Brexit and Covid-19 Shocks: Investment and Growth among UK SMEs

Abstract

Although economies experienced substantial turbulence from Covid-19, the United Kingdom Government rejected the possibility of a transitional period extension after the withdrawal from the European Union. This study uses microdata to unpack the impact of reduced investment due to the increased uncertainty attributable to Brexit and Covid-19 on SME growth.

Keywords: Brexit, Covid-19, Investment, SME, Growth

Classification codes: L2, O4

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Introduction

In response to the referendum on the withdrawal of the United Kingdom (UK) from the European Union (EU), commonly referred to as Brexit, scholars speculated about the protracted uncertainty undermining resilience (Brown et al., 2019, 2020) and a negative impact on investment and production, especially in the case of the departure from the customs union and EU single market (Jafari & Britz, 2020; McGrattan & Waddle, 2020). This was confirmed by empirical data and findings pointing to losses in output (Born et al., 2019) and foreign direct investment (Cieślik & Ryan, 2021). At the start of the transitional period, the Covid-19 pandemic hit the country, further negatively impacting businesses (Donthu & Gustafsson, 2020; Office for National Statistics, 2022).

These changes are likely to have a disproportionate impact on Small and Medium Sized Enterprises (SMEs) due to their smaller size, lower cash holdings (Calabrese et al., 2022), and a higher proportion of SMEs in industries impacted by Covid-19 constraints, such as social distancing in the service sector (Belitski et al., 2022). On the other hand, SMEs are known to be more flexible in their investment decisions, as shown by their prompt deferral of investments during Covid-19 (Thorgren & Williams, 2020) or scale back of capital investments almost immediately post the Brexit referendum (Brown et al., 2019).

This study is motivated by the Real Options Theory (ROT), which centres around uncertainty seen as a multifactor phenomenon that is challenging to quantify but capable of benefiting firms under favourable developments (Trigeorgis & Reuer, 2017). We test whether the combination of these shocks (Brexit and Covid-19), which triggered an unprecedented increase in uncertainty (Altig et al., 2020), resulted in a comparable effect on SME growth or whether

broadly similar effects are present amongst SMEs whose investments were impacted only by either Brexit or Covid-19.

Data and Methods

We use data from the 2020 wave of the Longitudinal Small Business Survey (DBEIS, 2022). Fieldwork for the 2020 survey was conducted between September 2020 and April 2021. After the data validation that excluded SMEs with missing responses, the final sample consisted of 601 SMEs, out of which 450 had employees and 51 did not. Table 1 offers further insight into the distribution within the sample, which is extended with correlations in Appendix A.

Table 1 Descriptive Statistics

	Mean	St. Dev.	Min	Max
Growth	2.93	2.08	1	7
Growth Direction Only	1.65	0.80	1	3
Brexit Obstacle	0.20	0.40	0	1
Covid-19 Impact	1.39	0.49	1	2
Government Assistance	1.28	1.13	0	5
Size (log)	1.95	1.57	0	5.53
Women Lead	0.14	0.35	0	1
Sector	1.51	1.31	0	3
Northern Ireland	0.10	0.30	0	1
Exporter to EU	0.38	0.49	0	1

The ordinal dependent variable based on responses to three survey questions measuring the direction and extent of the revenue change in the past 12 months was constructed for the analysis. Seven categories were derived: (1) substantial shrinkage, (2) significant shrinkage, (3) minor shrinkage, (4) no change, (5) moderate growth, (6) significant growth and (7) substantial growth. Respondents with missing observations were removed from the analysis.

The independent variables for the study include the impact on investment by Brexit and Covid-19. To capture the former, a dummy variable for those that responded as having already

experienced and expect to experience investment/greater difficulty in raising capital as the major obstacles resulting from Brexit were coded as 1 and those responding that it was not an issue as 0. For Covid-19, another dummy was created, taking a value of 1 when SMEs postponed investment to mitigate the pandemic's impacts and any associated trading restrictions, and 0 if they did not.

Commented [BG1]: this wording is a bit confusing - it almost reads like 'expect to experience investment'

We also include numerous controls that follow the wider literature related to Brexit and Covid-19, e.g., Clampit et al. (2021). Our controls include a logarithmic size variable that captures the number of employees and a categorical variable with three broad sectorial divisions: (1) transport, retail, and food service/accommodation; (2) production and construction; (3) business and other services. We also control for government support incentives measured with an ordinal variable taking any value between 0 and 5, indicating the number of the following government support mechanisms received by the business: (1) Coronavirus Job Retention Scheme, (2) Self-Employment Income Support Scheme, (3) Business Rates Holiday, (4) VAT (Value Added Tax) deferral and (5) HMRC's Time to Pay.

In terms of Brexit-related controls, we include a dummy variable for businesses that exported to EU, taking a value of 1 for exporters and 0 otherwise. Given that Northern Ireland stayed in the EU single market for goods after Brexit, we also produced a separate dummy taking a value of 1 when the SME is based in Northern Ireland and 0 otherwise. Finally, our rich data enables us to control for the women-led SMEs, which was identified as a major area to explore with future research by Clampit et al. (2021), with a dummy variable taking a value of 1 for SMEs that are women lead.

Given the ordinal structure of the dependent variable, we adopt ordinal regression. To test for the presence of multicollinearity, we obtained the variance inflation factors (VIFs). This did not reveal any issues, with the highest VIF of 1.2. As a further robustness check, models are

built in three steps. Model 1 includes only the control variables. The variables measuring investment decisions related to Brexit and Covid-19 are then added in models 2 and 3. The model 4 specifications include the control variables, investment decisions related to Covid-19 and Brexit, and the interaction term between them. At each stage of the model-building process, we evaluated the improvement in residual deviance and the Akaike Information Criterion (AIC). As a sensitivity check, we also reperformed analysis with only employing firms in model 5 (Appendix B) as well as dependent variable having only three broader categories: (1) decrease in turnover, (2) the same and (3) increase in turnover in model 6 (Appendix B).

Results and Discussion

Table 2 reports significant adverse effects on growth from decreased investment due to Brexit and Covid-19. The estimated coefficient for Brexit is negative and significant (-0.49, SE=0.20) in model 2. The introduction of the dummy related to postponing investment because of Covid-19 in model 3 results in a slight decrease in the negative effect from Brexit, with the Brexit-related coefficient becoming less significant and slightly lower than the Covid-19-related variable, -0.37 (SE=0.2) and -0.47 (SE=0.16), as indicated in model 3.

The interaction term introduced in model 4 further separates the effects of Brexit and Covid-19. It suggests that the effect of postponing investment due to Covid-19 significantly depends on whether SME investment decisions were also impacted by Brexit. Those affected only by Brexit-inflicted investment obstacles had the most detrimental impact on growth, averaging -0.86 (SE=0.3). Whilst the impact averaged -0.66 (SE=0.19) for SMEs forced to postpone investments by Covid-19 but did not perceive Brexit as detrimental to their investment. The extent of the effect was broadly sustained also for SMEs that were affected by both Brexit and Covid-19.

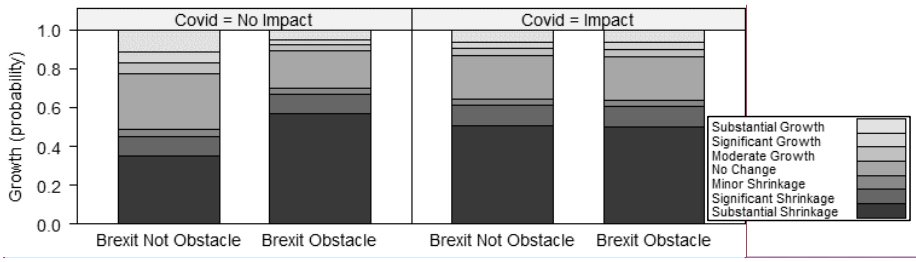
Commented [BG2]: Don't worry about it for now, but I have a niggle that reviewers could challenge this using the 'third variable' argument -something like the companies that reduced investment due to covid/brexit were also the ones that were most impacted in other ways (E.g. reduced sales etc.), but it would make the model a lot more complex.

Commented [BG3]: I think the explanation for the interaction term will be very important. In my mind what it is saying is that individually covid and brexit have a negative impact, but the negative effect is lessened for firms that delay investment because of both. I'm not certain though, as it isn't straightforward. I think potentially they will accept/reject the paper on the basis of the explanation for this.

One expanation might be something like:

Contrary to our expectations, delaying investment due to covid and brexit together reduced the engative impact on turnover. One explanation for this is that these firms were already experiencing increased turnover as a result of the shocks, and were therefore able to maintain turnover levels even with the reduced level of investment. This corresponds with the wider literature, which highlights that some firms performed relatively well during both covid-19 and brexit (refs).

Figure 1 Growth Probabilities



The scale refers to probabilities of being growth categories (in legend) based on Covid-19 and Brexit-related variables. Estimates are based on model 4.

Although the interaction is highly significant and positive, averaging 0.91 (SE=0.41), this effect is largely offset by the combination of coefficients related to Brexit and Covid-19. Figure 1 further illustrates that SMEs whose investment decisions were impacted by Covid-19 suffered a relatively similar impact irrespectively of Brexit. According to ROT, the uncertainty leverages decision flexibility, especially present among SMEs, and thus opens the window of opportunity (Trigeorgis & Reuer, 2017), clarifying why the simultaneous severe shock further escalating uncertainty had only a marginal, somewhat positive, impact on SME growth.

The magnitude of the effect on growth is also difficult to untangle because of the heterogeneity of other Brexit and Covid-19-related factors, as indicated by significant controls of Brexit-related trade restrictions (0.52, SE=0.25), Covid-19 government support (-0.40, SE=0.08) and sectors with SMEs in production and construction more likely to grow (0.40, SE=0.20) than in transport, retail and food service/accommodation sectors that were more affected by Covid-19.

Commented [GU4]: maybe its something like: if the business has already reduced investment due to brexit, then they can't reduce it any further as a result of covid as presumably there is some minimum level needed for survival, so additional shocks have less impact than the first shock. OR it could be that brexit impacts different firms than covid (e.g. brexit might impact exporters, whereas covid might impact local firms) or it might have an impact depending on industry etc.

Commented [KM5R4]: I added the first idea but more through the ROT lenses and the second a bit when discussing controls.

Commented [BG6R4]: I read the paepr on ROT and this does seem like a good fit to develop out more if EL do not accept this.

Commented [BG7]: this is sort of what I was talking about in a previous comment, so goo that it's in here to preempt that!

Table 2 Ordinal Regression Results

	Model 1	Model 2	Model 3	Model 4
Brexit Obstacle		-0.49**	-0.37*	-0.86***
		(0.20)	(0.20)	(0.30)
Covid-19 Impact			-0.47***	-0.66***
			(0.16)	(0.19)
Interaction				0.91**
				(0.41)
Government Assistance	-0.44***	-0.43***	-0.40***	-0.40***
	(0.08)	(0.08)	(0.08)	(0.08)
Size (log)	0.17***	0.17***	0.18***	0.18***
	(0.05)	(0.05)	(0.05)	(0.05)
Women Lead Dummy	-0.23	-0.25	-0.26	-0.24
	(0.22)	(0.22)	(0.22)	(0.22)
Production and Construction Sector	0.37*	0.39**	0.40**	0.40**
	(0.20)	(0.20)	(0.20)	(0.20)
Business and Other Services Sector	-0.05	-0.01	0.02	0.04
	(0.19)	(0.19)	(0.19)	(0.19)
Northern Ireland Dummy	0.46*	0.51**	0.52**	0.52**
	(0.25)	(0.25)	(0.25)	(0.25)
Exporter to EU Dummy	0.18	0.16	0.17	0.13
	(0.16)	(0.16)	(0.16)	(0.16)
AIC	1854.54	1850.4	1844.05	1841.11
Residual Deviance	1,828.54	1,822.40	1,814.05	1,809.11
Degrees of Freedom	588	587	586	585

*Note: *p<0.1; **p<0.05; ***p<0.01.*

Conclusions

We find that Brexit-related investment reductions significantly negatively impacted growth, but the effects are broadly comparable to those caused by Covid-19. The combination of Brexit and Covid-19-related effects on investment had a lesser negative impact on growth than only Covid-19. These findings suggest that under extreme uncertainty, the degree of uncertainty

does not necessarily correspond to the degree of investment decisions generating growth and, in this way, provides empirical evidence supporting the foundations of ROT.

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Appendix A

Table A.1 Spearman Rank-order Correlation Coefficients

	Growth	Growth	Brexit	Covid-19	Government	Size (log)	Women Lead	Sector	Northern	Exporter to EU
Growth	1									
Growth Direction Only	0.95	1								
Brexit Obstacle	-0.10	-0.09	1							
Covid-19 Impact	-0.16	-0.17	0.21	1						
Government Assistance	-0.18	-0.19	0.04	0.20	1					
Size (log)	0.06	0.04	-0.003	0.14	0.44	1				
Women Lead	-0.06	-0.06	-0.02	-0.05	0.001	-0.08	1			
Sector	-0.02	-0.02	0.08	0.03	-0.18	-0.24	0.10	1		
Northern Ireland Dummy	0.04	0.02	0.09	0.05	0.15	0.02	0.03	-0.07	1	
Exporter to EU	0.07	0.07	-0.04	0.04	0.05	0.21	-0.001	-0.04	-0.003	1

Appendix B

Table B.1 Sensitivity Analysis

	Model 5	Model 6
Brexit Obstacle	-1.17***	-0.75**
	(0.38)	(0.32)
Covid-19 Impact	-0.65***	-0.71***
	(0.21)	(0.20)
Interaction	1.24***	0.81*
	(0.48)	(0.45)
Government Assistance	-0.43***	-0.46***
	(0.09)	(0.09)
Size (log)	0.17**	0.16***
	(0.07)	(0.06)
Women Lead Dummy	-0.58**	-0.26
	(0.27)	(0.24)
Production and Construction Sector Dummy	0.61***	0.32
	(0.22)	(0.21)
Business and Other Services Sector Dummy	0.26	-0.001
	(0.22)	(0.20)
Northern Ireland Dummy	0.51*	0.48*
	(0.28)	(0.28)
EU Exports Dummy	0.18	0.15
	(0.18)	(0.17)
Observations	450	601
AIC	1392.88	1154.5
Residual Deviance	1,360.88	1,130.50
Degrees of Freedom	434	589

*Note: *p<0.1; **p<0.05; ***p<0.01.*