risk firms were routed through to the BBL scheme in greater numbers, but even after 'matching' on these characteristics a residual higher default probability remained. This has wider relevance for the design of international loan guarantee schemes during crisis periods as the consequences of setting the guarantee rate too high (or too low) are likely to have significant long-term effects for firms, lenders, and governments.

CRediT authorship contribution statement

Marc Cowling: Writing – review & editing, Writing – original draft, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Nick Wilson:** Writing – review & editing, Writing – original draft, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation. **Weixi Liu:** Writing – review & editing, Writing – original draft, Formal analysis.

Declaration of competing interest

No competing interests. We would like to thank the UK Department for Business and Trade and the British Business Bank for their support with this research and for sharing the data. The views expressed here are those of the authors and not the UK government.

Data availability

The authors do not have permission to share data.

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