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COVID-19, business support and SME productivity in the UK

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Abstract

In this paper we draw on arguments related to behavioural additionality to consider how UK COVID-19 emergency public support measures – Furlough funding and loan guarantees – during the pandemic have influenced firms' future investment intentions and employee well-being. Both provide an early indication of potential effects on future productivity. The potential linkages and mechanisms are suggested using Logic Models. Survey data from the SME Finance Monitor for 2020Q3 and 2020Q4 and the Health and Well-being Survey 2021 provide data and we estimate probit models, instrumenting for different combinations of policy instruments (Furlough/loan, loan only, Furlough-only). Overall, we find widespread positive short-term impacts of the government support schemes on investment planning and smaller impacts on employee well-being. For example, firms which received a combination of Furlough and loans are 17.2 percentage points more likely to plan investments in capital equipment than firms with no pandemic support. The same group of firms are 9.2 per cent less likely to report mental health absences and 9.9 per cent less likely to report sickness absences. While it is too early to draw firm conclusions our results suggest that public support during the pandemic is contributing to more positive investment intentions and well-being and potentially to sustaining or growing productivity which will be crucial in the recovery.

COVID-19, business support and SME productivity in the UK

1. Introduction

The COVID-19 pandemic has impacted firms of all sizes but has had significant negative impacts on small and medium sized enterprises (SMEs) with over 60 countries implementing specific support measures for small firms (OECD 2020). The ILO have forecast significant rises in global unemployment but also note that 'sustaining business operations will be particularly difficult for SMEs' (ILO 2020 p5). OECD (2020) identifies both supply-side and demand-side mechanisms through which COVID-19 has impacted SMEs. Supply side effects relate to disruption to the supply of labour or inputs due to sickness or lockdown. On the demand-side, revenue losses combined with continued costs are creating severe liquidity impacts for many firms. Here, the impacts on SMEs may be particularly severe due to a lack of reserves and greater difficulty in securing bank backing due to perceived lending risk. OECD (2020) reports the results of around 40 surveys internationally which 'show the increasing concerns among SMEs. However, in more recent surveys – in particular in countries where lockdowns are being lifted - SME sentiment has become slightly more optimistic' (OECD 2020, p. 6).

Policy responses to COVID-19 have varied internationally but many countries have implemented measures to support short-time working and layoffs, tax and rate deferral measures and loan guarantees or direct lending or grant support (OECD 2020). The UK government has actively supported firms across all fronts providing a range of fiscal and financial support measures which were adapted and developed as the duration of the COVID-19 pandemic and its impacts evolved. Initial responses included a reduction in interest rates (March 2020) and the introduction of the Coronavirus Business Interruption Loan Scheme (CBILS) delivered by the British Business Bank, to support SMEs by giving access to bank lending and overdrafts. The UK government provides lenders with an 80% guarantee on each loan and does not charge businesses or banks for their guarantee. At the same time the Coronavirus Job Retention Scheme ('Furlough') wage subsidy scheme was introduced to cover the wage costs of those employees unable to work. In April 2020, further support was provided for high-growth and innovating companies through the Future Fund and Innovate UK grant and loan schemes. Bounce Back Loans (BBLs) were introduced in May 2020 with a 100%

guarantee on each loan. March/April 2020 also saw the introduction of additional support measures for SMEs in the devolved territories of the UK.

Here, we draw on notions of behavioural additionality, which are common in the policy evaluation literature, to examine some of the early impacts of the Coronavirus Job Retention Scheme (CJRS) and CBILS/BBILs loan schemes. Behavioural additionality arguments suggest that policy interventions will lead to changes in the behaviour and attitudes of decision makers – here firm owner-managers – before having longer-term impacts on growth, productivity etc. (Georghiou, 2004). The linkages between policy interventions, such behavioural changes and eventual outcomes are often represented in a logic model or theory of change (Jordan, 2010). Here, we focus on two mechanisms which might link policy interventions such as the Furlough scheme and CBILS/BBLs to future productivity. We focus first on firms' intentions to invest in capital equipment, innovation and workforce training. This analysis is based on data taken from the SME Finance Monitor for 2020Q3 and 2020Q4 which provides firm-level information on the receipt of government wage subsidies and loan support (CBILS and BBLs). Trends in investment matter primarily because of their subsequent impact on business growth and productivity. For example, Onkelinx, Manolova, & Edelman (2016) suggest a positive relationship between investments in human capital and productivity in SMEs, with subsequent benefits for internationalisation. Second, we consider the effects of the Furlough scheme and CBILS/BBILs on employers' experience of employee well-being during the pandemic as it is reflected in employee mental health and sickness absence. This analysis is based on the second wave of the Mental Health and Well-being survey conducted in 2021Q1 and covering around 1500 SMEs across the East and West Midlands of England. Numerous studies have linked employee well-being to higher productivity (see Stansfield et al. 2020 for a recent review)[1]. We adopt an instrumental variables approach to minimise potential endogeneity and the risks of reverse causality to estimate the effects of different policy-mixes on investment intentions and employee well-being.

We contribute by providing some of the first evidence on the impact of COVID-19 support measures on UK firms which can feed into planned evaluations[2]. Our results suggest a

[1] Our analysis focuses on the direct effects of each scheme on recipient SMEs while recognising that where this type of support sustains weaker businesses it may hinder resource re-allocation across the economy and so reduce potential productivity gains.
[2] See for example: https://www.gov.uk/government/publications/coronavirus-job-retention-scheme-evaluation-plan.

generally positive picture with positive and significant treatment effects: firms receiving CBILS/BBLs and/or Furlough support have strong future investment intentions and CBILS/BBLs also appears to be contributing to employee well-being. Both are reassuring from a UK policy perspective but given the ubiquity of this type of support measure internationally also provide some wider justification of similar government interventions elsewhere, albeit in different contextual settings.

The remainder of the paper is organised as follows. Section 2 provides a brief conceptual overview linking public support measures, investment intention, well-being and productivity. We base this discussion around two high-level logic models for each type of intervention and a brief overview of existing evidence on the impact of loan guarantees and wage subsidies on investment intentions and well-being. This draws primarily on previous evaluations of the UK Small Firm Loan Guarantee Scheme and Enterprise Guarantee Scheme; less prior evidence is available on the investment impacts of wage subsidy measures. Section 3 provides an overview of the Furlough scheme and the CBIL and BBL loan schemes. Section 4 describes our method and data, and Section 5 presents our results.

2. Conceptual framework and prior evidence

Logic models are a standard approach in policy analysis reflecting the links between inputs, activities, outputs, outcomes and the longer-term effects of a policy initiative. Closely related to theories of change, logic models provide an indication of the mechanisms through which particular policy interventions influence outcomes (Jordan, 2010). The value of logic models comes in their potential to provide an early assessment of whether a particular policy initiative is working through the anticipated mechanisms and is therefore likely to achieve the desired outcomes. Wage subsidies such as the Furlough scheme (CJRS) are typically characterized as active labour market interventions and such measures have proved effective at sustaining employment and reducing unemployment across a range of countries (Sahnoun & Abdennadher, 2018). Wage subsidies may influence productivity through effects on firms and on employees (Figure 1) although subsidy effects may be more muted in recessionary periods as firms become more cautious in making spending decisions (Bloom, Floetotto, Jaimovich, Saporta-Eksten, & Terry, 2018). Paid through the tax system in a similar way to the Australian COVID-19 subsidy scheme (Hamilton, 2020), the UK job retention scheme may, as well as the

obvious impact on the survival of the business, be having positive impacts on productivity through its effects both on firms' liquidity and investment readiness as well as through worker productivity (Figure 1). Wage subsidies may be improving the liquidity of recipient firms, offsetting the potential effects of lockdown or market disruption, and increasing the scope for future investment. Subsidies may also be impacting workers by reducing stress, worry or sadness, and hence increasing attention span (Kaur et al 2020)[3] and willingness to work (Banerjee et al 2020, in Kaur et al 2020). This psychological channel can mean that workers return from Furlough motivated to work harder. The 'gift exchange' hypothesis can also lead to higher worker productivity if workers feel grateful for being retained, paid on Furlough, and re-employed after Furlough. Evidence from elsewhere suggests that COVID-19 related wage subsidies can also increase liquidity and increase the likelihood of re-hiring (Bruhn, 2020). Furlough itself may also have benefits in terms of allowing workers to invest time and energy in personal development (training and education) which may improve their skillset and hence increase their personal productivity.

Loan guarantees (CBILS/BBLs) may also influence firm-level productivity through a number of different routes (Figure 2), effects which may be particularly critical in periods of crisis. In terms of our variables of interest conceptual perspectives on the likely effects of crises are ambiguous, however. Schumpeterian growth models, for example, imply counter-cyclical R&D investment over the business cycle (Aghion et al., 2012), with economic crises creating the conditions for new innovation by lowering factor prices and creating a stock of idle resources (Schumpeter, 1934). The central argument here is one of 'creative destruction' where, during times of recession, there is a reallocation of resources towards new entrants (Aghion et al., 2014). Conversely, if access to credit in order to finance investment becomes limited during a recession, firms may become cash constrained, and investment becomes procyclical (Aghion et al., 2012). Investments in training and other aspects of employee well-being may also be either counter- or pro-cyclical: opportunity costs may be lower in crises suggesting counter-cyclicality, while upturns might provide an increased return to skills suggesting pro-cyclicality (Caponi, Kayahan, & Plesca, 2010).

The empirical evidence, however, suggests the dominance of cash constraints or increased uncertainty and a tendency towards the pro-cyclicality of investment across a range of firms'

[3] https://economics.mit.edu/files/16997

activities. Driver and Munoz-Bugarin (2019), for example, suggest that financial constraints negatively impacted investment in larger UK firms in the GFC, linked perhaps to perceptions of the sustainability and certainty of market demand. Similar evidence points to the pro-cyclicality of investment in R&D and innovation. For example, using US firm-level data on non-federally funded, high-technology firms, Kabukcuoglu (2019) finds that R&D investment is pro-cyclical due to binding financial constraints. Essentially similar results emphasising the impact of financial constraints and the pro-cyclicality of R&D and innovation investments are found by Campello et al. (2010) in a survey of senior managers across 39 countries and by López-García et al. (2013) in a more focussed examination of the impact of credit constraints on 3200 Spanish firms. The international evidence on cyclical fluctuations in training activity is more mixed with (Caponi et al., 2010) at least identifying a counter-cyclical pattern in Canadian firms (i.e. more training in recessions).

By increasing the availability of finance and reducing its costs, therefore, CBILS/BBLs may help firms to sustain their operations despite low levels of trading, and to invest in digital and ICT technologies, in new ways of working and in other innovative activities, with positive impacts on future productivity. Evaluations of previous loan guarantee schemes in the UK provide some useful evidence. For example, an evaluation of the Small Firm Loan Guarantee Scheme (SFLGS) was undertaken in 2010. SFLGS operated by providing a loan guarantee to banks in cases where a business with a viable business plan was unable to raise finance due to a lack of security or track record (Cowling 2010). The evaluation highlighted significant employment gains as well as an (unquantified) and positive impact on investment in innovation and export market development. No robust productivity impacts were evident, however. In 2010, the Small Firm Loan Guarantee Scheme was extended and became the Enterprise Finance Guarantee Scheme (EFGS). Based on a cohort of firms which received support from the EFGS in 2009 a 2013 evaluation provides a potentially useful guide to the likely impacts of CBILS and BBLs during the COVID-19 pandemic. This suggested that EFGS was having its desired effect: 'the key contribution of EFGS is in removing the impediment of lack of finance to the growth process' (Allinson et al. 2013, p. iii) and helping to start earlier and scale-up their investment projects.

For both wage subsidies and loan guarantees (Figure 1 and 2), however, there exists another channel of effect which produces an opposite (negative) impact on (aggregate) productivity. Low costs of credit and its availability (relaxation of credit constraints) offset competitive

pressures through which less efficient firms are forced to exit the market and, therefore, reduces opportunities for cleansing (Aghion et al. 2019). These firms are enabled to survive as zombie firms performing below normal profitability thresholds. Their survival can lead to market congestion and raises the cost of entry for new innovative firms while reducing profits and incentives to invest for incumbent innovative and productive firms. Thus, the positive impact of COVID-related loans will be concentrated among firms with previously high productivity and innovation levels and which were previously financially viable. On the other hand, the negative crowding out of new entrants will result in a different set of unproductive firms allowed to stay afloat by the loans. The severity of this effect in the context of COVID support measures will depend on eligibility criteria - some loans require firms to prove they would qualify for a similar loan in normal times (e.g. Covid Corporate Financing Facility(CCFF) for large firms) but for small firms the conditions for eligibility are less strict, potentially allowing unproductive firms to access funds. This constitutes a potentially unproductive misallocation of funds. In support of this channel, Aghion et el (2019) find that a low exit rate is stronger for the most unproductive firms that accessed loans. Note that their analysis is performed in 'good times'- at these times maintaining a low interest rate can lower aggregate productivity. At a time of crisis, however, evidence from Besley and Reenan (2018) suggests that credit constraints lowered productivity more through reducing investment, rather than through credit misallocation to unproductive firms.

3. The Coronavirus business support schemes: An overview

Browning (2021) provides a detailed description of the various coronavirus business support schemes including their eligibility criteria and any updates and amendments that were made as the pandemic evolved. The following section draws heavily on this report as well as on other government sources.

3.1 The Coronavirus Job Retention Scheme (Furlough Scheme)

The main aim of the CJRS was to 'support businesses to preserve employer-employee matches by providing a mechanism to pay the wages of Furloughed employees', (HMRC, 2020, p.8)[4]. This aim is to be achieved through easing financial burdens on firms, preventing layoffs for firms that need to temporarily close due to coronavirus restrictions and reduce the risk of

[4]https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/945800/The_Coronavirus_Job_Retention_Scheme__CJRS__Evaluation_Plan.pdf

permanent business closure (HMRC, 2020). By preventing layoffs and supporting wages, the scheme hopes to ensure a quicker and smoother recovery. The Coronavirus Job Retention Scheme was announced on 25th March 2020 and initially covered the period from 1 March to 31 October 2020. It has since been extended to cover the period 1 November 2020 to 30 September 2021.

The initial CJRS scheme provided a grant that covered 80% of wages for Furloughed employees up to a maximum of £2,500 per month, and an additional grant to cover the cost of Employer National Insurance and pension contributions. From 1st July 2020 to 31st October 2020, however, the scheme changed to accommodate flexible Furloughing where employees could work reduced hours and employers can claim under the scheme for any usual hours not worked (Browning, 2021). When the first national lockdown was eased, the rates of support progressively declined. In particular, from 1st August 2020, the CJRS grant no longer covered the cost of Employer National Insurance and pension contributions. From 1st September 2020 the grant covered 70% of wages with employers required top up the remaining 10%. From 1st October 2020 the grant covered 60% of wages with employers required to top up the remaining 20%.

The second national lockdown announced on 31st October 2020 ushered in further changes to the scheme. In November and December of 2020, the scheme was further extended to cover the period 1st November 2020 to 30th April 2021 and the initial 80% rate of support, as well as Employer contributions, were reinstated. In the 2021 budget, the Chancellor announced that the CJRS scheme will be extended to cover the period 1st May 2021 to 30th September 2021. Rates of support are such that the scheme will continue to cover 80% of wages, up to a maximum of £2,500 per month, until June 2021. The rate of support will then progressively decline to 70% of wages in July 2021 and 60% of wages in August 2021, with employers expected to make up the difference.

All UK firms with employees are eligible for the CJRS. The only criteria is that the firms must have notified HMRC of a PAYE payroll on a Real Time Information (RTI) basis by 30th October 2020. The initial scheme only covered workers employed by 30th October and on the on the PAYE payroll, but employees employed up to a week earlier, that is, on 23rd September 2020, could be re-employed and placed on Furlough. The scheme required that firms entered into a 'Furlough agreement' which set out the employees being Furloughed and the terms and conditions of Furlough including the rates of pay. There are relatively tight two week

timescales within which claims can be made, i.e., claims can only be made within 14 days of the end of the reference month.

3.2 Coronavirus Business Interruption Loan Scheme (CBILS) and Bounce Back Loan Scheme (BBLS)

By March 2021, the Coronavirus Business Interruption Loan Scheme (CBILS) and the Bounce Back Loan Scheme (BBLS), along with the Coronavirus Large Business Interruption Loan Scheme (CLBILS) for large firms, had disbursed £75 billion through loans and other facilities, with the BBLS accounting for about 94% of loans and 62% of funds disbursed[5]. Both schemes closed on 31st March 2021, and were replaced by the Recovery Loan Scheme (RLS).

The Coronavirus Business Interruption Loan Scheme (CBILS) aimed at supporting viable businesses to respond to cash flow pressures (Browning, 2021). The scheme was announced on 11th March 2020 as part of the budget. It offered loans and similar facilities, up to a maximum of £5m, to small firms with a turnover of less than £45m. The scheme, which commenced on 23rd March 2020, offered loans which were interest-free for the first year. The loans were initially based on repayment terms of up to six years, but this was extended to 10 years taking effect from 23rd December 2020. Under the scheme, lenders received a government backed partial guarantee of 80% against the outstanding facility balance and the government covered the first 12 months of interest plus any lender fees, but the borrower remained liable for the debt in its entirety. In addition, there were no personal guarantees or securities for facilities below £250k; above this, personal guarantees were at the discretion of the lender but were limited to a maximum of 20% of outstanding balance and could not include the principal private residence of the borrower. The scheme closed on 31st March 2021.

Small businesses from most sectors could apply for the scheme, with the exception of the following trades and organisations: banks, building societies, insurers, state funded primary and secondary schools, trade unions, and other professional membership organisations. Firms in fishery, agriculture and horticulture may not have qualified for the full interest and fee payment (Browning, 2021). To be eligible, SMEs must be UK based with an annual turnover of £45m or less; they must have a borrowing proposal which would have been considered viable if the pandemic had not occurred; they must self-declare that they have been adversely

[5] https://commonslibrary.parliament.uk/research-briefings/cbp-8906/

affected by the pandemic, and, if they are applying for a loan of more than £30k, they must not have been classed as an 'undertaking in difficulty' on 31st December 2019. The scheme, therefore, initially targeted relatively healthy small firms undergoing cash flow difficulties due to the coronavirus pandemic and associated restrictions. The criteria relating to 'undertakings in difficulty' was eased on 30th July 2020 allowing the smallest firms, with less than 50 employees and less than £9m annual turnover, to access the scheme irrespective of being 'undertakings in difficulty' unless they were already subject to insolvency proceedings or they were in receipt of rescue aid.

The Bounce Back Loan Scheme (BBLS) was created as a simplified loan scheme that would ensure rapid business access to loans through simplifying the application process and relaxing consumer protection provisions[6]. It was announced on 17th April 2020 and came into effect on 4th May 2020. Although it was promoted as particularly beneficial for small businesses, the BBLS was open to firms of all sizes and proved to be the most popular loan scheme[7].

BBLS offered smaller loans of £2000 to £50,000, or up to 25% of turnover, for up to 10 years. The government guaranteed 100% of the loan but the borrower remains liable for it in its entirety. The government also covered the first year of interest repayments, no repayment on the loan was required in the first year, and the annual rate of interest was 2.5% for all loans. In September 2020, the loan term was increased from 6 years to 10 years, and on 2nd November, it was announced that firms could top up their existing BBL once. Those that had accessed CBIL were excluded except to use BBL to finance CBIL or to transfer up to £50,000 from CBIL unto BBL. Essentially, firms could not use both schemes simultaneously to finance business activities or cash flow pressures.

The eligibility criteria for the BBLS are similar to that of the CBILS. Businesses must be UK based and were required to self-declare that they had been negatively affected by the pandemic. They must also self-declare that they were not classed as 'undertakings in difficulty' as of 31st December 2019. If they were, then they were required to declare that they comply with some additional government aid restrictions. Businesses must have been established before 1st March 2020, they must not be in use of any other pandemic-related loans unless the BBL is being used to refinance those loans, they must not be in liquidation, bankruptcy, or undergoing debt restructuring at the time of application, and they must derive at least half of their income from

[6] https://commonslibrary.parliament.uk/research-briefings/cbp-8906/
[7] https://commonslibrary.parliament.uk/research-briefings/cbp-8906/

their trading activity. Finally, businesses must not be in the restricted sectors of activity as outlined under CBILS. Like the CBILS, therefore, the BBLS targeted relatively healthy firms undergoing cash flow problems due to the coronavirus pandemic and associated restrictions. Key variables that should determine selection into the use of these schemes should therefore be around the perceived impact of the pandemic on the firm and its profitability prior to the pandemic.

4. Data and methods

4.1 Method

In this paper we use a bivariate probit model to examine the impact of CJRS, CBILS and BBLS on firms' investment intentions and employee well-being. The model forms part of the group of discrete choice endogenous variables models first introduced in Heckman (1978).

The choice of model is driven by concerns over two potential sources of endogeneity: reverse causality and selection bias. Specifically, using government pandemic support schemes may enable firms to think strategically about the future and afford them resources to invest in capital, innovation, export, the workforce or other major expenditures that can improve productivity post-pandemic. On the other hand, firms that already have plans to undertake such investments may be more likely to seek and obtain government pandemic support schemes, since these can lift resource constraints that will otherwise limit their ability to implement their investment plans. A single equation probit model will merely reveal correlations between the support schemes and investment plans but will not account for this bidirectional causality. Employee's sickness and mental health absences may also influence the decision to seek pandemic support, although here the likelihood of such bidirectional causality appears more limited.

There is also the potential for selection bias in both the equations for investment intentions and those for mental health outcomes. Some firms will be eligible for support based on the criteria set by government while others will not. The most notable eligibility criteria relate to profitability prior to the pandemic and the perceived impact of the pandemic on the business. While we control for both of these factors in our empirical specifications, there remains the possibility that there are unobservable characteristics, perhaps related to firm capabilities, that

are correlated with both the probability of investment planning and the probability of obtaining government pandemic support.

Both reverse causality and unobserved heterogeneity could lead to a correlation between the government support schemes and the error term in standard regression models, violating the exogeneity assumptions of OLS models and leading to biased estimates of treatment effects (Greene, 2002, Baum, 2007). The bivariate probit model used here is a recursive simultaneous equation model that addresses the problem of an endogenous binary variable through joint maximum likelihood of two probit equations (Madalla, 1986, Greene, 2002) - the reduced form equation for the endogenous regressor and the structural form equation for the binary outcome of interest thus:

$$y_{1i}^{*} = \beta_1 x_{1i} + \mu_{1i}, \quad (1)$$

$$y_{2i}^{*} = \beta_1 x_{2i} + \mu_{2i} = \delta_1 y_{1i} + \delta_2 v_{1i} + +\mu_{2i}, \quad (2)$$

Where y_{1i}^{*} and y_{2i}^{*} are unobserved continuous latent variables that determine the observed binary variables y_{1i} and y_{1i} thus:

$$y_{1i} = \begin{cases} 0 \; if \; y_{1i}^{*} \leq 0 \\ 1 \; if \; y_{1i}^{*} > 0 \end{cases} \text{ and } y_{2i} = \begin{cases} 0 \; if \; y_{2i}^{*} \leq 0 \\ 1 \; if \; y_{2i}^{*} > 0 \end{cases}, \quad (3)$$

x_{1i} and v_{1i} are vectors of regressors, and the error terms μ_{1i}, μ_{2i} have a bivariate normal distribution with zero mean, unit variance and correlation coefficient ρ.

In the presence of an endogenous binary regressor, this joint estimation of the bivariate probit model is required to achieve consistent estimates of the parameters in the structural equation. Unlike OLS, the simultaneity in the model does not matter for the maximum likelihood estimation of the recursive bivariate model, because the endogenous nature of y_{1i} can be ignored in formulating the log-likelihood function[8]. A test for determining the exogeneity of y_{1i} is important since, if it is exogenous, the models become independent probit equations and joint estimation becomes unnecessary (Greene, 2002). One exogeneity test is achieved through estimating the correlation coefficient, ρ, between the error terms μ_{1i}, μ_{2i} (Greene, 2002; Monfardini and Radice, 2007). This test involves testing the null hypothesis that $\rho = 0$ against the alternative hypothesis that $\rho \neq 0$. Under the null, y_{1i}, is exogenous and a single equation

[8] See Greene (2002) for the mathematical derivation of this result.

probit model provides a consistent estimate of its impact. Under the alternative, y_{1i} is endogenous and the bivariate probit model provides a consistent estimate of its impact.

The empirical model we estimate is:

$$Treatment_{i,j} = \beta_1 Controls_i + \beta_2 z_i + \mu_{1i},\ j = (1,..,3),\ (4)$$

$$Investment\ plan_{i,j} = \delta_1 Treatment_i + \delta_2 Controls_i + \mu_{2i},\ \ j = (1,..,5),\ \ (5)$$

$$Absence_{i,j} = \delta_1 Treatment_i + \delta_2 Controls_i + \mu_{2i},\ \ j = (1,..,5),\ \ (6)$$

In equation (4), $Treatment_{i,j;\ j=(1,..,3)}$, is a binary variable equal to one if the firm has used Furlough-only, CBIL or BBL loans only, or a combination of Furlough and CBIL or BBL loans; it is zero if the firm has used neither Furlough nor CBIL or BBL loans. $Controls_i$ is a vector of individual and firm specific control variables including sectoral dummy variables. z_i is a vector of instrumental variables used to identity $Treatment_{i,j}$. These variables, not included in the structural equations (5)-(6), are assumed to be highly correlated with treatment such that they induce variation in $Treatment_{i,j}$ without having a direct impact on $Investment\ plan_{i,j}$ or $Abcense_{i,j}$, except through their correlation with $Treatment_{i,j}$. Although such an exclusion restriction is desirable, it may not be necessary for consistent estimation of the parameters of the bivariate probit model (Wilde, 2000, Monfardini and Radice, 2007).

In equation (5), $Investment\ plan_{i,j;\ j=(1,..,5)}$ is a binary variable equal to one if, in the next year, a firm plans to undertake investments in capital equipment, innovation, export market development, workforce increase or other major expenditures, and zero otherwise. We estimate separate models for each type of investment plan. In equation (6), $Absence_{i,j}$ is an indicator variable equal to one if, over the past twelve months, there have long term sickness absences, repeated sickness absences, or absences due to staff metal health problems. Here also, we estimate separate models for each type of absence. In both equations (5) and (6), $Controls_i$ is a vector of individual and firm specific control variables including sectoral and regional dummies.

To identify the impact of the government support schemes on the probability of investment planning and employee well-being, we use the sectoral averages of the use of each form of government support as an instrument for firm-level use of support. This is based on the argument that the use of support at the sectoral level is a good indicator of whether individual

firms within that sector use support, but it should not directly impact firm-level investment decisions except through the firm's own use of support. Such aggregate level instrumental variables are argued to be relatively uncontroversial, since they are outside the control of the firm (Borsch Supan and Koke, 2002; Renders and Gaeremynck, 2006). For the investment equations, we use a second instrumental variable which is an indicator variable equal to 1 if the firm has previously used external finance, and zero otherwise. Previous use of external finance could be correlated with current use of external finance through CBIL or BBL schemes; firms with an experience of using external finance will be more likely to use it in the future. The previous use of external finance is also pre-determined with respect to current investment plans. Of course, to the extent that past investment planning is related to investment planning during the pandemic, there remains the possibility that previous use of external finance can have a direct effect on current investment planning via its effect on past investment planning. However, such a correlation is arguably low because the pandemic would have induced a shift in firms' investment plans[9]. Due to data availability do not use this instrumental variable in the employee absence equations.[10]

4.2 Data

We use two datasets to enable the estimation of the effects of pandemic support schemes on investment intentions and employee health related absences.

To estimate the impact on investment intentions, we use quarterly survey data from the Small and Medium Enterprises Finance Monitor (SMEFM) surveys. The SMEFM administers quarterly surveys to 4,500 SMEs and sole proprietorships across nine sectors and across all UK regions. The data is cross-sectional as the surveyed firms vary from quarter to quarter. The SMEFM data provides detailed information of the financial activities of firms, including borrowing and other forms of external finance, sources of external finance, firms' profitability and investment planning. It also includes basic individual and firm-level variables such as employment, sector, region, and gender of firm leaders. Starting from the second quarter of

[9] Since we have binary dependent variables and thus (nonlinear) probit models, and non-random survey sampling requires the use of sampling weights, standard tests for the validity of these instruments and of over-identification restrictions, such as the Sargan- Hansen tests, are invalid (Pitt, 2011). However, we argue conceptually that these instruments are not weak, i.e., they are strongly correlated with government support and they have a limited direct impact on investment planning during the pandemic.

[10] Data on the previous use of external finance is unavailable in the Mental Health Survey used to estimate equation (6)

2020, the SMEFM incorporated questions related to the coronavirus pandemic, including firms' subjective assessments of the impact the pandemic has had on their businesses and their optimism for the future, as well as their awareness and use of the government's pandemic support schemes. The SMEFM data, therefore, serves as a useful starting point for understanding the potential productivity effects of the government's pandemic support schemes. In our analysis, we use a pooled cross section of the surveys conducted in the third and fourth quarters of 2020, hence covering the periods in which most firms had access to pandemic support schemes. We exclude sole proprietorships and focus on firms with at least two employees including the owner or manager.

To estimate the impact of pandemic support schemes on employee well-being, we use the second wave of the workplace Mental Health and Well-being survey, conducted during between February and April 2021 as part of the Mental Health and Productivity Pilot project[11], and covered 1,551 firms across the East and West Midlands. Conducted by telephone, this survey aimed to explore firms' experiences of workplace mental health and, given its timing, it included specific questions relating to the pandemic and details of the government support schemes that the firms accessed. It therefore provides a suitable basis for examining the impact of these schemes on employee well-being, helping to shed light on the labour force channel through which pandemic support may improve productivity.

Below we detail the measurements of our dependent variables, treatment variables, instrumental variables and control variables.

Dependent variables

Our dependent variables (equation 5) are measures of investment planning. Firms' investment plans give an early indication of potential investment decisions firms will make, which we expect to have positive longer-term effects on productivity. We measure five types of investment plans. These are binary variables equal to 1 if, in the next year, the firm plans to invest in new plant, machinery or premises (capital equipment), if it plans to develop a new product or service (innovation), if it plans to start selling, or to sell more, overseas (export development), if it plans to take on more staff (increase workforce), and if it plans some other major expenditure such as IT or acquiring another business.

[11] See https://mhpp.me/. See also Stanfield et al. (2020) for a detailed survey description.

In equation (6), we consider three dependent variables as measures of employee well-being. These are binary variables equal to one if, over the past twelve months, staff have been on long term sickness absence of four weeks or more, if there were instances of staff taking repeated sickness absence, and if staff have been absent for any length of time due to mental health problems.

Treatment variables

The SMEFM and the Mental Health and Well-being survey datasets provide information on whether firms used the CJRS Furlough scheme and whether they obtained a CBIL or BBL loan. The SMEFM survey does not distinguish between these two loans so we cannot disaggregate the effect of CBIL from that of BBL. As discussed above, however, the loans are similar in terms of their eligibility criteria and repayment times, and firms are not permitted to use both loans simultaneously. In both the SMEFM and Mental Health and Well-being survey, therefore, we define three mutually exclusive combination of treatments with the comparison group in each case comprising of firms that used neither Furlough nor any of the loan schemes. The treatment groups are:

- *Furlough-only* is a binary variable equal to one if the firm only used the CJRS scheme and did not have CBIL or BBL loans; it is equal to zero if the firm had neither Furlough nor CBIL or BBL.
- *CBIL or BBL only* is a binary variable equal to one if the firm only had CBIL or BBL loans and did not use the Furlough scheme; it is equal to zero if the firm had neither CBIL or BBL nor Furlough. We note that, in the Mental Health and Well-being survey, there were too few firms with this combination of support so we do not estimate its impact on employee well-being.
- *Furlough+CB* is a binary variable equal to one if the firm used *both* Furlough and CBIL or BBL; it is equal to zero if the firm had neither Furlough nor CBIL or BBL.

Instrumental variables

As previously discussed, we use sectoral averages of treatment and, for investment intentions, we also use firms' previous use of external finance as instrumental variables. The former is equal to the sectoral averages of the use of each type of treatment in each 2-digit SIC sector;

the latter is a binary variable equal to one if the firm has previously used external finance and zero otherwise.

Control variables

Definitional details for the control variables included in the equations of investment intentions and employee well-being are provided in Table 1. In both equations, we control for a range of firm-level characteristics, i.e., size of the firm, its sector and its region, as well as a range of individual level characteristics. We control for gender differences and individual capabilities/education level. We also control for two variables that capture the key elements of the eligibility and selection criteria for the use of CBIL and BBL, namely the impact of the pandemic on the business (in terms of perceived impact or redundancies) and the relative health or profitability of the business prior to the pandemic (see Table 1).

In the equations for investment intentions, we further control for the firm leader's growth ambition to account for differences in investment plans and support use stemming from differences in ambitions and aspirations. Here we also control for firm's status as an innovator or exporter and their access to business mentorship; these variables capture additional firm-level capabilities that may affect investment planning. We also include a time dummy variable to account for time specific differences between 2020Q3 and 202Q4. In the employee well-being equations, we control for relevant employee characteristics including the share of ethnic minority employees, the share of disabled employees, the share of employees under the age of 25 and whether some employees are on zero hour contracts. Finally, we control for firm's attitudes towards employee mental health in the wake of the pandemic.

4.3 Descriptive statistics

Descriptive statistics of all the variables used in the analysis are provided in Table 2 for the SMEFM data and Table 3 for the Mental Health and Well-being data.

In the SMEFM survey 48.9% of firms used only the Furlough scheme, 3.6% of firms used only the CBIL or BBL loans scheme, and 16.4% of firms used a combination of the two schemes (Figure 3). The remaining 31.1% of firms used neither the Furlough nor the loans scheme. There was strong sectoral variation in the use of the exclusive schemes i.e. *Furlough-only* and *CBIL/BBL only* (Figure 3). Firms in agriculture, forestry and fishing were most likely to use *CBIL/BBL only* and least likely to use *Furlough-only*. Firms in manufacturing were least likely

to use *CBIL/BBL only* but most likely to use *Furlough-only*. The use of *CBIL/BBL only* was highest in hotels and restaurants, where the use of *Furlough-only* was also high. On the other hand, firms in health and social work were least likely to use *CBIL/BBL only***.**

Within the Mental Health and Well-being survey (conducted in Q1 of 2021 after the SMEFM survey) 69.8% of firms were using *Furlough-only*, just over 1% of firms were using *CBIL/BBL only*[12], and 15.8% of firms were using the combination of schemes, i.e., *Furlough+CB* (Figure 4). There is little sectoral variation in the use of the of the *Furlough-only* scheme. Firms in Construction and Business Services were most likely to be using *Furlough+CB*, while firms in Other Services are least likely to be using this combination of support.

Looking at our dependent variables we see, perhaps surprisingly, stronger investment intentions in 2020Q3 and 2020Q4, across various investment categories than in previous quarters (Figure 5). In addition, plans to invest in export market development and to increase the workforce increased significantly between 2020Q3 and 2020Q4. This is consistent with our previous argument that the pandemic likely induced shifts in investment planning for firms, thereby providing support for using previous use of external finance as an instrument for the use of government support schemes. There is some sectoral variation in investment planning. Firms in agriculture were most likely to plan capital investments, whereas firms in Health and Social Work were most likely to plan to expand the workforce. Manufacturing firms were most likely to plan investments in export market development and in innovation (Figure 6).

In terms of our employee well-being indicators, about 33% of firms reported long term sickness absences over the previous 12 months, compared to just over 20% of firms reporting absences due to mental health problems or repeated absences (Figure 7). There is some sectoral variation, with firms in Other Services most likely to report all three types of absences.

5. Results

5.1 The effects of government support schemes on investment intentions

For each dependent variable, we report marginal effects of each treatment on the probability of making investment plans (Tables 4-8). The correlation coefficient between the disturbances of the error terms in the bivariate probit models, ρ, is significant in most cases. This suggests that in the models for investment planning the government support schemes are endogenous

[12] In our analysis we exclude this group for firms due to low number of observations.

supporting our choice of models. Overall, we find widespread positive impacts of the government support schemes on investment planning:

- Firms with *Furlough-only* are 42.1 percentage points more likely to plan investments in capital equipment than firms with no form of pandemic support (Table 4). On the other hand, firms with *CBIL or BBL only* are 35.5 percentage points more likely to plan investments in capital equipment than firms with no pandemic support. Finally, firms with a combination of Furlough and CBIL or BBL loans, *Furlough+CB*, are 17.2 percentage points more likely to plan investments in capital equipment than firms with no pandemic support (Table 4).
- With regards to planning to innovate, firms with *Furlough-only* are 29.3 percentage points more likely to plan to innovate than firms with no pandemic support, firms with *CBIL or BBL only* are no more likely to plan to innovate than firms without support, and firms with *Furlough+CB* are 15.6 percentage points more likely to plan to innovate than firms without pandemic support (Table 5). Thus, the loans scheme alone do not exert a positive influence on the probability to plan for innovation.
- By contrast, the *Furlough-only* treatment has no impact of the probability of planning for export market development (Table 6). Here, however, the *CBIL or BBL only* treatment increases the probability of planning to invest in export market development by 15.2 percentage points, and the *Furlough+CB* treatment increases this probability by 7.5 percentage points.
- As with plans to invest in capital equipment and plans to innovate, the *Furlough-only* treatment has the largest impact on plans to increase the workforce (Table 7). Here, *Furlough-only* increases the probability that a firm plans to increase staff by 41 percentage points. The impact is 29.1 percentage points for firms with the *CBIL or BBL only* treatment and 23.6 percentage points for those with the *Furlough+CB* treatment.
- Plans to undertake other major expenditures, such as IT or business takeovers, are 27.9 percentage points higher for firms with *Furlough-only*, and 18.4 percentage points higher for those with *CBIL or BBL only* (Table 8). Having a combination of the two schemes, *Furlough+CB,* has no impact on plans to undertake other major investments.

Overall, our results suggest that the *Furlough-only* treatment has the highest and most consistent impact on investments and productivity enhancing plans, except in the case of plans to develop the export market where *Furlough-only* has no impact. In addition, the *CBIL or BBL only* treatment has consistent positive effects on all but firms' plans to innovate, where its effect

is insignificant. Finally, the combination of schemes i.e. the *Furlough+CB* treatment generally has weaker impacts than treatment involving the exclusive use of each scheme.

We also examine whether these treatment effects vary by firm size and report the marginal effect of each treatment for firms with 2-10 employees, 11-50 employees, 51-100 employees, 100-200 employees and 201 to 250 employees (Figures 8-12):

- For plans to invest in capital equipment, the effects of *Furlough-only* decrease with firm size and the effects of *CBIL or BBL only* increase with firm size; these differences are statistically significant (Figure 8). The effects the *Furlough+CB* do not vary by firm size.
- For investment in innovation, the effects of *Furlough-only* again decrease sharply with firm size, but there are no differences by size for the effects of *CBIL or BBL only* or *Furlough+CB* (Figure 9).
- For investment in export market development, the effects of *Furlough-only* and *Furlough+CB* decrease with size and that of *CBIL or BBL only* increase with size; none of these differences are statistically significant (Figure 10).
- For investments in increasing the workforce, the effects of *Furlough-only* fall sharply with firm size and these differences are statistically significant. Here, differences in the effects of *CBIL or BBL only* seem to follow an inverted U shape. The effect for the smallest firms (2-10 employees) is significantly different from the effect for firms with between 11-50, 51-100 and 101-200 employees, but not significantly different from firms with more than 200 employees. The effect for firms with 11-50 employees is also significantly different from that for firms with 51-100 employees. The effect of *Furlough+CB* does not differ by firm size (Figure 11).
- For other major investments, the effects of *Furlough-only* again decrease significantly with firm size, but the effects of the other two treatments do not vary by firm size (Figure 12).

Overall, therefore, the analysis of treatment effects by firm size reveal that the *Furlough-only* treatment consistently has a higher positive impact for smaller firms, whereas larger firms with more employees benefit less from the *Furlough-only* treatment.

By sector there are notable sectoral differences for intentions to investment in capital (Figure 13). Here, the effect of *Furlough-only* is highest for firms in Agriculture, Forestry and Fishing despite the low use of this treatment combination in this sector (Figure 4). The effect of *Furlough-only* is also high for firms in Transport, Storage and Communications and those in Health and Social work. On the other hand, the effect of *Furlough-only* is lowest for firms in Wholesale and Retail and in Real Estate, Renting and Business Activities. For intentions to invest in innovation, the *Furlough-only* treatment had the highest impact for firms in Health and Social Work and the lowest impact for firms in Construction (Figure 13). Again, in Health and Social Work, the *Furlough-only* treatment had the highest impact on intentions to invest in expanding the workforce and to undertake other major investments. Overall, therefore, the impact of the *Furlough-only* treatment across all investment types tends to be high among firms in Health and Social care, suggesting that firms in this sector may be the biggest winners from the Furlough scheme.

Similar sectoral differences are evident for *CBIL/BBL only* by sector and investment types (Figure 14). In terms of intentions to invest in capital, as with the *Furlough-only* treatment, the effect here is highest among firms in Agriculture, Forestry and Fishing; this sector also had the highest use of this treatment combination (Figure 4). There are fewer differences in the effects of *CBIL/BBL only* on intentions to expand the workforce, with the highest impact occurring in Construction (Figure 14). With regard to intentions to invest in export market development, the effects of *CBIL/BBL only* are notably lower for firms in Agriculture, Forestry and Fishing, and for those in Hotels and Restaurants; the effect is highest for firms in Other Community, Social and Personal Services. As with intentions to invest in export market development, the effects of *CBIL/BBL only* on intentions to undertake other major investments are lowest among firms in Agriculture, Forestry and Fishing and those in Hotel and Restaurants. Here, the effects are highest for firms in Health and Social Work and Real Estate, Renting and Business Activities (Figure 14).

The effects of *Furlough+CB* also vary by sector and investment types. The largest impact on intentions to invest in capital is again for firms in the Agriculture, Forestry and Fishing sector; the lowest impact is for firms in Wholesale and Retail and those in Real Estate, Renting and Business services (Figure 15). The effect of *Furlough+CB* on intentions to innovate is highest among firms in Health and Social Work and lowest in Construction. As with the effects of the exclusive schemes, here there is limited sectoral variation in the impact on intentions to expand the workforce, with the highest impact occurring in Health and Social Work. The effect of

Furlough+CB on intentions to invest in export market development is notably lower among firms in Hotels and Restaurants, Construction and Agriculture, Forestry and Fishing; on the other hand, the effect is notably higher among firms in Health and Social Work and those in Other Community, Social and Personal Services. The effect on manufacturing firms is also above average. For intentions to undertake other major investments, *Furlough+CB* has the highest impact for firms in Health and Social Work and for those in Real Estate, Renting and Business activities. The effect is lowest for firms in Hotels and Restaurants.

Overall, the key findings from our analysis by sector suggests:

- All scheme combinations have very high impacts on the intentions of firms in Agriculture, Forestry and Fishing to invest specifically in *plant and capital equipment.*
- Effects on manufacturing firms across schemes and investment types tend to be about the average effect for all firms.
- Firms in Health and Social Care have well above average benefits across investment intentions from using the *Furlough-only* and *Furlough+CB* treatments, but not *CBIL/BBL only*, suggesting that the effect of Furlough here is stronger than that of loans.
- Across schemes and investment types, effects tend to be lower among firms in the Hotels and Restaurants sector.

5.2 The effects of government support schemes on employee well-being

Here we report the impact of *Furlough-only* and *Furlough+CB* on the probability of employee absences relating to mental health problems, long term sickness or repeated sickness; the effects of *CBIL/BBL only* are inestimable due to low sample size. The *Furlough-only* treatment has no impact on any type of staff absence, suggesting that having only the Furlough scheme does not affect employee well-being (Table 9). *Rho*, the measure of exogeneity, is insignificant in all the *Furlough-only* models, indicating the absence of endogeneity in these models and suggesting that single equation probit models will provide a consistent estimate of the treatment effect. By contrast, the *Furlough+CB* treatment is endogenous in the mental health absence equation (*rho* significant at the 1% level); here, relative to firms that have no support, firms that have *Furlough+CB* are 49.3 percentage points less likely to report employee mental health absences. This indicates that the *Furlough+CB* treatment exerts a positive well-being effect on employee mental health. The *Furlough+CB* treatment, however, has no impact of long term

and repeated sickness absences, and *rho* is again insignificant in these equations, suggesting the absence of endogeneity bias (Table 9).

Given that the use of government support schemes generally appear exogenous in employee well-being equations, we estimate standard single equation probit models (Greene, 2002) (Table 10). Here, the *Furlough-only* treatment now significantly reduces mental health related absences by 7.7 percentage points, and reduces long term and repeated sickness absences by 8.1 percentage points and 2.6 percentage points respectively. On the other hand, the *Furlough+CB* treatment now reduces long term and repeated absences by 9.2 percentage points and 9.9 percentage points respectively, although these are only weakly significant (Table 10).[13]

We find little variation by firm size in the effects of Furlough-only and *Furlough+CB* on all measures of employee well-being, indicating that these schemes have similar impacts across firms of all sizes (Figure 17). Estimates of the effect of *Furlough+CB* on employee mental health absences by sector are derived from the bivariate probit model with endogeneity (Figure 18). Here, the Furlough+CB treatment causes the largest reduction in mental health absences among firms in Wholesale and Retail and those in Business services, indicating that employee well-being in these sectors is positively impacted by the use of this scheme. However, firms in Construction and those in Hospitality experienced the least reduction in metal health absence as a result of the *Furlough+CB* treatment. Similar results for the *Furlough-only* treatment (Figure 19) and the *Furlough+CB* treatment (Figure 20) suggest limited sectoral variations. Overall, the strongest effects on employee well-being stem from the effect of Furlough+*CB* on mental health absences. The benefit of this treatment is lowest among firms in Construction and those in Hospitality sectors, but highest among firms in Wholesale and Retail and those in Business services.

6. Conclusions

Our initial analysis of the SME Finance Monitor data provides some reassuring evidence of the potential for positive medium-term productivity impacts from UK government pandemic support measures at least at the level of the individual firm. We report four main findings. First, we find strong evidence that firms receiving either Furlough support, guaranteed loans or a

[13] Here the probit model shows a much lower impact of the *Furlough-only* treatment than estimated in the bivariate probit model; we prefer the latter due to the endogeniety bias in the single equation probit for this model.

combination of the two have stronger investment intentions than non-recipients (Table 11). Receipt of Furlough-only has positive and sizable impacts on the intention to invest in capital equipment, innovation, and workforce scaling but not exporting. CBIL/BBL only has positive and sizable impacts on the intention to invest in capital equipment, exporting and workforce scaling but not innovation. Interestingly, however, the combination of schemes, that is, the *Furlough+CB* treatment generally has smaller treatment effects than treatment involving the exclusive use of each scheme. Arguments linked to financial slack may be important here which suggest that investment intention may decline where levels of slack – over-subsidy – are too great (Paeleman and Vanacker, 2015).

Second, we also find strong evidence that firms receiving either Furlough or Furlough and CBIL/BBL are less likely to experience issues with either sickness or mental health absence (Table 11). Here, effects are smaller in scale and need to be regarded with some caution due to identification issues. Are firms using the Furlough scheme less likely to identify mental health issues because of the benefits of the Furlough scheme on employee well-being or simply because some employees are not working? Issues with home working may also be important is some sectors in terms of firms' perceptions of mental health and sickness issues. Interestingly, here however the combined effects of Furlough and CBIL/BBL are larger than the Furlough-only effect suggesting that CBIL/BBL receipt is having a small and additional positive effect on well-being.

Third, treatment effects for investment intention differ by firm size, particularly the effect of the Furlough scheme. Furlough-only has a consistently stronger effect on investment intentions in smaller firms although the effects of CBIL/BBLs only and the combination of support measures is less sensitive to firm size. We find no such variation between sizebands in effects on employee well-being. While this latter finding is perhaps surprising the greater effects on investment intention in smaller firms is consistent with the idea that smaller firms may be more cash constrained and also impacted more severely by the COVID-19 crisis (ILO 2020; OECD 2020). Fourth, and perhaps unsurprisingly, impacts very somewhat across sector. In terms of investment intentions the effects of each of the schemes are smaller in hospitality. Furlough and CBIL/BBLs had relatively low impacts on well-being in construction and hospitality and their largest effects in wholesale and retailing and business services. Again, however, some identification issues apply to these findings which need to be interpreted carefully.

It is too early in the pandemic and our own work on these themes to draw particularly firm conclusions about either the impact of the pandemic on productivity or the final effects of government support measures. This first look suggests that we might have some positive expectations, however.

Future analysis could consider future waves of the quarterly SME Finance Monitor to provide a larger sample and investigate the longer-term effects of the policy interventions, including potential negative impacts on aggregate (economy-wide) productivity arising from the survival of low productivity 'zombie' firms that access pandemic support schemes. We also plan to replicate the current treatment analysis using other empirical approaches such as propensity score matching.

Table 1: Measurement of Control Variables		
Control Variables	**Investment intentions**	**Employee well-being equations**
Firm size	Number of employees	Number of employees
Sector	Sector dummies*	Sector dummies*
Region	Regional dummies**	Regional dummies**
Gender	Indicator variable equal to 1 if the owner is female	Proportion of staff that are female
Education	Indicator variable equal to one if the person in charge of financial decisions has formal financial training, and zero otherwise	Proportion of staff with a degree of higher level qualification
Impact of pandemic	Likert scale of business leader's assessment of the impact of COVID19 on their business, ranging from 1 if COVID19 has had a very negative impact, to 5 if it has had a very positive impact	Indicator variable equal to 1 if the firm has made any staff redundant as a result of the Covid-19 pandemic, and zero otherwise
Prior profitability	Equal to 1 if the firm was profitable in the previous 12 month, 2 if it broke even and 3 if it made a loss.	Sales growth
Growth ambition	Likert scale variable that takes the value 4 if, over the next year, the firm intends to grow the business by more than 20%; 3 if the firm intends to grow by less than 20%, 2 if they plan to stay the same, 1 if they plan to become smaller, and 0 if they plan to close or sell	
Innovator	Indicator variable equal to 1 if the firm has previously produced a new product or service, and zero otherwise	
Exporter	Indicator variable equal to 1 if the firm has previously exported a product or service, and zero otherwise	
Time dummy	Indicator variable if the survey was carried out in 2020Q3, and zero if in 2020Q4.	
Business mentor	Indicator variable equal to 1 if the business leader has a business mentor, and zero otherwise	
Share of ethnic minority employees		Proportion of employees from a non-white ethnic group
Share of disabled employees		Proportion of employees with a long-term disability that affects the amount or type of work they can do
Share of young employees		Proportion of employees under the age of 25
Employment terms		Indicator variable equal to one if there are some employees on zero hour contracts, and zero otherwise.
Mental health initiative due to the pandemic		Indicator variable equal to 1 if, due to the pandemic, the firm has introduced new initiatives to promote good mental health in the workplace, and zero otherwise

* NACE level 1 sector codes- SMEFM data included 11 sectors and the Mental Health and Well-being Survey contains 6 sectors.

**North, South and Midlands on England in the SMEFM data; East and West Midlands in the Mental Health and Well-being Survey.

Table 2: Descriptive statistics of the SMEFM data

Variable	N	Mean	Std. Dev.
Plan to invest in capital equipment	6,985	0.274	0.446
Plan to invest in innovation	6,985	0.200	0.400
Plan to invest in export market development	6,985	0.081	0.274
Plan to invest in an increased workforce	6,985	0.332	0.471
Plans to undertake other major investments	6,985	0.124	0.330
Furlough-only	6,985	0.489	0.500
CBIL/BBL only	6,985	0.036	0.186
Furlough+CB	6,985	0.164	0.371
2-10 employees	6,985	0.420	0.494
11-50 employees	6,985	0.387	0.487
51-100	6,985	0.134	0.341
101-200	6,985	0.044	0.204
201-250	6,985	0.014	0.119
North	6,985	0.338	0.473
Midlands	6,985	0.311	0.463
South	6,985	0.351	0.477
2020q3	6,985	0.515	0.500
2020q4	6,985	0.485	0.500
Female	6,841	0.200	0.400
Business mentor	6,985	0.256	0.436
Grown more than 20%	6,985	0.018	0.134
To grow but by less than 20%	6,985	0.109	0.312
To stay the same	6,985	0.434	0.496
To become smaller	6,985	0.294	0.456
To sell or pass on or close the business	6,985	0.145	0.352
Negative Covid impact	6,985	0.725	0.446
No Covid impact	6,985	0.175	0.380
Positive Covid impact	6,985	0.099	0.299
Product innovator	6,985	0.253	0.435
Exporter	6,985	0.170	0.376
Financial training	6,608	0.481	0.500
Profit	5,615	0.810	0.392
Loss	5,615	0.057	0.233
Broke even	5,615	0.133	0.339
Agriculture, forestry, fishing, hunting	6,985	0.062	0.241
Manufacturing	6,985	0.099	0.299
Construction	6,985	0.157	0.364
Wholesale/retail	6,985	0.119	0.324
Hotels/restaurants	6,985	0.075	0.263
Transport, storage communication	6,985	0.102	0.303
Real estate, renting and business activities	6,985	0.206	0.405
Health and social work	6,985	0.069	0.253
Other services	6,985	0.111	0.314
Previous use of external finance	6,985	0.242	0.428

Table 3: Descriptive statistics of the Mental health and Well-being data

Variable	N	Mean	Std. Dev.
Mental health absence	1,441	0.235	0.424
Long term sickness absence	1,457	0.328	0.470
Repeated sickness absence	1,442	0.225	0.418
Furlough-only	1,279	0.846	0.361
Furlough+CB	1,442	0.154	0.498
Manufacturing			
Construction	1,551	0.072	0.258
Wholesale and Retail	1,551	0.213	0.410
Hospitality	1,551	0.070	0.256
Business Services	1,551	0.226	0.418
Other Services	1,551	0.186	0.389
10-19 employees			
20-49 employees	1,551	0.306	0.461
50-249 employees	1,551	0.184	0.388
250 plus employees	1,551	0.026	0.159
Region	1,551	0.441	0.497
Sales growth	1,411	0.236	0.425
Redundancy	1,546	0.248	0.432
Female share	1,540	45.104	30.579
Graduate share	1,488	25.339	26.835
Disabled share	1,517	2.207	5.171
Employees under 25	1,510	16.370	17.045
Mental Health initiative	1,530	0.306	0.461
Zero hour contracts	1,551	0.125	0.331

Table 4: Marginal effects for intention to invest in capital equipment

	(1)	(2)	(3)	(4)	(5)	(6)
	Furlough-only		CBIL/BBL only		Furlough+CB	
VARIABLES	Investment intention	Treatment model	Investment intention	Treatment model	Investment intention	Treatment model
Furlough-only	0.421***					
	(0.032)					
CBIL/BBL only			0.355***			
			(0.063)			
Furlough+CB					0.172***	
					(0.049)	
Size	-0.066***	0.220***	0.055***	-0.016	0.012	0.143***
	(0.016)	(0.015)	(0.017)	(0.018)	(0.018)	(0.014)
North	-0.003	0.056**	0.030	0.033	0.012	0.052*
	(0.021)	(0.026)	(0.031)	(0.026)	(0.028)	(0.028)
Midlands	0.016	-0.006	0.010	0.007	-0.044	0.028
	(0.019)	(0.026)	(0.029)	(0.025)	(0.027)	(0.027)
2020q3	-0.034**	0.024	-0.038	0.011	-0.014	0.001
	(0.017)	(0.022)	(0.025)	(0.021)	(0.023)	(0.023)
Female	-0.010	-0.024	-0.042	-0.005	-0.015	-0.002
	(0.022)	(0.027)	(0.031)	(0.023)	(0.029)	(0.029)
Business mentor	0.046**	-0.001	0.061**	0.013	0.048*	0.057**
	(0.021)	(0.027)	(0.030)	(0.026)	(0.027)	(0.027)
Growth ambition	0.078***	-0.056***	0.058***	0.014	0.076***	-0.013
	(0.009)	(0.011)	(0.014)	(0.011)	(0.012)	(0.013)
Covid impact	0.055***	-0.080***	0.039**	-0.012	0.053***	-0.080***
	(0.012)	(0.016)	(0.017)	(0.015)	(0.017)	(0.018)
Product innovator	0.032	0.041	0.030	0.047*	0.038	0.061**
	(0.020)	(0.027)	(0.031)	(0.026)	(0.028)	(0.028)
Exporter	0.057***	-0.066**	0.023	-0.008	0.006	-0.020
	(0.022)	(0.030)	(0.034)	(0.030)	(0.032)	(0.032)
Financial training	-0.018	0.046**	-0.049*	0.036*	-0.012	0.034
	(0.017)	(0.022)	(0.027)	(0.021)	(0.024)	(0.023)
profitability	0.021	-0.005	0.018	0.023	0.023	0.029
	(0.013)	(0.018)	(0.020)	(0.016)	(0.018)	(0.018)
Agriculture, forestry, fishing, hunting	0.260***		0.180***		0.220***	
	(0.029)		(0.036)		(0.039)	
Manufacturing	0.030		0.019		0.062	
	(0.026)		(0.045)		(0.040)	
Construction	0.034		0.059		0.084**	
	(0.022)		(0.038)		(0.036)	
Wholesale/retail	-0.013		-0.024		0.054	
	(0.024)		(0.043)		(0.042)	
Hotels/restaurants	0.013		0.009		0.010	
	(0.033)		(0.057)		(0.053)	
Transport, storage communication	0.065***		0.063		0.104**	
	(0.025)		(0.044)		(0.042)	
Health and social work	0.071**		0.017		0.076	
	(0.033)		(0.059)		(0.056)	
Other services	0.020		0.077*		0.066	
	(0.027)		(0.043)		(0.041)	
Sector average treatment		0.807***		0.575*		0.588***
		(0.103)		(0.319)		(0.109)
Previous use of external finance		0.121***		0.234***		0.357***
		(0.024)		(0.020)		(0.018)
Rho (ρ)	-0.876		-0.735		-0.306	
Prob >χ^2	(0.000)		(0.000)		(0.007)	
Observations	3,839	3,839	1,433	1,433	2,204	2,204

Table 5: Marginal effects for intention to invest in innovation

	(1)	(2)	(3)	(4)	(5)	(6)
	Furlough-only		CBIL/BBL only		Furlough+CB	
VARIABLES	Investment intention	Treatment model	Investment intention	Treatment model	Investment intention	Treatment model
Furlough-only	0.293***					
	(0.083)					
CBIL/BBL only			0.046			
			(0.112)			
Furlough+CB					0.156***	
					(0.054)	
Size	-0.081***	0.223***	0.031*	-0.013	-0.027	0.143***
	(0.023)	(0.015)	(0.018)	(0.018)	(0.018)	(0.014)
North	-0.011	0.057**	-0.019	0.028	-0.045	0.051*
	(0.022)	(0.026)	(0.032)	(0.027)	(0.028)	(0.028)
Midlands	-0.022	-0.008	-0.025	-0.007	-0.049*	0.028
	(0.021)	(0.026)	(0.030)	(0.026)	(0.026)	(0.027)
2020q3	0.006	0.023	0.014	0.005	0.032	0.002
	(0.017)	(0.022)	(0.025)	(0.022)	(0.022)	(0.023)
Female	0.016	-0.025	-0.056*	0.006	-0.068**	-0.004
	(0.021)	(0.027)	(0.031)	(0.024)	(0.027)	(0.029)
Business mentor	0.078***	0.005	0.014	0.016	0.049**	0.060**
	(0.019)	(0.027)	(0.029)	(0.027)	(0.024)	(0.027)
Growth ambition	0.065***	-0.056***	0.064***	0.015	0.061***	-0.015
	(0.009)	(0.011)	(0.014)	(0.011)	(0.011)	(0.013)
Covid impact	0.034**	-0.082***	0.023	-0.017	0.015	-0.082***
	(0.015)	(0.016)	(0.019)	(0.016)	(0.018)	(0.018)
Product innovator	0.178***	0.037	0.199***	0.046*	0.193***	0.065**
	(0.024)	(0.027)	(0.026)	(0.027)	(0.023)	(0.028)
Exporter	0.092***	-0.072**	0.092***	-0.016	0.093***	-0.022
	(0.022)	(0.030)	(0.030)	(0.032)	(0.026)	(0.031)
Financial training	-0.014	0.044*	0.002	0.038*	0.009	0.036
	(0.019)	(0.022)	(0.027)	(0.022)	(0.023)	(0.023)
profitability	0.015	-0.006	0.034*	0.024	0.004	0.029
	(0.013)	(0.018)	(0.018)	(0.016)	(0.016)	(0.018)
Agriculture, forestry, fishing, hunting	-0.005		-0.076*		-0.055	
	(0.042)		(0.044)		(0.042)	
Manufacturing	-0.046*		-0.037		0.001	
	(0.026)		(0.046)		(0.037)	
Construction	-0.097***		-0.140***		-0.125***	
	(0.027)		(0.042)		(0.035)	
Wholesale/retail	-0.055**		-0.094**		-0.047	
	(0.026)		(0.047)		(0.040)	
Hotels/restaurants	-0.029		0.014		-0.020	
	(0.036)		(0.054)		(0.045)	
Transport, storage communication	-0.025		-0.049		-0.056	
	(0.028)		(0.041)		(0.037)	
Health and social work	0.043		0.002		0.035	
	(0.036)		(0.056)		(0.050)	
Other services	0.000		0.029		0.011	
	(0.026)		(0.041)		(0.036)	
Sector average treatment		0.825***		0.625*		0.579***
		(0.105)		(0.326)		(0.109)
Previous use of external finance		0.107***		0.230***		0.352***
		(0.027)		(0.021)		(0.019)
Rho (ρ)	-0.718		-0.197		-0.427	
Prob >χ^2	(0.009)		(0.453)		(0.004)	
Observations	3,839	3,839	1,433	1,433	2,204	2,204

Table 6: Marginal effects for intention to invest in export market development

	(1)	(2)	(3)	(4)	(5)	(6)
	Furlough-only		CBIL/BBL only		Furlough+CB	
VARIABLES	Investment intention	Treatment model	Investment intention	Treatment model	Investment intention	Treatment model
Furlough-only	0.119					
	(0.126)					
CBIL/BBL only			0.152**			
			(0.063)			
Furlough+CB					0.075**	
					(0.035)	
Size	-0.032	0.229***	0.011	-0.010	-0.020*	0.143***
	(0.031)	(0.015)	(0.011)	(0.017)	(0.012)	(0.014)
North	0.004	0.056**	0.035	0.028	0.016	0.052*
	(0.017)	(0.026)	(0.021)	(0.027)	(0.018)	(0.028)
Midlands	-0.005	-0.009	-0.007	-0.006	-0.029*	0.027
	(0.015)	(0.026)	(0.021)	(0.025)	(0.017)	(0.027)
2020q3	-0.014	0.022	-0.010	0.002	0.013	-0.001
	(0.013)	(0.022)	(0.018)	(0.021)	(0.015)	(0.023)
Female	0.004	-0.030	-0.001	0.009	-0.001	-0.002
	(0.017)	(0.027)	(0.022)	(0.023)	(0.018)	(0.029)
Business mentor	0.019	0.002	-0.001	0.017	-0.002	0.059**
	(0.014)	(0.027)	(0.019)	(0.027)	(0.016)	(0.027)
Growth ambition	0.041***	-0.055***	0.032***	0.016	0.025***	-0.014
	(0.015)	(0.012)	(0.010)	(0.011)	(0.008)	(0.013)
Covid impact	0.009	-0.081***	0.010	-0.015	-0.002	-0.082***
	(0.014)	(0.016)	(0.012)	(0.016)	(0.011)	(0.018)
Product innovator	0.046***	0.041	0.048***	0.050*	0.037***	0.063**
	(0.012)	(0.027)	(0.017)	(0.027)	(0.014)	(0.028)
Exporter	0.160***	-0.073**	0.163***	-0.010	0.164***	-0.017
	(0.036)	(0.030)	(0.018)	(0.030)	(0.015)	(0.031)
Financial training	0.004	0.043*	0.018	0.038*	0.008	0.032
	(0.014)	(0.023)	(0.018)	(0.022)	(0.015)	(0.023)
profitability	0.014	-0.004	0.024*	0.027*	0.006	0.029
	(0.010)	(0.018)	(0.013)	(0.015)	(0.012)	(0.018)
Agriculture, forestry, fishing, hunting	-0.016		-0.051		-0.050	
	(0.032)		(0.035)		(0.033)	
Manufacturing	0.011		0.015		0.000	
	(0.019)		(0.029)		(0.022)	
Construction	-0.045*		-0.019		-0.058**	
	(0.026)		(0.032)		(0.027)	
Wholesale/retail	0.000		-0.027		-0.024	
	(0.021)		(0.033)		(0.026)	
Hotels/restaurants	-0.090**		-0.056		-0.102**	
	(0.044)		(0.042)		(0.040)	
Transport, storage communication	0.021		-0.020		-0.010	
	(0.021)		(0.030)		(0.025)	
Health and social work	-0.019		-0.014		0.014	
	(0.033)		(0.046)		(0.039)	
Other services	0.017		0.043*		0.018	
	(0.019)		(0.024)		(0.021)	
Sector average treatment		0.831***		0.609*		0.585***
		(0.104)		(0.320)		(0.110)
Previous use of external finance		0.098***		0.228***		0.355***
		(0.030)		(0.022)		(0.018)
Rho (ρ)	-0.524		-0.630		-0.414	
Prob >χ^2	(0.302)		(0.019)		(0.027)	
Observations	3,839	3,839	1,433	1,433	2,204	2,204

Table 7: Marginal effects for intention to invest in an increased workforce

	(1)	(2)	(3)	(4)	(5)	(6)
	Furlough-only		CBIL/BBL only		Furlough+CB	
	Investment intention	Treatment model	Investment intention	Treatment model	Investment intention	Treatment model
Furlough-only	0.410***					
	(0.067)					
CBIL/BBL only			0.291***			
			(0.082)			
Furlough+CB					0.236***	
					(0.050)	
Size	-0.056**	0.226***	0.087***	-0.012	0.012	0.144***
	(0.028)	(0.015)	(0.018)	(0.017)	(0.019)	(0.014)
North	0.011	0.060**	0.007	0.029	-0.024	0.052*
	(0.024)	(0.026)	(0.033)	(0.027)	(0.029)	(0.028)
Midlands	0.006	-0.005	-0.011	-0.007	-0.030	0.029
	(0.020)	(0.026)	(0.032)	(0.026)	(0.029)	(0.027)
2020q3	-0.034**	0.024	-0.030	0.006	-0.028	-0.002
	(0.017)	(0.022)	(0.027)	(0.022)	(0.024)	(0.023)
Female	0.014	-0.023	-0.029	0.003	-0.048	-0.003
	(0.021)	(0.027)	(0.034)	(0.023)	(0.030)	(0.029)
Business mentor	0.045**	0.004	0.082**	0.018	0.064**	0.058**
	(0.022)	(0.027)	(0.032)	(0.027)	(0.028)	(0.027)
Growth ambition	0.128***	-0.055***	0.107***	0.013	0.128***	-0.014
	(0.015)	(0.011)	(0.016)	(0.012)	(0.013)	(0.013)
Covid impact	0.073***	-0.084***	0.067***	-0.019	0.081***	-0.081***
	(0.013)	(0.016)	(0.019)	(0.016)	(0.018)	(0.019)
Product innovator	0.032	0.041	0.079**	0.051*	0.034	0.062**
	(0.022)	(0.027)	(0.033)	(0.027)	(0.029)	(0.028)
Exporter	0.034	-0.069**	0.027	-0.014	0.038	-0.021
	(0.024)	(0.031)	(0.036)	(0.032)	(0.032)	(0.032)
Financial training	-0.007	0.047**	-0.030	0.036	-0.009	0.033
	(0.018)	(0.022)	(0.029)	(0.022)	(0.026)	(0.023)
profitability	0.018	-0.005	0.028	0.022	0.020	0.029
	(0.014)	(0.018)	(0.021)	(0.016)	(0.019)	(0.018)
Agriculture, forestry, fishing, hunting	0.048		-0.070		-0.075	
	(0.042)		(0.045)		(0.047)	
Manufacturing	-0.057**		-0.062		-0.072*	
	(0.025)		(0.050)		(0.043)	
Construction	0.011		0.042		-0.004	
	(0.023)		(0.040)		(0.037)	
Wholesale/retail	-0.076***		-0.087*		-0.043	
	(0.025)		(0.049)		(0.043)	
Hotels/restaurants	-0.039		-0.087		-0.067	
	(0.033)		(0.062)		(0.053)	
Transport, storage communication	-0.001		-0.008		-0.015	
	(0.026)		(0.048)		(0.045)	
Health and social work	0.123***		0.017		0.087	
	(0.031)		(0.058)		(0.056)	
Other services	0.004		-0.009		-0.005	
	(0.027)		(0.048)		(0.042)	
Sector average treatment		0.801***		0.623*		0.579***
		(0.105)		(0.320)		(0.109)
Previous use of external finance		0.095***		0.231***		0.356***
		(0.027)		(0.021)		(0.018)
Rho (ρ)	-0.818		-0.448		-0.179	
Prob >χ^2	(0.036)		(0.019)		(0.129)	
Observations	3,839	3,839	1,433	1,433	2,204	2,204

Table 8: Marginal effects for intention to undertake other major investments

	(1)	(2)	(3)	(4)	(5)	(6)
	Furlough-only		CBIL/BBL only		Furlough+CB	
VARIABLES	Investment intention	Treatment model	Investment intention	Treatment model	Investment intention	Treatment model
Furlough-only	0.279***					
	(0.090)					
CBIL/BBL only			0.184**			
			(0.080)			
Furlough+CB					0.051	
					(0.046)	
Size	-0.058**	0.228***	-0.004	-0.013	0.001	0.144***
	(0.025)	(0.015)	(0.015)	(0.018)	(0.014)	(0.014)
North	0.011	0.056**	0.025	0.030	0.028	0.055**
	(0.020)	(0.026)	(0.026)	(0.027)	(0.021)	(0.028)
Midlands	0.008	-0.007	-0.001	-0.008	0.010	0.030
	(0.019)	(0.026)	(0.026)	(0.025)	(0.021)	(0.027)
2020q3	-0.017	0.024	-0.026	0.001	0.022	-0.000
	(0.016)	(0.022)	(0.022)	(0.021)	(0.018)	(0.023)
Female	-0.002	-0.026	-0.007	0.008	-0.019	-0.004
	(0.021)	(0.027)	(0.025)	(0.024)	(0.021)	(0.029)
Business mentor	0.038**	0.003	-0.138***		0.048**	0.059**
	(0.019)	(0.027)	(0.044)		(0.019)	(0.027)
Growth ambition	0.061***	-0.056***	-0.023		0.046***	-0.014
	(0.009)	(0.012)	(0.040)		(0.009)	(0.013)
Covid impact	0.023	-0.080***	-0.073**		0.001	-0.081***
	(0.015)	(0.016)	(0.035)		(0.013)	(0.018)
Product innovator	0.024	0.038	-0.099***		0.022	0.061**
	(0.018)	(0.027)	(0.038)		(0.020)	(0.028)
Exporter	0.050**	-0.067**	-0.163***		0.007	-0.017
	(0.023)	(0.030)	(0.050)		(0.022)	(0.032)
Financial training	-0.011	0.042*	-0.062		0.013	0.032
	(0.018)	(0.023)	(0.038)		(0.018)	(0.023)
profitability	0.011	-0.005	0.019		0.011	0.029*
	(0.013)	(0.017)	(0.045)		(0.014)	(0.018)
Agriculture, forestry, fishing, hunting	-0.030		-0.071*		-0.106***	
	(0.044)		(0.038)		(0.039)	
Manufacturing	-0.082***			0.678**	-0.025	
	(0.026)			(0.326)	(0.030)	
Construction	-0.069***			0.229***	-0.068**	
	(0.023)			(0.021)	(0.028)	
Wholesale/retail	-0.056**		0.038	0.016	-0.076***	
	(0.023)		(0.026)	(0.027)	(0.029)	
Hotels/restaurants	-0.060*		0.049***	0.013	-0.130***	
	(0.034)		(0.012)	(0.011)	(0.039)	
Transport, storage communication	-0.042		-0.008	-0.017	-0.050	
	(0.026)		(0.015)	(0.016)	(0.031)	
Health and social work	0.065**		0.003	0.043	0.021	
	(0.032)		(0.026)	(0.027)	(0.039)	
Other services	-0.080***		0.007	-0.012	-0.061**	
	(0.028)		(0.029)	(0.032)	(0.031)	
Sector average treatment		0.817***	0.027	0.042*		0.589***
		(0.103)	(0.022)	(0.022)		(0.109)
Previous use of external finance		0.107***	0.016	0.024		0.353***
		(0.027)	(0.017)	(0.015)		(0.018)
Rho (ρ)	-0.719		-0.400		-0.319	
Prob >χ^2	(0.011)		(0.068)		(0.042)	
Observations	3,839	3,839	1,433	1,433	2,204	2,204

Table 9: Marginal effects pandemic support schemes on the probability of employee absences

	Mental Health Absence				Long term Absence				Repeated Absence			
	Furlough-only		Furolugh+CB		Furlough-only		Furlough+CB		Furlough-only		Furlough+CB	
VARIABLES	structural equation	Reduced form equation	structural equation	reduced form equation	structural equation	reduced form equation	structural equation	reduced form equation	structural equation	reduced form equation	structural equation	reduced form equation
Furlough-only	-0.184				-0.197				0.313			
	(0.269)				(0.198)				(0.308)			
Furlough+CB			-0.493***				-0.297				0.369	
			(0.025)				(0.238)				(0.271)	
20-49 employees	0.105***	-0.012	0.043	-0.045	0.123***	-0.014	0.213***	-0.035	0.103***	-0.009	0.068	-0.032
	(0.033)	(0.028)	(0.042)	(0.045)	(0.035)	(0.028)	(0.075)	(0.048)	(0.037)	(0.028)	(0.049)	(0.050)
50-249 employees	0.251***	0.043	0.139**	-0.016	0.332***	0.044	0.310***	-0.013	0.200**	0.037	0.160	-0.032
	(0.045)	(0.033)	(0.069)	(0.080)	(0.047)	(0.033)	(0.103)	(0.073)	(0.097)	(0.034)	(0.101)	(0.087)
250+ employees	0.507***	-0.093	0.033	-0.050	0.479***	-0.098	0.261	-0.083	0.328*	-0.059	0.297	-0.105
	(0.149)	(0.140)	(0.170)	(0.263)	(0.129)	(0.140)	(0.167)	(0.315)	(0.176)	(0.142)	(0.442)	(0.354)
Region	-0.003	-0.027	-0.048	-0.087**	-0.004	-0.024	-0.071	-0.087*	0.028	-0.030	0.011	-0.070
	(0.027)	(0.025)	(0.036)	(0.041)	(0.029)	(0.024)	(0.049)	(0.047)	(0.027)	(0.026)	(0.058)	(0.046)
Sales growth	0.020	-0.108***	-0.146***	-0.219***	-0.007	-0.109***	-0.133*	-0.227***	0.096	-0.109***	0.109	-0.232***
	(0.046)	(0.028)	(0.047)	(0.046)	(0.043)	(0.027)	(0.076)	(0.046)	(0.064)	(0.026)	(0.082)	(0.048)
Redundancy	0.083**	0.206***	0.176***	0.347***	0.082**	0.209***	0.073	0.393***	-0.023	0.215***	-0.114	0.395***
	(0.041)	(0.039)	(0.044)	(0.046)	(0.039)	(0.039)	(0.104)	(0.057)	(0.093)	(0.038)	(0.176)	(0.058)
Female share	0.000	-0.000	-0.001	-0.001	0.000	-0.000	0.001	-0.001	0.000	-0.000	-0.000	-0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Graduate share	-0.000	-0.001*	-0.001	-0.002***	-0.002***	-0.001**	-0.002**	-0.002**	-0.000	-0.001*	0.001	-0.002**
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Disabled share	0.009***	-0.001	0.005	-0.005	0.004	-0.001	-0.007	-0.006	0.006**	-0.001	0.011***	-0.005
	(0.003)	(0.002)	(0.004)	(0.004)	(0.003)	(0.002)	(0.005)	(0.004)	(0.003)	(0.002)	(0.004)	(0.004)
Employ under 25	0.001	0.000	0.002*	0.002	-0.001	0.000	0.001	0.001	0.001	0.000	0.003	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
MH initiative	0.127***	-0.044	0.074*	-0.112**	0.067*	-0.043	0.056	-0.087*	0.076**	-0.043	0.079	-0.079
	(0.034)	(0.028)	(0.039)	(0.048)	(0.034)	(0.027)	(0.067)	(0.051)	(0.031)	(0.027)	(0.055)	(0.056)
Zero hours	-0.047	0.048	0.051	0.067	-0.015	0.047	-0.012	0.028	-0.044	0.046	-0.077	-0.000
	(0.046)	(0.040)	(0.060)	(0.074)	(0.047)	(0.041)	(0.078)	(0.078)	(0.048)	(0.040)	(0.084)	(0.083)
Construction	-0.083		-0.118		0.016		0.117		0.001		-0.034	
	(0.051)		(0.099)		(0.065)		(0.110)		(0.069)		(0.119)	
Wholesale/Retail	-0.020		0.069		-0.054		0.068		-0.010		0.039	

	(0.037)		(0.055)		(0.040)		(0.073)		(0.039)		(0.065)	
Hospitality	-0.006		-0.082		-0.030		-0.071		-0.093*		-0.119	
	(0.071)		(0.096)		(0.073)		(0.124)		(0.055)		(0.076)	
Business Services	-0.033		0.055		-0.084*		-0.042		-0.016		0.010	
	(0.043)		(0.063)		(0.045)		(0.071)		(0.052)		(0.064)	
Other services	0.042		0.010		0.079		-0.014		0.084		0.223**	
	(0.065)		(0.070)		(0.063)		(0.108)		(0.070)		(0.091)	
Sector average treatment		0.881**		0.422**		0.867**		0.524***		0.893**		0.563***
		(0.372)		(0.196)		(0.375)		(0.202)		(0.374)		(0.205)
Rho (ρ)	0.232		0.983		0.216		0.398		-0.741		-0.708	
Prob >χ^2	(0.692)		(0.002)		(0.550)		(0.472)		(0.511)		(0.453)	
Observations	1,077	1,077	396	396	1,077	1,077	396	396	1,077	1,077	396	396

Marginal effects at means from bivariate probit models. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10: Marginal effects of pandemic support schemes on the probability of employee absences: Standard probit models

	Mental Health Absence		Long term Absence		Repeated Absence	
VARIABLES	Furlough-only	Furlough+CB	Furlough-only	Furlough+CB	Furlough-only	Furlough+CB
Furlough-only	-0.077**		-0.081*		-0.026	
	(0.038)		(0.044)		(0.038)	
Furlough+CB		-0.092*		-0.099*		0.043
		(0.050)		(0.059)		(0.055)
20-49 employees	0.110***	0.090*	0.129***	0.239***	0.105***	0.065
	(0.031)	(0.052)	(0.034)	(0.058)	(0.030)	(0.052)
50-249 employees	0.253***	0.220***	0.336***	0.341***	0.248***	0.182*
	(0.044)	(0.080)	(0.047)	(0.086)	(0.048)	(0.095)
250+ employees	0.528***	0.097	0.497***	0.315	0.354**	0.310
	(0.130)	(0.240)	(0.126)	(0.288)	(0.150)	(0.319)
Region	-0.001	-0.012	-0.001	-0.056	0.019	-0.025
	(0.027)	(0.045)	(0.030)	(0.051)	(0.027)	(0.047)
Sales growth	0.035	-0.049	0.008	-0.087	0.047	0.028
	(0.032)	(0.056)	(0.037)	(0.063)	(0.032)	(0.057)
Redundancy	0.070**	0.033	0.068*	-0.000	0.044	0.035
	(0.032)	(0.058)	(0.035)	(0.066)	(0.032)	(0.064)
Female share	0.001	-0.001	0.000	0.001	0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Graduate share	0.000	-0.000	-0.002***	-0.002*	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Disabled share	0.009***	0.010**	0.005	-0.006	0.006***	0.011**
	(0.002)	(0.004)	(0.003)	(0.005)	(0.002)	(0.005)
Employ under 25	0.001	0.002*	-0.001	0.001	0.002*	0.004**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
MH initiative	0.135***	0.159***	0.074**	0.084	0.065**	0.051
	(0.029)	(0.047)	(0.033)	(0.057)	(0.030)	(0.056)
Zero hours	-0.055	0.062	-0.024	-0.014	-0.024	-0.082
	(0.043)	(0.068)	(0.047)	(0.081)	(0.043)	(0.082)
Construction	-0.086*	-0.116*	0.012	0.079	0.028	0.058
	(0.050)	(0.060)	(0.065)	(0.112)	(0.061)	(0.095)
Wholesale/Retail	-0.019	0.091	-0.053	0.065	-0.018	0.056
	(0.038)	(0.066)	(0.041)	(0.076)	(0.038)	(0.067)
Hospitality	-0.006	-0.064	-0.030	-0.091	-0.095*	-0.103
	(0.070)	(0.082)	(0.074)	(0.123)	(0.057)	(0.076)
Business Services	-0.029	0.092	-0.081*	-0.052	-0.038	0.019
	(0.043)	(0.065)	(0.045)	(0.074)	(0.041)	(0.066)
Other services	0.056	0.203**	0.096*	0.035	0.041	0.163*
	(0.057)	(0.089)	(0.057)	(0.093)	(0.052)	(0.095)
Observations	1,011	368	1,017	368	1,010	365

. Marginal effects at means from Probit models. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11: Summary of average treatment effects on the probability of investment planning and employee well being

	Furlough-only	CB only	Furlough and CB
Investment Planning			
Capital equipment	+42.1	+35.5	+17.2
Innovation	+29.3	Ns	+15.6
Export development	Ns	+15.2	+7.5
Increase workforce	+41.0	+29.1	+23.6
Other expenditure	+27.9	+18.4	ns
Employee well-being			
Mental health absence	-7.7	Na	-9.2
Sickness absence	-8.1	Na	-9.9
Repeat sickness absence	-2.6	Na	Ns

Sources: Average marginal effects derived from earlier tables. Na is not available. Ns is not significant. Well-being results derived from single equation probit models.

Figure 1: Logic model for the effect of the Coronavirus Job Retention Scheme (CJRS) on productivity

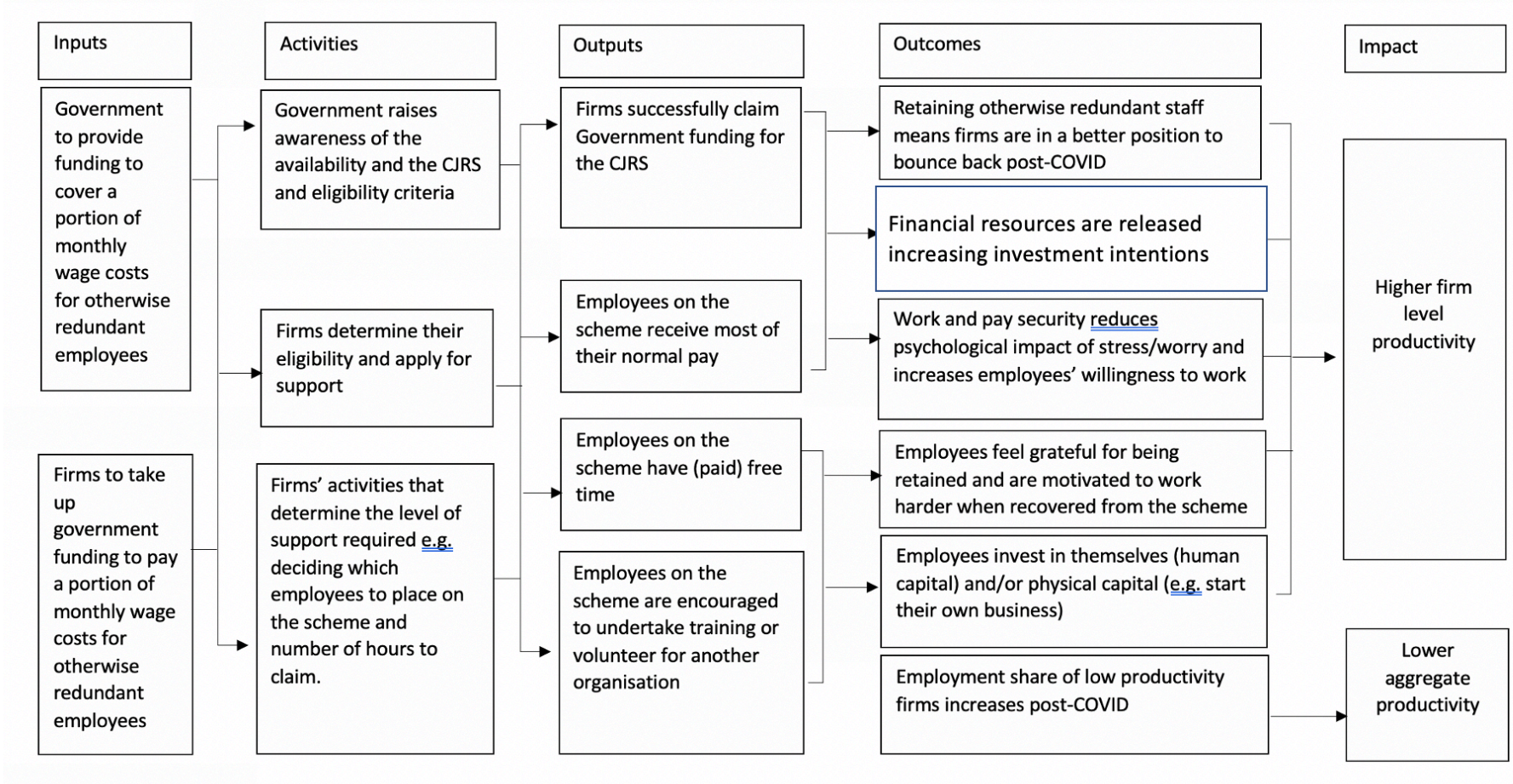


Figure 2: Logic model for the effect of pandemic related loans on productivity

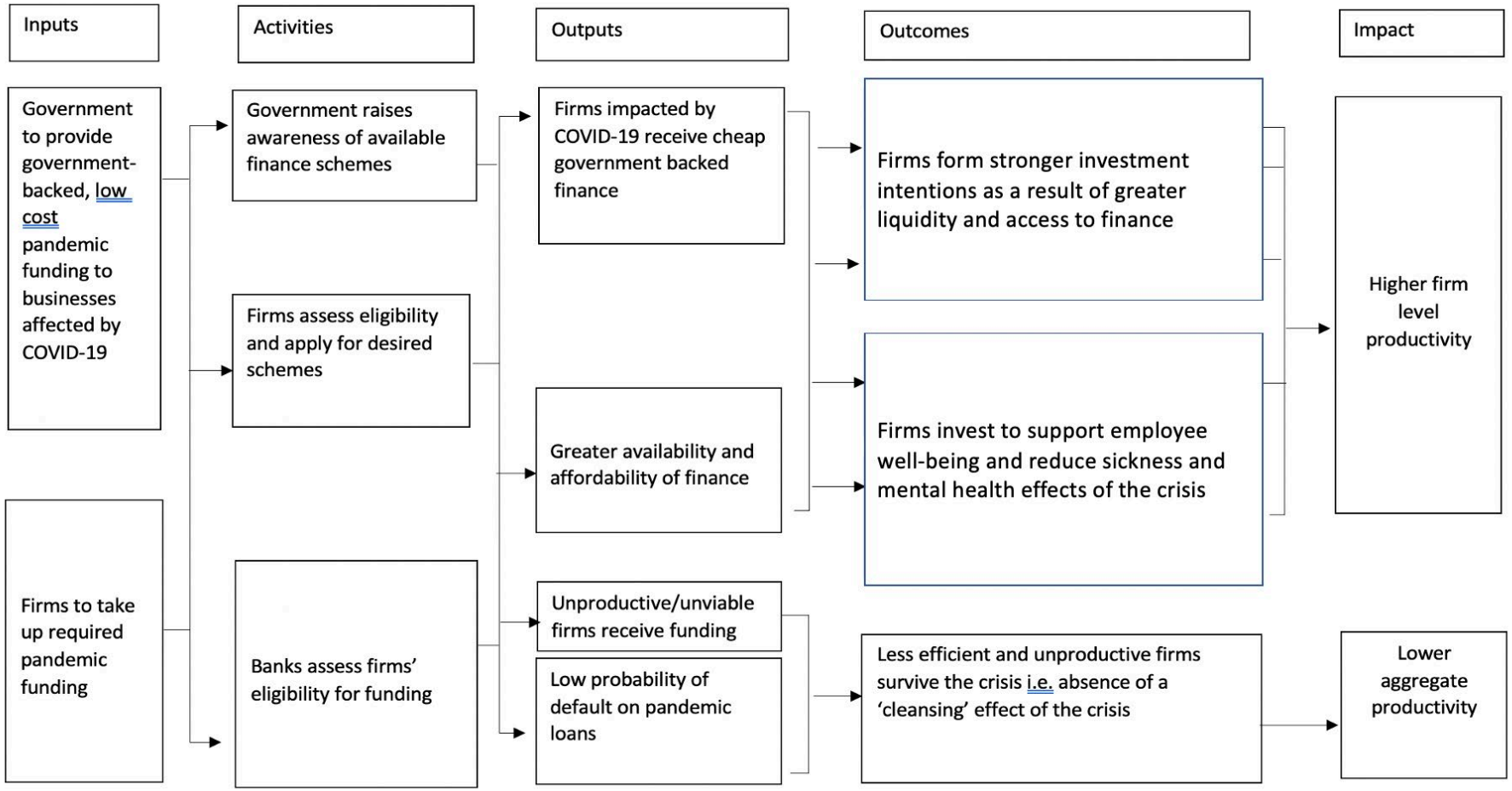
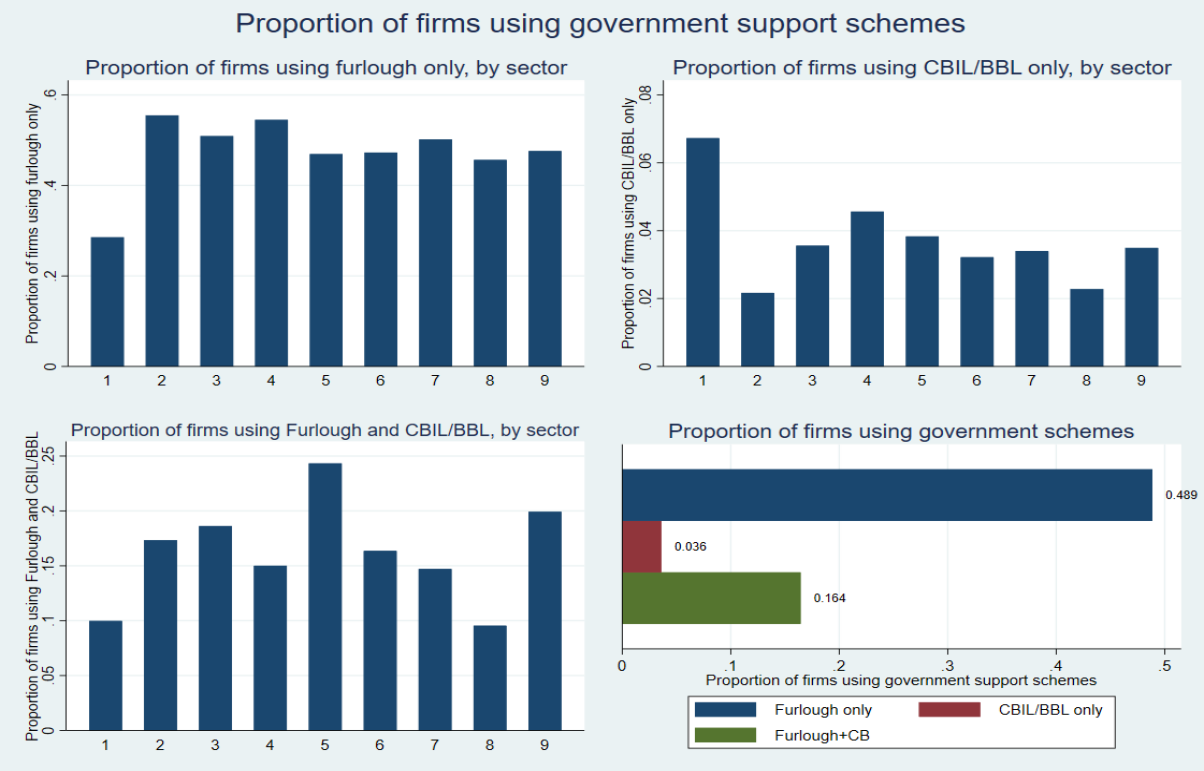


Figure 3: Proportion of firms using the government support schemes SMEFM



Notes and sources: Authors' calculation using 2020Q3 and 2020Q4 data from SMEFM.
1=Agriculture, forestry and fishing; 2=Manufacturing; 3=Construction; 4=Wholesale/retail; 5=Hotels and restaurants; 6=Transport, storage and communications; 7=Real estate, renting and business activities; 8=Health and social work; 9=other community, social and personal services

Figure 4: Proportion of firms using the government support schemes MHWS

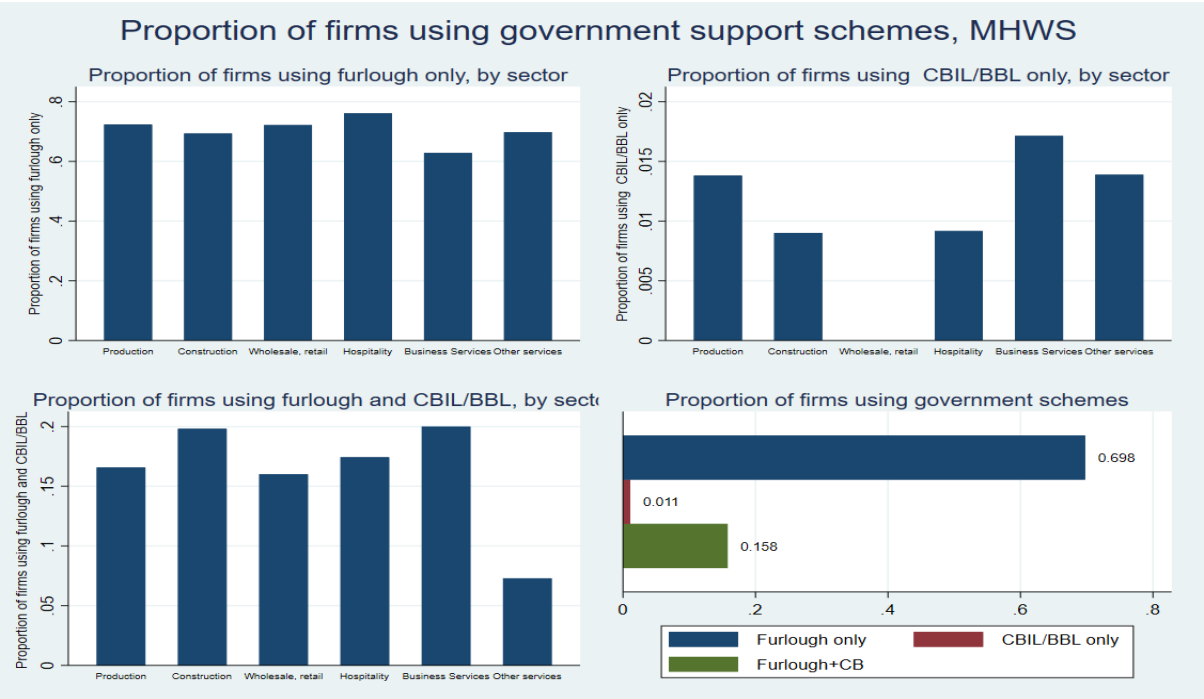


Figure 5: Proportion of firms planning investments

Source: Authors' calculation using 2018Q3 to 2020Q4 data from SMEFM.

Figure 6: Proportion of firms planning investments by Sector, SMEFM

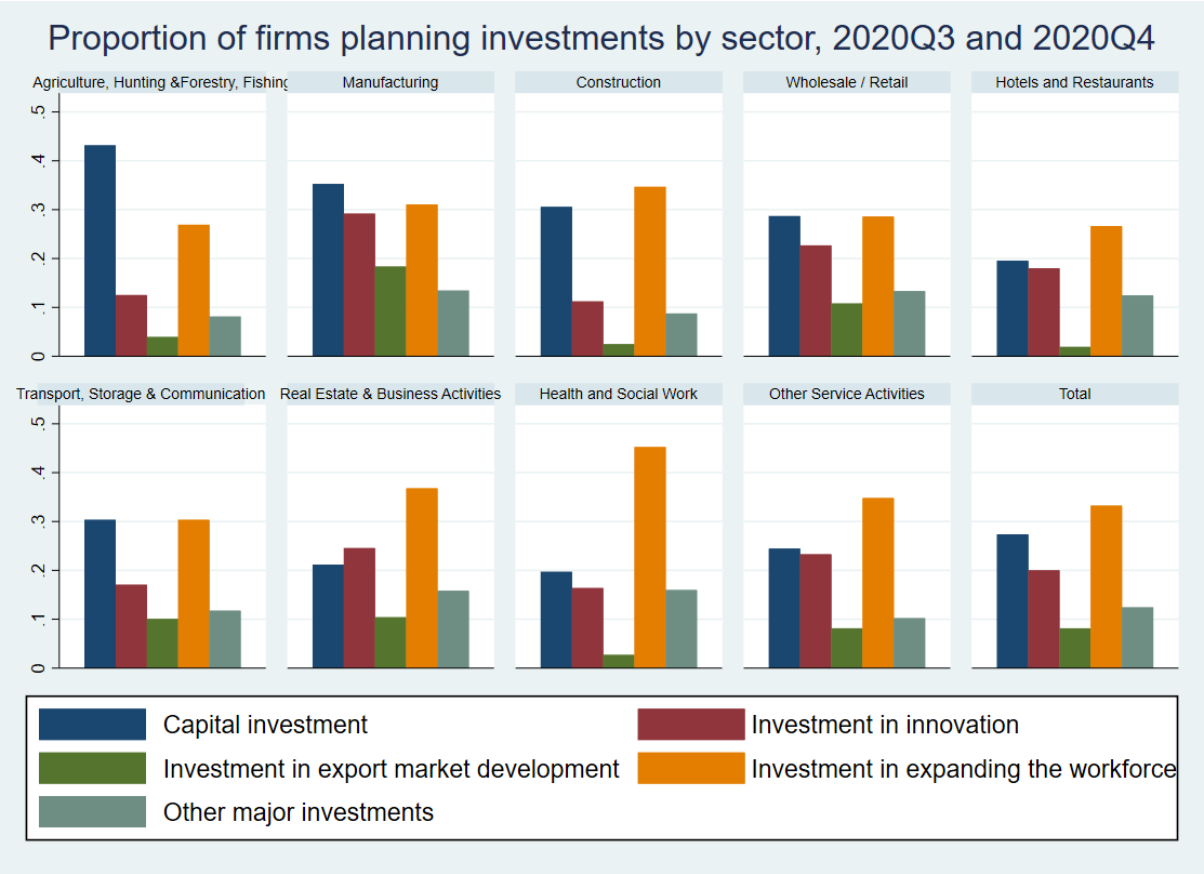
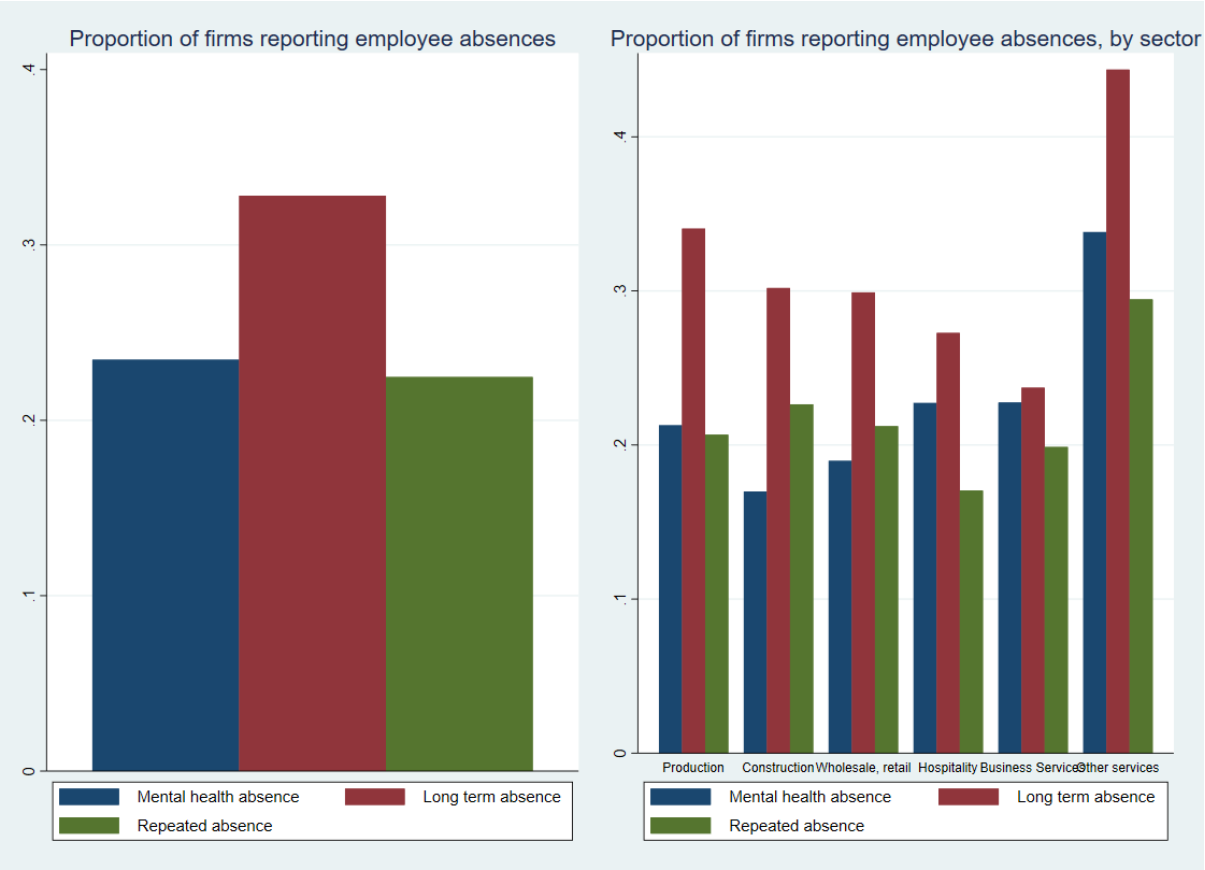
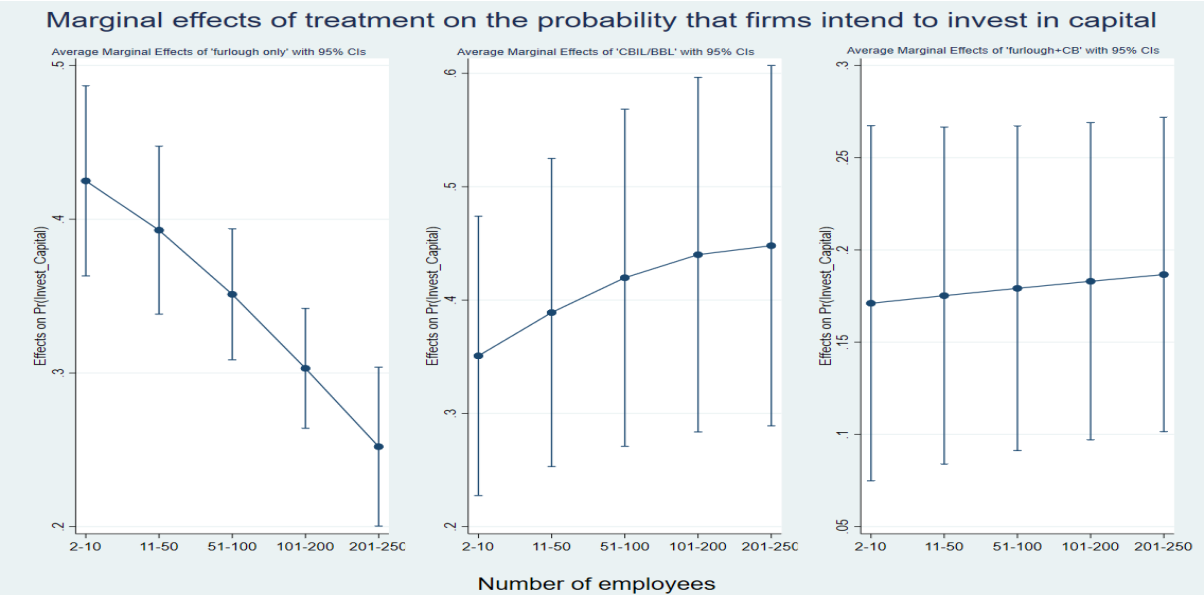


Figure 7: Proportion of firms planning investments by Sector, SMEFM



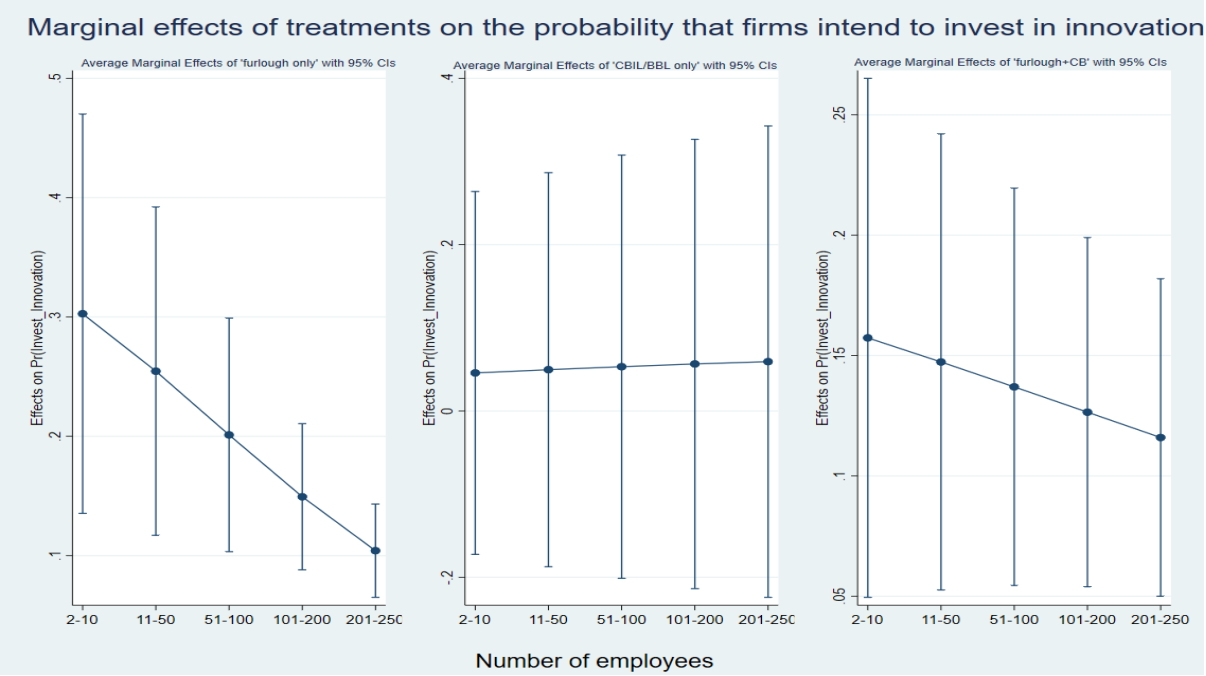
Source: Authors' calculation using 2020Q2, 2020Q3 and 2020Q4 data from SMEFM

Figure 8: Marginal effects on the probability of investing in capital equipment



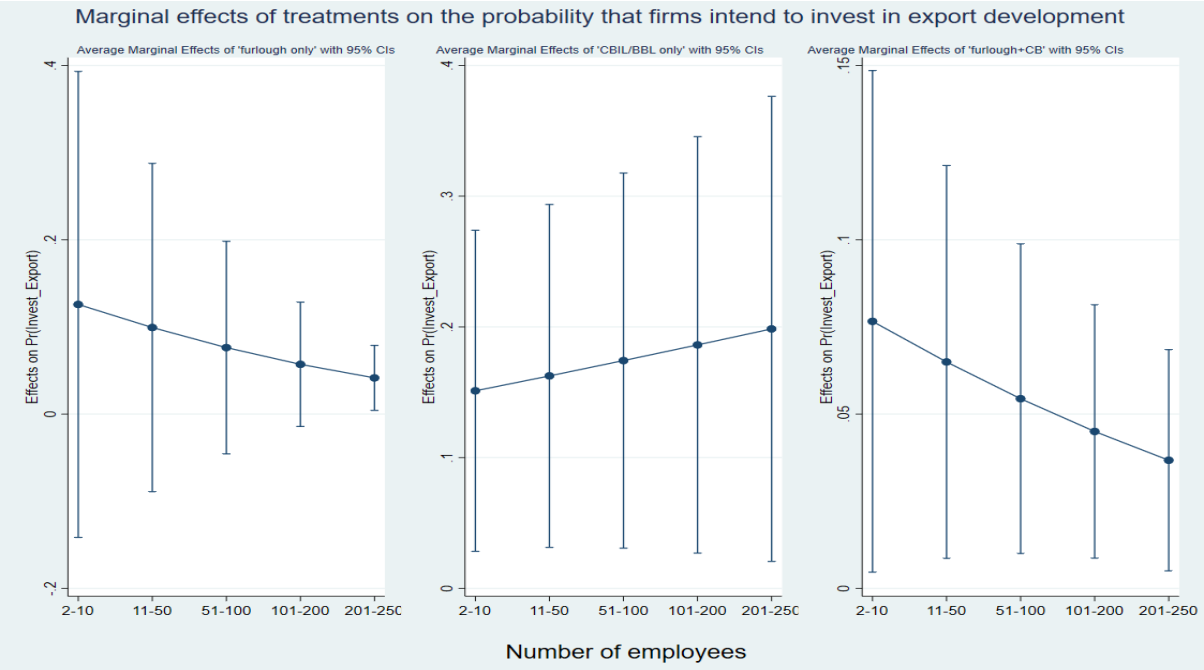
Source: Authors' calculations using 2020Q3 and 2020Q4 SMEFM data

Figure 9: Marginal effects on the probability of investing in innovation



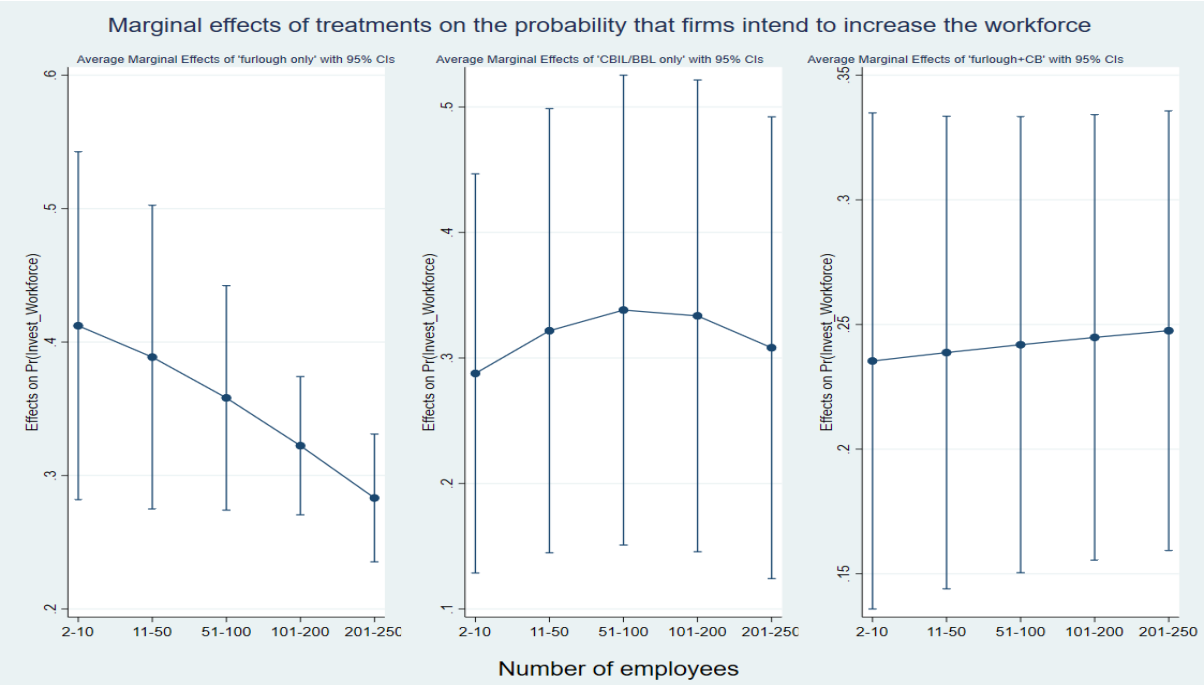
Source: Authors' calculations using 2020Q3 and 2020Q4 SMEFM data

Figure 10: Marginal effects on the probability of investing in export market development



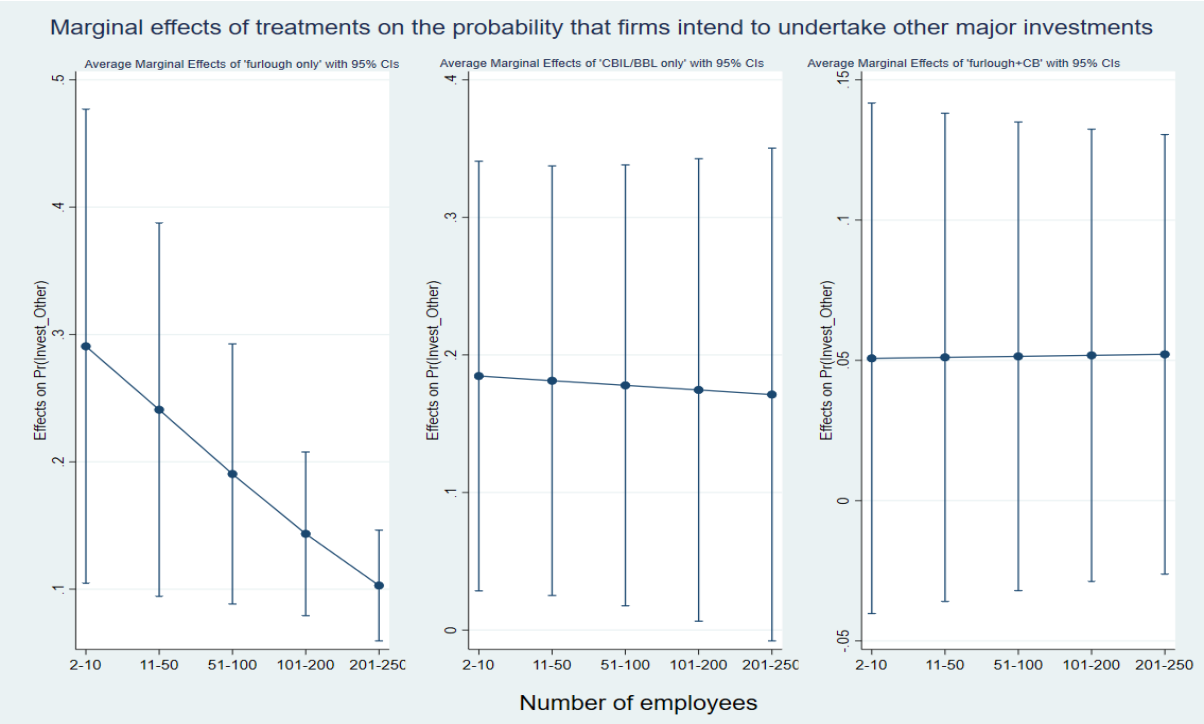
Source: Authors' calculations using 2020Q3 and 2020Q4 SMEFM data

Figure 11: Marginal effects on the probability of investing in increasing the workforce



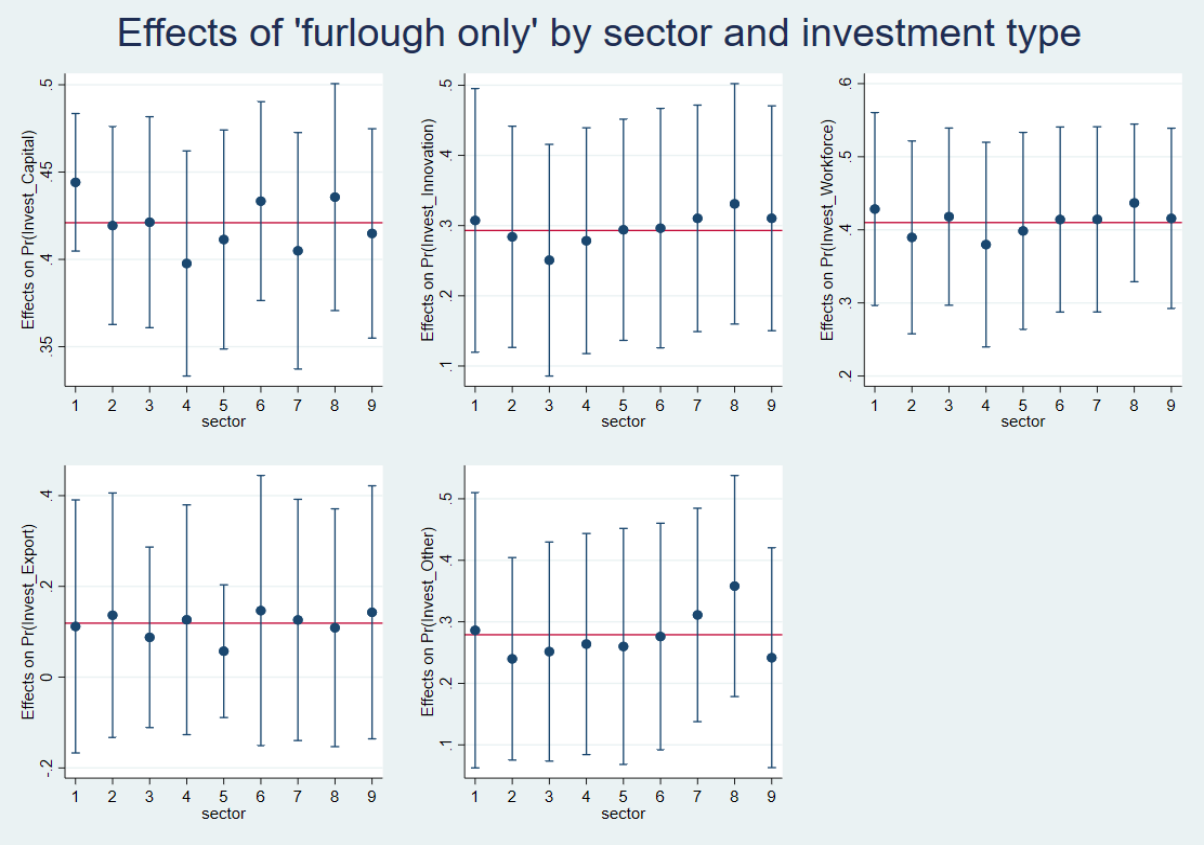
Source: Authors' calculations using 2020Q3 and 2020Q4 SMEFM data

Figure 12: Marginal effects on the probability of undertaking major investments



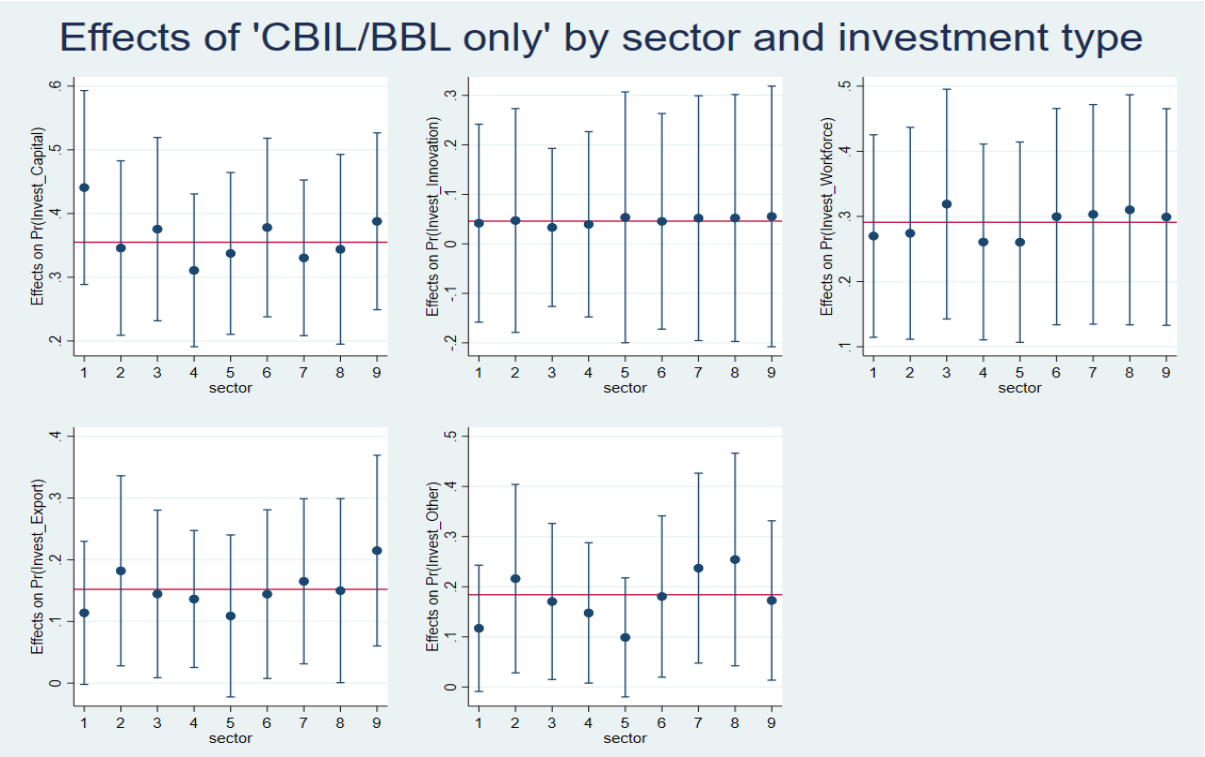
Source: Authors' calculations using 2020Q3 and 2020Q4 SMEFM data

Figure 13: the effects of Furlough-only by sector and investment type



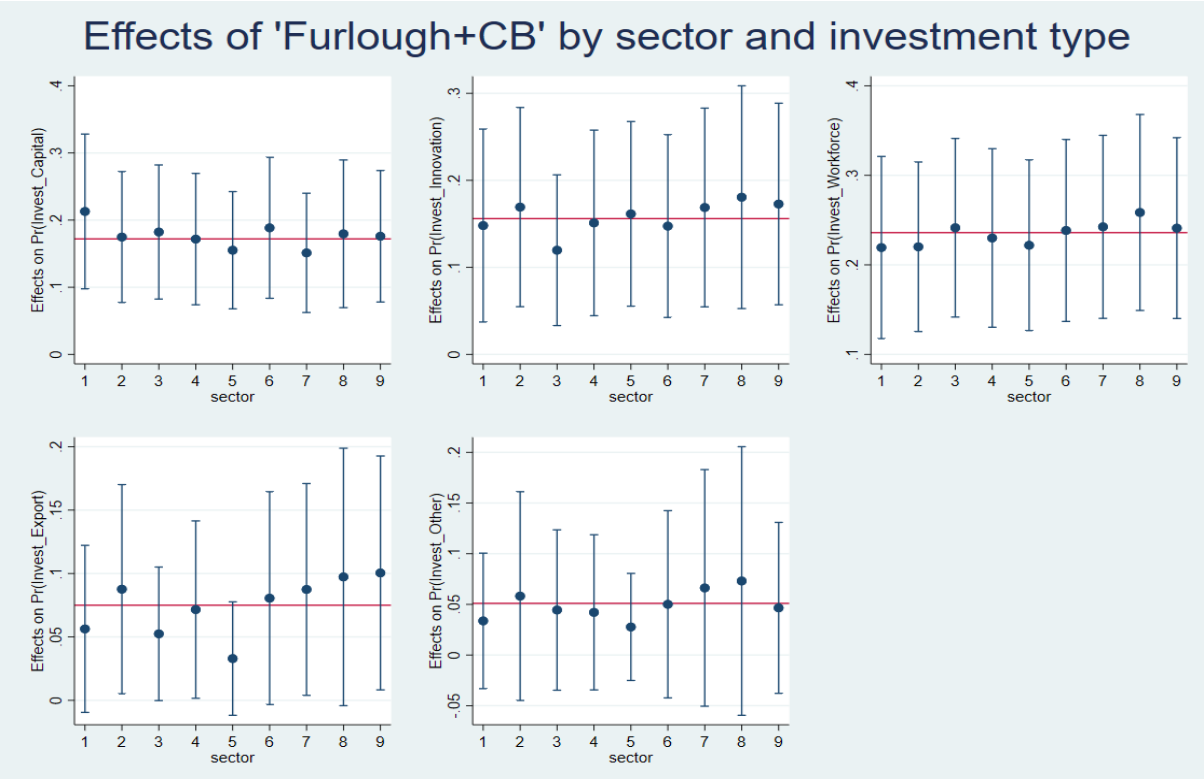
Notes and sources: Authors' calculation using 2020Q3 and 2020Q4 data from SMEFM.
1=Agriculture, forestry and fishing; 2=Manufacturing; 3=Construction; 4=Wholesale/retail; 5=Hotels and restaurants; 6=Transport, storage and communications; 7=Real estate, renting and business activities; 8=Health and social work; 9=other community, social and personal services

Figure 14: the effects of CBIL/BBL Only by sector and investment type



Notes and sources: Authors' calculation using 2020Q3 and 2020Q4 data from SMEFM.
1=Agriculture, forestry and fishing; 2=Manufacturing; 3=Construction; 4=Wholesale/retail; 5=Hotels and restaurants; 6=Transport, storage and communications; 7=Real estate, renting and business activities; 8=Health and social work; 9=other community, social and personal services

Figure 15: the effects of Furlough+CB by sector and investment type



Notes and sources: Authors' calculation using 2020Q3 and 2020Q4 data from SMEFM.
1=Agriculture, forestry and fishing; 2=Manufacturing; 3=Construction; 4=Wholesale/retail; 5=Hotels and restaurants; 6=Transport, storage and communications; 7=Real estate, renting and business activities; 8=Health and social work; 9=other community, social and personal services

Figure 16: the effects of Furlough+CB on employee mental health absence by firm size

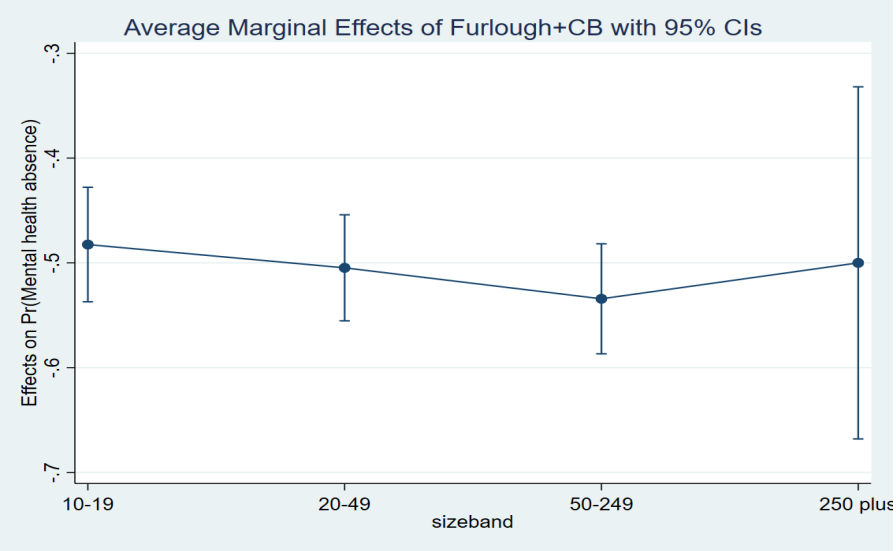


Figure 17: the effects of Furlough-only and Furlough+CB on employee well-being, by firm size

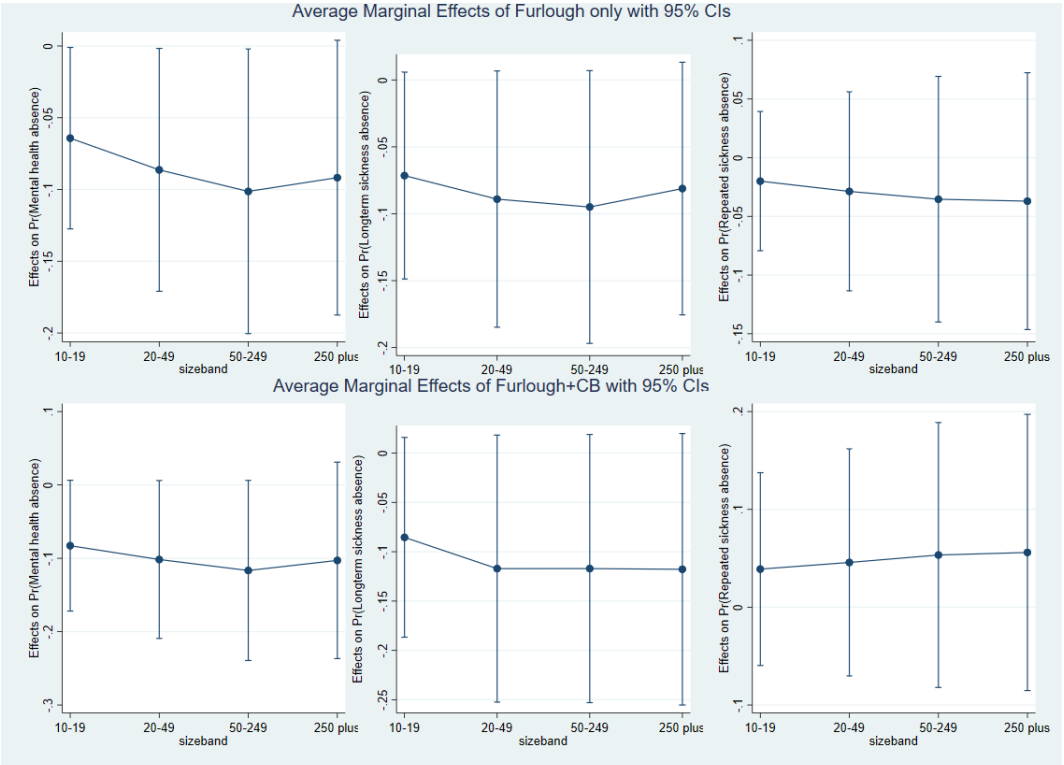
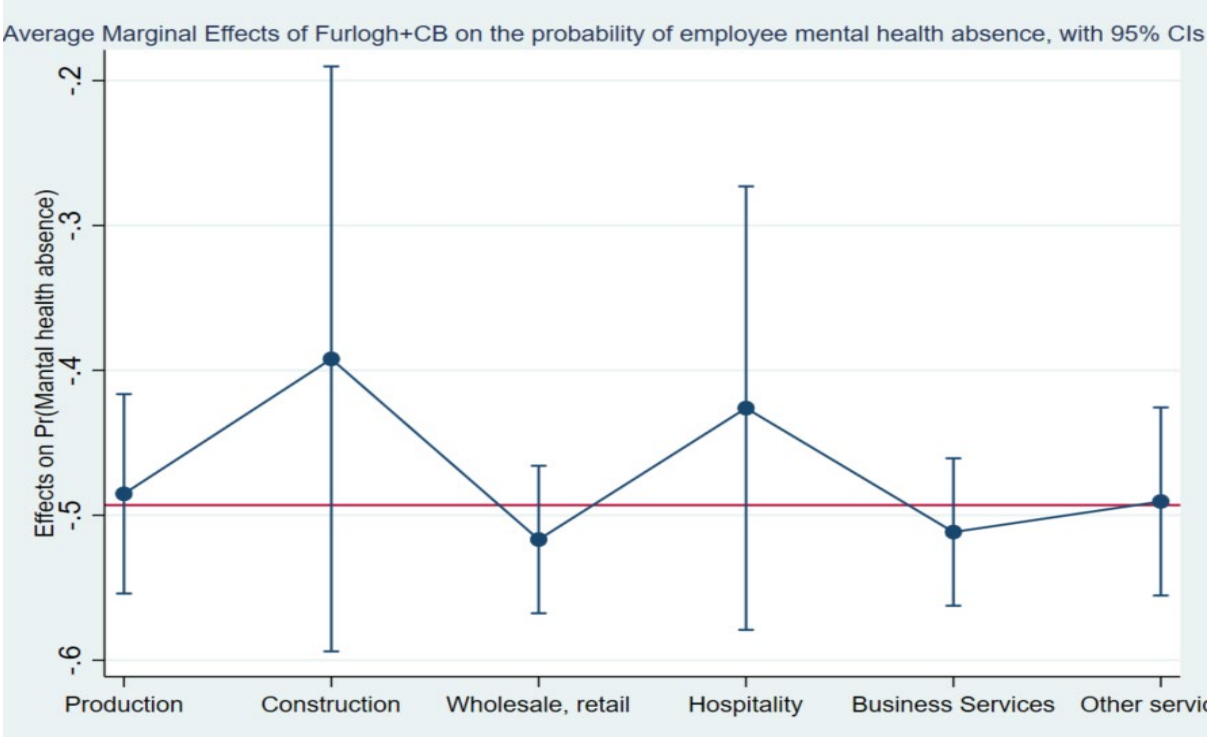
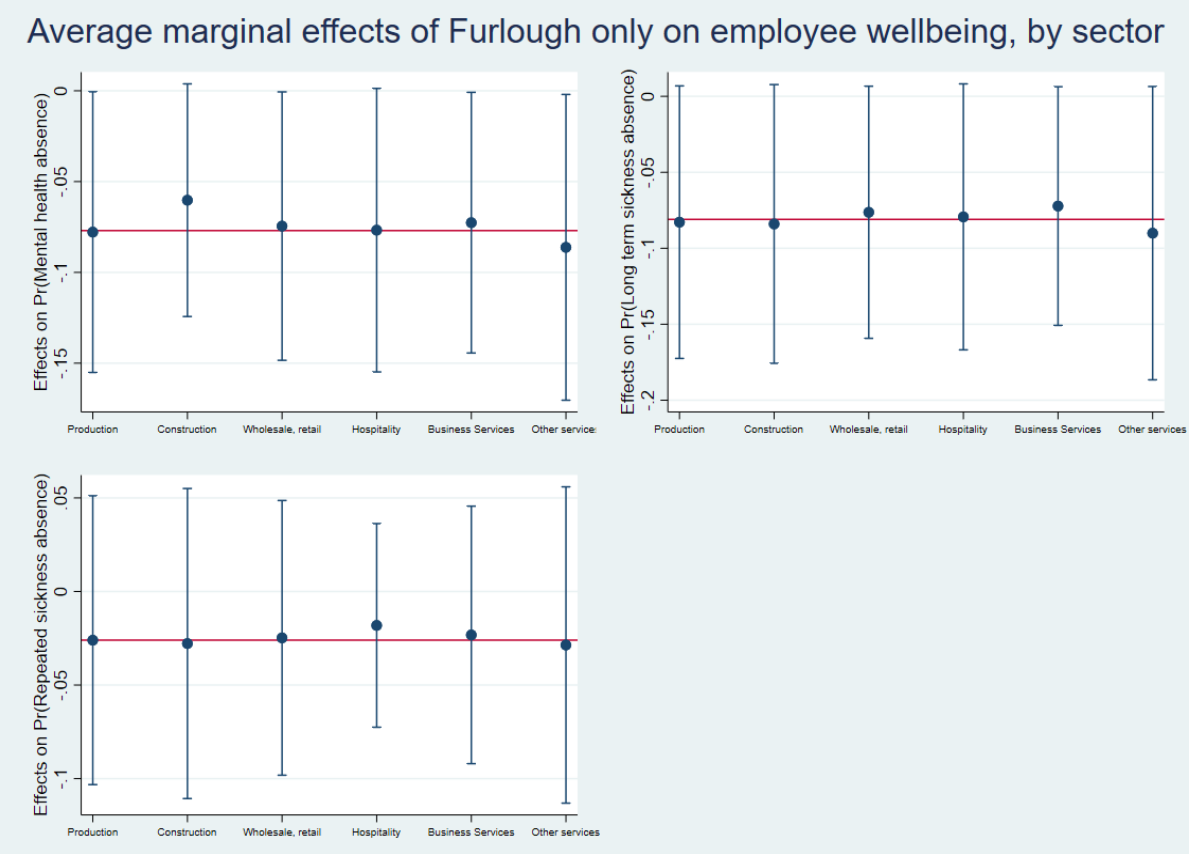


Figure 18: the effects of Furlough+CB on employee mental health absence by sector



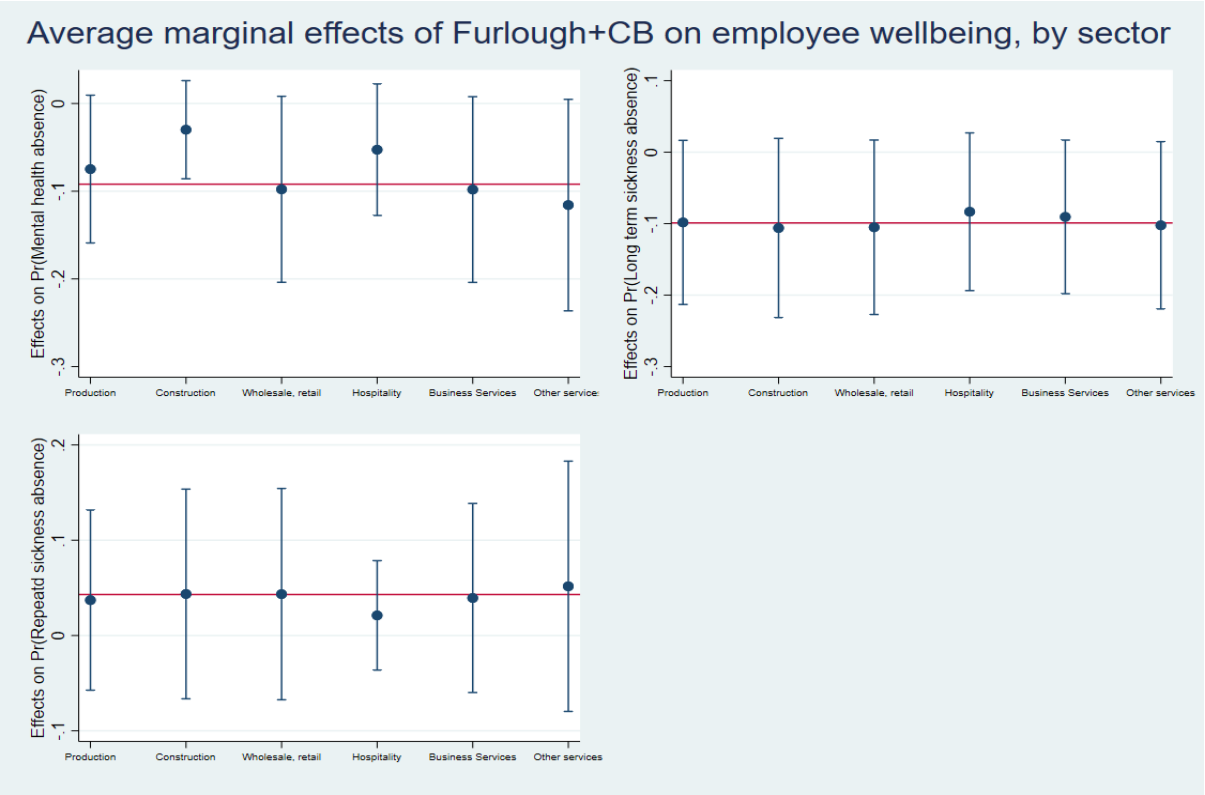
Marginal effects from single equation probits. Red horizontal line represents the average effect across sectors.

Figure 19: the effects of Furlough-only on employee well-being, by sector



Marginal effects from single equation probits. Red horizontal line represents the average effect across sectors.

Figure 20: the effects of Furlough+CB on employee well-being, by sector



Marginal effects from single equation probits. Red horizontal line represents the average effect across sectors

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