The effect of financial grants on the performance of private firms

14 June 2022

Abstract

This study empirically examines the effectiveness of government-financed grants available to private firms in Slovenia. We use a sample of 7,671 private firms during the 2005-2020 period applying for and eventually receiving financial grants from the government. We employ the staggered difference-in-difference approach as recently proposed by Baker et al. (2022) and Athey & Imbens (2022) to assess the effects of financial grants over time and across firms. This method allows for firms switching back and forth between receiving and not receiving financial grants and thus being a treated observation or a potential control observation respectively. Our results show that firms receiving a grant, on average, increase the number of employees in the subsequent period, generate higher cash flows, increase value added per employee, make higher capital investments, higher levels of exports, but – surprisingly – decrease productivity on average. Standard DID, PSM, Heckman's two-stage, and the time-varying average treatment effects robustness analyses further support the conclusions that grants successfully foster firm performance.

Keywords: Impact investing, financial grants, firm performance, investment policy, private firms

JEL Classification: G32, H25, H50, L25, M14

1. Introduction

Ever since the Rockefeller Foundation philanthropy meeting in Italy in 2007, the *impact investing* tries to find its place in the literature and practice. This term, coined at the very same meeting for the first time, pursues the multiple role of creating socio-economic development and generating net positive financial returns for those engaged. As a sub-set of responsible investing (Hebb, 2013), firms engaging in impact investing achieve their goals through investments in projects, activities, and enterprises which apart from creation of a positive social and/or environmental impact, they create commercial values too (Agrawal & Hockerts, 2019). The impact investing market is expanding as never before where governments, foundations, banks, and wealthy individuals are the main funding source of capital (Tekula & Shah, 2016). Including global infrastructure investments, it is estimated that the market for impact investing would be worth anywhere from 1 trillion USD to 14 trillion USD by the year 2023 (O'Donohoe et al. 2010; Battilana et al. 2012).

One of the main reasons that drives the market and the institutional interest for impact investing is that investors can realize social and financial plans at the same time (Rizzello et al. 2016). Since impact investments generate positive externalities, governments are often involved as active partners primarily to structure these investment opportunities, mitigate risk and provide solid financial returns (Hebb, 2013). However, at this moment in time, impact investing as an investment practice has not been teamed up with enough empirical evidence and theoretical knowledge. The volume of empirical studies on impact investing is surprisingly deficient.

Motivated by Agrawal & Hockerts (2021), this study empirically contributes to the impact investing literature from financial accounting perspective by examining the effectiveness of the Ministry-financed impact investing grants available to the private firms in Slovenia.[1] We use financial data on the sample of Slovenian private firms for the 2005-2020 period, and data on impact investing financial grants given to the firms in the period 2009-2018. Motivated by Baker et al. (2022) and Athey & Imbens (2022), we use an innovative staggered difference-in-difference (DID) approach to empirically evaluate the effectiveness of the impact investing financial grants. The staggered DID method detects the effects from the financial grants over time and across firms, allowing firms to switch back and forth between receiving a financial grant and not receiving a financial grant (and thus potentially being a treated and a control observation, depending on the year). We find that impact investing motivates (positive) growth in the employment within the firms in the upcoming year(s),

[1]The Ministry of Finance of the Republic of Slovenia as a regional authority, distributes the shared financial grants funded by the European Social Fund (ESF), European Regional Development Fund (ERDF), and the European Commission under the EU Regulation no. 1303/2013. Briefly, the Regulation sums up the funds available to the firms that decide to use these funds for impact investing purposes. There were 51 impact investing grant schemes available to the private firms in Slovenia.

growth in their cash flows, more capital investments, higher value added per employee, more exports, and somewhat negative firm productivity. Controlling for firm factors suggests that impact investing effects differ among firm size, profitability, debt collaterals, working capital, degree of exports and taxes paid, and the number of days when firms have their bank accounts blocked. For example, Srhoj et al. (2019b) find that in the case of Croatia grants for small firms and women entrepreneurs have positive effects on employment, capital, sales, value-added and bank loans. Another example is Dvoulety and Blazkova (2019) who, for the case of the Czech Republic, find that the national program for firms investing in economic development and innovation has a positive impact on those firms' performance measured by a price-cost margin, value-added, growth in sales, and growth in tangible assets. Burger & Rojec (2018), assess the impact of 2008 financial crisis-motivated subsidization of Slovenian firms and study the subsidization effect on firms' sales and employment. They find that the crisis subsidies had no effect on firms' revenue growth in the years following the receipt of the subsidy, but that subsidies had positive effect on employment for as long as five years after receiving the subsidy. Another study on the Slovenian market is that of Schweiger (2011). She analyses the impact of state aid for rescuing and restructuring given to Slovenian firms in the period from 1998 to 2003 on the allocation of resources. She finds that state aid had positive impact on the growth rate of market shares, but an insignificant impact on the total factor productivity growth, which suggests that aid was distortive.

We support our main findings with additional validation analyses of the underlying mechanism. Our results are found robust when employing a standard DID regression approach as in Koski & Pajarinen (2013) and Wing et al. (2018), a propensity score matching (PSM) technique to estimate causal treatment effects (Rosenbaum & Rubin, 1983), and a Heckman's (1979) two-stage approach as another way to address selection bias. At the end, we also employ a time-varying average treatment effects analyses as suggested in the study of Cerulli & Ventura (2019). These analyses are also intended to provide comparable results with existing literature.

Our paper seeks to contribute to the literature at least in the following key aspects. Firstly, we evaluate a type of financial grant and in the same time a type of investment that has been largely neglected by the literature. In this way, we contribute to the literature on impact investing from financial accounting perspective on top of the existing review studies (for e.g. Hebb, 2013; Agrawal & Hockerts, 2019; 2021). Secondly, we assess the effect of such a grant on firms' potential for enhancing job creation, firms' financial performance, firm growth, and labour productivity, so to be able to address the direct and indirect effects from the grants. In this way, we expand further the findings of Rojec and Burger (2018) and Schweiger (2011) by employing a longer time series of grants, by including a number of additional control variables (e.g. ownership complexity, number of bank relations,

financial distress, auditing status) that were previously unavailable, and by employing the staggered DID to avoid the control observations trap.

The remainder of the paper is structured as follows. Section 2 describes the data and methods used. Section 3 presents our results. Section 4 presents the robustness results, and section 5 concludes.

2. Data and Methodology

2.1. Data

We obtain data for this research from three sources. Financial data on the sample of Slovenian private firms for the 2005-2020 period is obtained from the Agency of the Republic of Slovenia for Public Legal Records and Related Services (hereinafter AJPES). Data on impact investing financial grants given to the private firms in the period 2009-2018 is obtained from the Ministry of Finance of the Republic of Slovenia (hereinafter Ministry of Finance), and third, data on firms' ownership, firms' bank account blockages,[2] and data on firm auditing is obtained from Bisnode, d.o.o. - private database provider. The AJPES, requires (by law) all firms regardless of their size operating in Slovenia to submit their annual financial statements, and this data is made available for research purposes. Our AJPES sample ends in 2020 as this is the last year of full data availability, which also gives us manoeuvring space for t+1 and t+2 analyses. The Ministry of Finance dataset includes only the codename of the firm (recipient of the financial grant), the amount of money (in EUR denomination) it was given under specific grant scheme, and the year when the grant was given. In the 2009-2018 period, there are 51 different grant schemes available to the private firms in Slovenia. Some of the main objectives of these grants were to enhance job creation, boost firm financial performance and productivity, and stimulate firm-growth and labour productivity.

After merging the datasets, we clean the sample by excluding observations with fiscal year shorter than 12 months. We further remove those firms with changes in their legal status, we remove stock market listed firms, firms from the financial sector and utility services, and firms with any missing data. Finally, we filter out the observations with values below the 1st percentile and/or above 99th percentile. We end up with 67,489 firm-year observations from which 7,671 receive an impact investing financial grant.

[INSERT Table 2 HERE]

[2]The Claim Enforcement and Security Act published definition of bank account blockages in the Official Gazette of Republic of Slovenia no. 3/07, 93/07, 37/08. This data is provided to us by Bisnode d.o.o., a private business information provider. Source: https://www.bisnode.si/globalassets/slovenia/produkti/faq_slo_si.pdf.

Table 2 presents descriptive statistics of our sample. Panels A and B report statistics for the non-receiving and receiving financial grant observations, respectively. Panel C reports statistics for the full sample. Out of the full sample, 11.4% (7,671) firm-year observations received a financial grant. From these, 15% (1,148) received a grant only once and the others up to ten times. In addition, it is evident from panels A and B the statistically significant bivariate difference in means, and median[3] for all variables except for firms' profitability.

For the variables in the group receiving impact investing financial grants, we see that these firms are larger on average than the firms not receiving financial grants, these firms are on average owned by a larger number of *NP* and *LP* owners, and pay more taxes. On average, the grant-receiving firms export more; have more bank accounts, and short- and long-term bank loans. On the other side, for the variables in the group not receiving grants, we see that these firms have faster sales growth, more working capital at disposal, more often report negative equity, and have their transaction account(s) blocked more often too.

Spearman correlation coefficients presented in Table 3 do not indicate severe multicollinearity problems between the regressors. Among the main test variables, the highest correlation (0.43) is between *Value-added per employee* and *Productivity*, which are correlated by construction. The remaining correlations between the variables are all smaller (in absolute terms).

[INSERT Table 3 HERE]

2.2. Methodology

We use the staggered difference-in-difference method (DID) as motivated by Baker et al. (2022) and Athey & Imbens (2022) to empirically evaluate the effectiveness of the impact investing financial grants. The staggered DID method is a special case of the general DID set up, and detects the effects from the financial grants over time and across firms, as well as, allowing firms to switch back and forth between receiving a financial grant and not receiving a financial grant (Athey & Imbens, 2022). The staggered DID method reflects a shared belief among researchers that such a setting is more robust, compared to the standard DID setting, and it eases concerns that contemporaneous trends could confound the treatment effect of interest (Baker et al., 2022). We believe that the large potential of our rich dataset that can be used in the staggered DID analyses ranks above the limited propensity score matching (PSM) and Heckman's (1979) two-stage approaches, which are both presented in the robustness section. Apart from the fact that our dataset is large, the firms are highly

[3] Means of variables with differences significant at 5% level or better (two-tailed t-test) are presented in bold, as are medians with 5% significance of the Wilcoxon rank-sum test.

heterogeneous and the pair-matching comparison of similar firms would shrink the sample size significantly (albeit if only baseline controls like firm size and industry are used).

The staggered DID method is also used as a technique to remove a sample selection bias. This bias primarily originates from the time-invariant differences between the observable and unobservable factors that affect the firms' reception of a financial grant, between the (already) receiving and non-receiving financial grant firms, and from the aggregate factors affecting the outcome variables. In addition, there may also be time-variant factors that could generate biases in the estimates. The staggered DID method tackles these biases by calculating weighted averages of the causal effects of a particular firm receiving a financial grant(s) at random time intervals. This non-constant (in technical terms said, random adoption of the treatment) receiving of a financial grant consists of individual firms switching from never receiving to receiving a grant in time t, an average of individual firms that switch to receiving a financial grant at some time after t, as well as an average of individual firms that switch to receiving a financial grant at some time before t (Athey & Imbens, 2022).

Having large and long time-dimension dataset is valuable for several reasons. First, we could obtain some indication of the fit and correctness of the staggered DID method, that is, whether the treatment group parallelly changes with the control group in the absence of the treatment. More precisely, we could perform the parallel trend test using the time trend approach. Second, we could further identify possible long-term effects of the treatment.

To evaluate the effect of the impact investing financial grants on the outcome variables for enhancing job creation, boosting firm financial performance and productivity, and stimulating firm-growth and labour productivity, we use the *reghdfe* module in Stata modified and used as in Baker et al. (2022). We estimate the following equation:

$$\Delta Y_{k,t,t+q} = \alpha_0 + \alpha_1 II_{it} + \alpha_2 X'_{it} + \delta_t + \varphi_g + \mu_j + e_{it} , \quad (1)$$

where in the outcome variable, *k* is, once at a time, the number of employees in a firm (i.e., *Employee*), the cash flows from operations (i.e., *Cash flow*), firm productivity (i.e., *Productivity*), firm's investment in tangible fixed assets (i.e., *Tangible fixed assets*), the value-added per employee (i.e., *Value-value added per employee*), and firm's exports (i.e., *Exports*). The change is computed over the current time period *t* and the period *q*, where $q \in \{1, 2\}$. Furthermore, II_{it} is the staggered DID estimate constructed as an indicator variable equalling 1 if firm *i* has received an impact investing financial grant in time *t* or equalling 0, otherwise. X'_{it} is a vector of control variables ($Size_{it}$, $Profitability_{it}$, $Daysblock\_d_{it}$, $Sales\ growth_{it}$, PPE_{it}, WC_{it}, Tax_d_{it}, $Export\_d_{it}$). $Size$ is computed as the natural logarithm of firm's total assets. Larger firms are usually perceived as less risky, and having higher visibility and

reputation. $Profitability$ is measured as the sum of EBIT and asset write-offs scaled by firm's total assets. Firms that are more profitable are perceived as being more capable to cover their (potential) debt, have more sales, and employ more people (McKenzie, 2017). $Daysblock\_d$ is a dummy variable equalling 1 if a firm has its transaction (bank) account(s) blocked by the tax authorities for at least one day.[4] This variable indicates an aspect of firm failure where the firm fails to meet its potential tax obligations (Mramor & Valentincic, 2003). In addition, $Sales\ growth$ is the annual change in sales to lagged sales, and PPE is the property, plant and equipment scaled by firm's total assets. The working capital, WC, is calculated as the difference between firm's current assets and current liabilities to total assets, and its higher levels indicate higher liquidity and lower firm financial risk. Tax_d indicates a firm with zero income tax and zero deferred tax. It points out firm's tax avoidance, which leads to higher uncertainty of firm's future cash flows, and decreased financial reporting transparency (Shevlin et al., 2019). Last but not least, $Export\_d$ is calculated as firm's ratio of foreign sales to total assets to control for supply chain relationship effects. It is later transformed into an indicator variable equalling 1 if a specific firm is participating in international supply chains and 0, otherwise (Baiman & Rajan, 2002a, 2002b; Costello, 2013; Cheng et al., 2020). $\delta_t, \varphi_g, \text{and } \mu_j$ denote the year, grant, and industry controls. Variable definitions are presented in Table 1.

3. Results

We present our main results in table 4 and table 5. Table 4 presents the staggered DID estimates of Eq. (1) over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model, we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls.

Consistent with the findings of Burger & Rojec (2018), Capelleras et al. (2011), and Bia & Mattei (2012), we find that firms engaging in the Ministry-financed grant schemes for making a socio-economic impact, henceforth firms engaging in impact investing, do experience positive impact upon the change in the number of their employees. One reason for the current effect goes along with the fact that the active impact investing policies are specifically designed to improve employment and to remove employment barriers. In addition, firm profitability and debt collaterals are found to have positive impact upon the change in the number of employees, but the findings are statistically insignificant. Firm size, the number of days when firms have their bank accounts blocked, the working capital, taxes, and exports are recorded with negative and somewhat statistically significant coefficients. This result goes along the findings of Bia & Mattei (2012) and Criscuolo et al. (2012) who

[4]Bank account blockages are defined under the Claim Enforcement and Security Act published in the Official Gazette of Republic of Slovenia no. 3/07, 93/07, 37/08. This data was provided to us by Bisnode d.o.o., a private business information provider. Source: https://www.bisnode.si/globalassets/slovenia/produkti/faq_slo_si.pdf .

note that despite receiving higher levels of financial aid on average, medium and large sized firms experience lower employment gains, which refers that small sized firms have a greater propensity to invest in employment.

In column (2) of Table 4 we find that firms' cash flows increase when engaging in impact investing. This finding is consistent with Soderblom et al. (2015) who find that financial grants ameliorate equity financing which is later used for business development, such as sales and marketing. Control variables for firm size, growth in sales, and taxes yield positive and statistically significant coefficients, whereas bank account blockades and the indicator of firm's collateral in debt contracts (*PPE*) yield negative and statistically significant of at least 10% level coefficients.

In column (3), we explore the effect of firms' engagement in impact investing grants schemes upon firms' labour productivity. Similarly to the findings of Pufahl & Weiss (2019), Srhoj et al. (2019c), and similar in part to Benkovskis et al. (2018), we record a negative impact of receiving a grant towards the change in labour productivity. One reason for such an effect is that financial grants support employment in lower productivity firms, hence, since less productive firms receive more financial grants this implies lower aggregate productivity. Another reason is that firms, once receiving a grant, increase employment of low value-adding personnel, which results in lower productivity.

Next, we test whether for the firms receiving impact investing grants there is a significant impact upon investment in fixed assets. Consistent with the findings of Špička (2018), and Cerqua & Pellegrini (2014), we find that the firms do indeed enlarge their capital. We record a positive coefficient of 3.060, statistically significant at 1% level. Overall, this result suggests that the impact of the financial grants is in line (more or less) with its impact investing targets (Bernini & Pellegrini, 2011). Our control variables show somewhat expected outcomes. Namely, on average, larger firms invest less in fixed assets than smaller firms do, higher profitability and more export-oriented firms show statistically insignificant results and, last but not least, we observe negative coefficients of the *Sales growth*, *PPE*, and *Tax_d* variables upon firms' investments in fixed assets.

Some previous studies show results of rather positive and statistically significant effects of socio-economic development grants on additional capital investments, and significant increase in firms' value added per employee (e.g. Srhoj et al., 2019c). Other studies indicate that the causal effect of the financial grants upon the receiving firms' growth is rather limited - observing positive effect on investment, sales, and value added per employee, but statistically insignificant (Decramer & Vanormelingen, 2016). In line with the previous studies, we test whether engaging in impact investing would yield positive effects upon firms' value added per employee. Consistent with Srhoj et al. (2019c), we observe positive and statistically significant coefficient of the *II* variable which shows evidence that the value added per employee increases for at least up until the upcoming year. The

rest of the control variables are all significant but firms' profitability, sales growth, and exports, and in line with the theory.

Lastly, in column (6) we observe whether firms engaging in impact investing show changes in their magnitude of exports. We find a positive and statistically significant at 1% level coefficient of 0.202 for the *II* variable, together with positive and significant firm size and tax coefficients. This result suggest that firms of specific size and tax obligations, which are beneficiaries of grant scheme programs, on average, tend to be more oriented towards foreign markets as indicated by a higher share of exports. One reason for this result might be the fact that firm's export potential is one of the criteria for assessing entrants to the grant scheme. Another reason would be that, because of the high potential of reaping the benefits from being a global player, firms decide to self-select into the exporters group and thus apply for funding (Benkovskis et al., 2018). The rest of the controls are either negative or insignificant.

[INSERT Table 4 HERE]

In table 5 we present results over the change in the outcome variable at the current time period t and two periods ahead. Namely, we repeat the exercise of table 4 including two periods ahead, we use the same set of controls, and for each of the models from (1) to (6) we attach robust standard errors, industry-, year-, and grant-type controls. We cluster the sample by firm too. Comparing the estimates of Table 5 and Table 4, we can see that the conclusions made in Table 4 hold for table 5 too. The magnitude of the coefficients two periods ahead is, however, almost twice larger for specific models on average, indicating even firmer evidence of the effect that the impact investing financial grant schemes have towards the outcome variables. Dvoulety & Blazkova (2019b), who point out that only after the end of the first year of the financial intervention a positive impact can be seen towards the observed firms, record similar result as ours. In a nutshell, we observe that the firms that engage in impact investing experience positive growth in the employment, higher levels of cash flows, more investments in fixed assets, as well as, more exports. Firm productivity remains negative, and value added per employee is still positive but statistically insignificant. The control variables remain in line with our previous findings.

[INSERT Table 5 HERE]

4. Robustness analyses

4.1. Difference-in-Difference (DID)

To check whether our conclusions from the results section hold, we employ a standard DID regression model as inspired by Koski & Pajarinen (2013) and Wing et al. (2018). We use the ***didregress*** module in Stata authored by Wing et al. (2018) and we estimate Eq. (1). Similarly as before, the outcome variable is once at a time, the number of employees in a firm (i.e., *Employee*), the cash flows from operations (i.e., *Cash flow*), firm productivity (i.e., *Productivity*), firm's investment in tangible fixed assets (i.e., *Tangible fixed assets*), the value-added per employee (i.e., *Value-value added per employee*), and firm's exports (i.e., *Exports*). We further compute the change over the current time period *t* and the period *q*, where *q* ∈ {1, 2}. Furthermore, II_{it} is the standard DID estimate, X'_{it} is a vector of control variables ($Size_{it}$, $Profitability_{it}$, $Daysblock\_d_{it}$, $Sales\ growth_{it}$, PPE_{it}, WC_{it}, Tax_d_{it}, $Export\_d_{it}$), and $\delta_t, \varphi_g,$ and μ_j denote the year, grant, and industry controls. Results are presented in tables A.1 and A.2 in the appendix.

The main variable of interest, i.e. *II*, show positive and statistically significant impact towards the outcome variable when observing the change in firms' employment level, cash flows, investments in capital (tangible fixed assets), value added per employee, and export levels in both periods of interest (t+1 and t+2). Following the conclusions from the main results, yet again, we find negative effects towards firms' productivity. The control variables in place show somewhat similar result-pattern as in our previous analyses, with changes in the coefficients' magnitude and statistical significance.

4.2. Propensity Score Matching (PSM)

We further employ the propensity score matching (PSM) approach to observe causal treatment effects, stemming from the work of Rosenbaum & Rubin (1983). We use a module in Stata authored by Leuven & Sianesi (2003) and we match observations on all the covariates in our set. Probit-based propensity scores represent the probability of "treatment" given the observed characteristics. Then, for each treated unit, we find an untreated observation that is most similar to it according to the covariates, i.e., the propensity score (Wooldridge, 2010). Matching is performed on nearest neighbour without replacement on common support (within the minimum and maximum of control firms' propensity scores) as we want to achieve a balanced sample of observations. We also check the goodness of match variable-wise with a *t*-test of equality of means both before and after matching.[5] To improve the match (i.e., to avoid "bad" matches of observations with substantially

[5] As this is not our central analysis, the results are not tabulated for brevity but are available from the authors.

different propensity scores), we employ calipers (Caliendo & Kopeinig, 2008).[6] After the matching, we are left with 15,342 observations on support. The results for both periods of interest (t+1 and t+2) are presented in tables A.3 and A.4. in the appendix.

The results of the PSM technique show rather robust support of the main results presented in Tables 4 and 5. Namely, for the firms that are engaging in impact investing activities we can observe growth in the employment, growth in their cash flows, more capital investments, higher value added per employee, and exports, but yet again negative productivity. When looking at the control variables, we can spot some differences among the estimates mainly in the coefficients' sign for the one-year forward period. One possible explanation for these differences is the cost we pay in loosing almost 23% of the observations because of using the PSM technique. Another possible explanation goes in line with Dvoulety & Blazkova (2019b), who find that only after the end of the first year of the financial intervention a statistically significant impact can be seen towards the observed variables.

4.3. Heckman's Two-Stage Approach

The third robustness check we employ is Heckman's (1979) two-stage approach as another way to address selection bias. Although the better part of the studies in this research field use either DID or PSM methods to reach the desired conclusions, we think that Heckman's approach would additionally bring value to our study. We believe that the assumptions made in this approach are appropriate for our setting because getting involved in a grant scheme is an endogenous firm choice, which is related to factors observable as well as unobservable to the researcher. The observed results have to be used as a proxy, but if this proxy is not close to the counterfactual outcomes, this leads to selection bias. Motivated by Mole et al. (2009) and Capelleras et al. (2011), in the first stage of Heckman's (1979) approach we estimate a selection model for the probability to undergo a "treatment", and then we calculate the inverse Mills ratio (henceforth IMR) as a bias correction term. The probit selection model we use is:

$$II_{it} = \alpha_0 + \alpha_1 JSC_{it} + \alpha_2 L\_NP_{it} + \alpha_3 L\_LP_{it} + \alpha_4 B\_account_{it} + \alpha_5 ST\_LOAN_{it} + \alpha_6 LT\_LOAN_{it} + \alpha_7 N\_EQ_{it} + \varepsilon_{it}, \quad (2)$$

[6] We use various calipers (1, 0.01, 0.005, 0.001, 0.0005, and 0.0001) however; we report results for a caliper equal to 1. Decreasing the caliper (to 0.01, 0.005, 0.001 etc.) provides even more significant results, accompanied by an increasing number of observations, however these observations fall outside the set range, thus reducing our matched sample size.

where *JSC* identifies firms that are joint stock companies, and *L_NP* and *L_LP* (natural logarithm of the number of natural and legal person owners, respectively) control for ownership complexity.[7] While a natural person is a physical owner of a firm, a legal person is a firm that has an ownership stake in the observed firm. Next, we employ the total number of bank accounts a firm has at the end of the fiscal year (*B_account)* as a proxy for the closeness of firm-bank relationship (Bigus & Hillebrand, 2017) or, alternatively, multiple borrowing options. We capture firms' reliance on (short- and long-term) bank financing with its proportion in total assets, *ST_LOAN* and *LT_LOAN*, respectively, as in De Meyere et al. (2018). A higher ratio of bank-loan financing, particularly long-term, may imply that banks are more interested in the borrower's activities as relatively more funds are committed to it. However, banks also have superior information gathering and processing capabilities (Diamond, 1991; Bharath et al., 2008; Campbell et al., 2019). Lastly, we attach *N_EQ* to control for firm's existing levels of (negative) equity. For our second-stage model, we use the model in Eq. (1) to which we add the inverse Mills ratio calculated from Heckman's first-stage model presented in Eq. (2). The second-stage model is presented in Eq. (3):

$$\Delta Y_{k,t,t+q} = \alpha_0 + \alpha_1 II_{it} + \alpha_2 X'_{it} + \alpha_3 IMR_{i,t} + \delta_t + \varphi_g + \mu_j + e_{it} \quad (3)$$

The results from the probit selection model are presented in table A.5, whereas the second-stage model results are presented in table A.6 and in table A.7. The estimates from the probit selection model show that joint stock companies (*JSC*), which are characterized as being suitable for more complex corporate managing, more often choose to engage in an impact investing grant scheme than their counterparts of different legal status. Corresponding with the agency theory (Jensen & Meckling, 1976), our proxies for firm ownership (*L_NP* and *L_LP*) indicate that the firms with more dispersed ownership have higher probability to engage in impact investing than other firms. Furthermore, firms that have closer relationships to a bank (*B_account*), and firms with long-term loans show higher probability to get involved in impact investing (e.g. Diamond, 1991; Bharath et al.,2011), whereas firms with higher exposure to short-term bank loans as well as firms with higher levels of negative equity are less probable to get involved in impact investing.

The estimates from Heckman's second-stage model show rather mixed conclusions, especially when comparing estimates between t+1 and t+2. Namely, the effects recorded upon the change in firm cash flows, the value added per employee, and firm exports are in line with both our main findings

[7]Because of their skewed discrete distributions, we are using natural logarithms of *NP* (*L_NP*) and *LP* (*L_LP*) throughout the analysis. Main analysis results with non-logarithmic values, i.e., *NP* and *LP*, provide comparable significant results, but perform somewhat poorer in sensitivity tests. Nevertheless, we find it more informative to report descriptive statistics for the non-logarithmic values in Table 2.

and other robustness checks. The effects are sometimes prolonged (observable in t+2 and not in t+1), but apparent and statistically significant.

When observing the impact of being among the impact investing firms upon the change in the employment, productivity, and firms' capital investments, we either record coefficients with opposite sign than before or the coefficients' sign differ from t+1 to t+2. The latter results do not imply that the effects are lost, but more like that Heckman's approach might not be the most suitable approach for this specific study case.

4.4. Time–Varying Average Treatment Effects (ATEs)

Motivated by Cerulli & Ventura (2019), we additionally estimate time-varying average treatment effects (ATEs) which can be seen as a generalization of the DID approach to the case of many post- and pre-intervention times. This is the case when the treatment is a binary and varying over time, thus estimating the pre- and post- intervention effects by selecting the exact specific pre- and post- intervention periods. The results are presented in tables A.8 and A.9 in the appendix.

Namely, the estimates infer similar, at least to some point, conclusions as the *main* results presented in table 4 and table 5. It is important to note that once the ATEs are set, the number of observations roughly halves. This is due to the built-in lags and leads of Cerulli & Ventura (2019)'s model[8]. In a nutshell, the estimates show that for the firms that are engaging in impact investing activities we can observe growth in the employment, growth in their cash flows, more capital investments, higher value added per employee, but mixed results for t+1 and t+2 for the levels of export and productivity.

To sum up, all validation checks support, more or less, the conclusions of our results section. We can further conclude that DID, PSM, and ATEs approaches suit our study setup better than Heckman's two stage approach, which is also evident by the number of studies exploiting these methods, as presented in Dvoulety et al. (2021).

5. Conclusion

This paper examines the effects of financial grants on firm performance using a large dataset of Slovenian private firms. The analysis for the years 2005-2020 suggests that impact investing grants result in, on average, an increased number of employees in the subsequent period, generate higher

[8]Cerulli & Ventura (2019) estimate a model with binary treatment indicator for individual *i* at time *t* assuming an outcome equation with contemporaneous treatment plus lags and leads: $Y_{it} = \mu_{it} + \beta_{-1}D_{it-1} + \beta_0 D_{it} + \beta_{+1}D_{it+1} + \varphi x_{it} + u_{it}$, where D_{it} equals 1 if unit *i* is treated at time *t*, and 0 otherwise, β_{+1} measures the impact of the treatment 1-period after occurrence, and β_{-1} measures the impact 1-period before it. x_{it} is a vector of controls, and μ_{it} denotes a fixed effect.

cash flows, increase value added per employee, make higher capital investments, higher levels of exports, but – surprisingly – decrease productivity on average. Controlling for firm factors such as firm size, profitability, debt collaterals, working capital, number of days when firms have their bank accounts blocked, taxes, and exports further show statistically significant influence when we observe one- and two-periods ahead.

We are aware that our findings are subject to some limitations, too. Technically, when matching observations, there is still the possibility of an unobserved covariate affecting both the outcome and the selection into treatment. Within these lines, further research would ideally focus on controlling for even more firm characteristics, including levels of management, internal and/or external audit opinions, age and gender of firms' management team, human capital, etc., something that is, however, difficult to do for private firms. Another limitation is that this is still a single-country study carrying all the country-specific factors that may be different from other comparable (EU member) countries. This makes the results potentially less generalizable. Finally, we do not perform a general equilibrium analysis, but are only interested in the average treatment effect on the treated firms. We do not take account of other potential spill-overs.

References

Agrawal, A., & Hockerts, K. (2019). Impact Investing Strategy: Managing Conflicts between Impact Investor and Investee Social Enterprise. *Sustainability, 11*, 1-21.

Agrawal, A., & Hockerts, K. (2021). Impact investing: review and research agenda. *Journal of Small Business & Entrepreneurship, 33,* 153-181.

Athey, S., & Imbens, G. (2022). Design-based analysis in difference-in-difference settings with staggered adoption. *Journal of Econometrics, 226,* 62-79.

Baiman, S., & M. V. Rajan. (2002a). The role of information and opportunism in the choice of buyer-supplier relationships. *Journal of Accounting Research, 40*, 247–278.

Baiman, S., & M. V. Rajan. (2002b). Incentive issues in inter-firm relationships. *Accounting, Organizations and Society, 27*, 213–238.

Baker, A., Larcker, D., & Wang, C. (2022). How much should we trust staggered difference-in-difference estimates? *Journal of Financial Economics, 144,* 370-395.

Battilana, J.; Lee, M.; Walker, J.; Dorsey, C. In Search of The Hybrid Ideal. Available online: https: //ssir.org/articles/entry/in_search_of_the_hybrid_ideal (accessed on 26 November 2021).

Beņkovskis, K., Tkačevs, O., & Yashiro, N. (2018). Importance of EU regional support programs for firm performance. Latvijas Banka Working Paper (no. 1/2018). Available online: https://www.macroeconomics.lv/sites/default/files/2018-02/wp_1_2018_en.pdf.

Bernini, C., & Pellegrini, G. (2011). How is growth and productivity in private firms affected by public subsidy? Evidence from a regional policy. *Regional Science and Urban Economics*, *41*, 253-265.

Bharath, S. T., Dahiya, S., Saunders, A., & Srinivasan, A. (2011). Lending relationships and loan contract terms. *Review of Financial Studies, 24*, 1141-1203.

Bia, M.,& Mattei, A. (2012). Assessing the effect of the amount of financial aids to Piedmont firms using the generalized propensity score. *Statistical Methods & Applications*, *21*, 485–516.

Bigus, J., & Hillebrand, C. (2017). Bank relationships and private firms' financial reporting quality. *European Accounting Review, 26*, 379-409.

Burger, A., & Rojec, M. (2018). Impotence of crisis-motivated subsidization of firms: The case of Slovenia. *Eastern European Economics, 56*, 122-148.

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys, 22*, 31-72.

Campbell, D., Loumioti, M., & Wittenberg-Moerman, R. (2019). Making sense of soft information: interpretation bias and loan quality. *Journal of Accounting and Economics, 68*, 101240.

Capelleras, J. L., Contín-Pilart, I., & Larraza-Kintana, M. (2011). Publicly funded prestart support for new firms: who demands it and how it affects their employment growth. *Environment and Planning: Government and Policy*, *29*, 821–847.

Cerqua, A., & Pellegrini, G. (2014). Do subsidies to private capital boost firms' growth? A multiple regression discontinuity design approach. *Journal of Public Economics, 109*, 114–126.

Cerulli, G., & Ventura, M. (2019). Estimation of pre- and post-treatment average treatment effects with binary time-varying treatment using Stata. *The Stata Journal, 19*, 551-565.

Cheng, A., Sun, W., Ye, K., & Zhang, N. (2020). The effect of auditing on promoting exports: evidence from private firms in emerging markets. *Management Science, Articles in Advance,* 1-25.

Costello, A. M. (2013). Mitigating incentive conflicts in inter-firm relationships: Evidence from long-term supply contracts. *Journal of Accounting and Economics, 56* 19–39.

Criscuolo, C., Martin, R., Overman, H., & Van Reenen, J. (2012). The causal effects of an industrial policy. IZA Discussion Papers, No. 6323, Institute for the Study of Labor (IZA), Bonn.

Decramer, S., & Vanormelingen, S. (2016). The effectiveness of investment subsidies: evidence from a regression discontinuity design. Small Business Economics, *47*, 1007–1032.

De Meyere, M., Vander Bauwhede, H., & Van Cauwenberge, P. (2018). The impact of financial reporting quality on debt maturity: the case of private firms. *Accounting and Business Research, 48*, 759-781.

Diamond, D. (1991). Monitoring and reputation: the choice between bank loans and directly placed debt. *Journal of Political Economy. 99*, 689-721.

Dvouletý, O., & Blažková, I. (2019). Assessing the microeconomic effects of public subsidies on the performance of firms in the Czech food processing industry: a counterfactual impact evaluation. *Agribusiness: An International Journal*, *35*, 394–422.

Dvouletý, O., Srhoj, S. & Pantea, S. (2021). Public SME grants and firm performance in European Union: A systematic review of empirical evidence. *Small Business Economics, 57***,** 243–263.

Hebb, T. (2013). Impact investing and responsible investing: what does it mean? *Journal of Sustainable Finance & Investment, 3*, 71-74.

Heckman, J. (1979). Sample selection bias as a specification error. *Econometrica, 47*, 153-161

Jensen, M. C., & Meckling, W. H. (1976). Theory of the frim: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*, 305-360.

Koski, H., & Pajarinen, M. (2013). The role of business subsidies in job creation of start-ups, gazelles and incumbents. *Small Business Economics, 41*, 195–214.

Leuven, E., & Sianesi, B. (2003). PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing, https://EconPapers.repec.org/RePEc:boc:bocode:s432001.

McKenzie, D. (2017). Identifying and spurring high-growth entrepreneurship: experimental evidence from a business plan competition. *American Economic Review*, *107*, 2278-2307.

Mole, K. F., Hart, M., Roper, S., & Saal, D. S. (2009). Assessing the effectiveness of business support services in England: evidence from a theory-based evaluation. *International Small Business Journal*, *27*, 557–582.

Mramor, D., & Valentincic, A. (2003). Forecasting the liquidity of very small private companies. *Journal of Business Venturing, 18*, 745-771.

O'Donohoe, N., C. Leijonhufvud, Y. Saltuk, A. Bugg-Levine, & M. Brandenburg. (2010). Impact Investments: An emerging asset class. New York: JPMorgan Chase & Co., The Rockefeller Foundation and Global Impact Investing Network. *Global Research.*

Pufahl, A., & Weiss, C. (2009). Evaluating the Effects of Farm Programs: Results from Propensity Score Matching. European Review of Agricultural Economics, *36*, 79–101.

Rizzello, A., M. C. Migliazza, R. Car_e, & A. Trotta. (2016). Social Impact Investing : A model and Research Agenda. *In Routledge handbook of social and sustainable finance*, edited by O. Weber. Oxford.

Rosenbaum, P., & Rubin, D. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika, 70,* 41-55.

Schweiger, H. (2011). The Impact of State Aid for Restructuring on the Allocation of Resources. *EBRD Working Paper No. 127*, European Bank for Reconstruction and Development, London, UK. http://www.ebrd.com/downloads/research/economics/workingpapers/WP0127.pdf

Shevlin, T., Urcan, O., & Vasvari, F. (2019). Corporate tax avoidance and debt costs. *The Journal of the American Taxation Association In-Press*.

Soderblom, A., Samuelsson, M., Wiklund, J., & Sandberg, R. (2015). Inside the black box of outcome additionality: effects of early-stage government subsidies on resource accumulation and new venture performance. Research Policy, *44*, 1501–1512.

Srhoj, S., Lapinski,M., & Walde, J. (2019c). Size matters? Impact evaluation of business development grants on firm performance. *University Innsbruck Working Papers*, pp. 1–50.

Tekula, R., & Shah, A. (2016). Impact Investing: funding social innovation. *Routledge Handbook of Social and Sustainable Finance*, edited by O. M. Lehner, 125-136.

Špička, J. (2018). How does public investment support change the capital structure and productivity of small enterprises? An empirical study of the food industry. *International Food and Agribusiness Management Review*, *21*, 1045–1059.

Wing, C., K. Simon, and R. A. Bello-Gomez. (2018). Designing difference in difference studies: Best practices for public health policy research. *Annual Review of Public Health, 39*, 453–469.

Wooldridge, J. M. (2010). Econometric analysis of cross section and panel data (2nd ed.). Cambridge, Massachusetts: The MIT Press.

Table 1
Variable Definitions

Variable	Description
Dependent variable	
Employee	Change in the number of employees from t to t+1 and t+2, respectively.
Cash flow	Change in cash flows from operations from t to t+1 and t+2, respectively. Measured as firm's net income less its accruals.
Productivity	Change in productivity from t to t+1 and t+2, respectively. Measured as firm's total sales divided by the number of employees.
Tangible fixed assets	Change in tangible fixed assets from t to t+1 and t+2, respectively.
Value-added per employee	Change in value-added per employee from t to t+1 and t+2, respectively. Measured as firm's gross operating income less costs of goods, materials, services and other operating expenses scaled by the number of employees in the firm.
Exports	Change in exports from t to t+1 and t+2, respectively. It is the ratio of firm's foreign sales to total sales.
Independent variables	
II	Impact Investing, an indicator variable equaling 1 if a firm has received a financial grant, and 0 otherwise.
Size	Natural logarithm of total assets.
Profitability	Profitability, measured as the sum of EBIT and asset write-offs scaled by total assets.
Daysblock_d	Indicator variable equaling 1 if the number of days that the firm has its transaction account(s) blocked by the tax authorities is greater than zero, and 0 otherwise.
Sales growth	Sales growth, measured as the ration of change in sales to previous year's sales.
PPE	Property, plant, and equipment scaled by total assets.
WC	Working capital, measured as the difference between current assets and current liabilities, scaled by total assets.
Tax_d	An indicator variable equalling 1 if the sum of firm's income and deferred taxes is equal to 0, and 0 otherwise.
Export_d	Exports as a share of total sales
JSC	An indicator variable equaling 1 if a firm's legal status is a joint stock company, and 0 otherwise.
NP	Number of natural person owners of a firm.
LP	Number of legal person owners of a firm.
B_account	Number of bank accounts open at the end of the year.
ST_Loan	Short-term bank loans scaled by total assets.
LT_loan	Long-term bank loans scaled by total assets.
N_EQ	An indicator variable equaling 1 if the firm is reporting negative equity, and 0 otherwise.
IMR	It is the Inverse Mills Ratio obtained from the 1st stage Heckman probit regression.

Table 2
Descriptive Statistics

Variable	Mean	Min	25%	Median	75%	Max	SD	N
Panel A: Non-receiving financial grants								
Size	**15.526**	0.000	14.422	**15.097**	16.208	26.998	1.987	59,818
Profitability	0.102	-97.034	0.049	0.094	0.159	78.164	0.834	59,818
Daysblock_d	**0.259**	0	0	**0**	1	1	0.438	59,818
Sales growth	**4.526**	-0.192	-0.016	**0.005**	0.187	42.072	12.921	59,818
PPE	**0.332**	0.000	0.100	**0.303**	0.520	1	0.254	59,818
WC	**0.175**	-0.157	-0.006	**0.149**	0.357	0.554	0.228	59,818
Tax_d	**0.224**	0	0	**0**	0	1	0.417	59,818
Export_d	**0.763**	0	1	**1**	1	1	0.425	59,818
JSC	**0.062**	0	0	**0**	0	1	0.241	59,818
NP	**0.661**	0	0	**0.693**	1.099	7.426	0.786	59,818
LP	**0.543**	0	0	**0.693**	0.693	5.881	0.660	59,818
Bank account	**2.280**	0	1	**2**	3	151.000	2.030	59,818
ST_Loan	**0.062**	0	0	**0.002**	0.079	11.727	0.138	59,818
LT_loan	**0.079**	0	0	**0**	0.115	26.022	0.186	59,818
N_EQ	**0.041**	0	0	**0**	0	1	0.197	59,818
Variable	**Mean**	**Min**	**25%**	**Median**	**75%**	**Max**	**SD**	**N**
Panel B: Receiving financial grants								
Size	**15.639**	10.384	14.689	**15.397**	16.365	22.473	1.337	7,671
Profitability	0.106	-3.615	0.056	0.093	0.150	1.251	0.112	7,671
Daysblock_d	**0.182**	0	0	**0**	0	1	0.386	7,671
Sales growth	**0.076**	-0.192	-0.061	**0.033**	0.144	12.051	0.311	7,671
PPE	**0.393**	0	0.205	**0.384**	0.563	0.991	0.235	7,671
WC	**0.156**	-0.157	-0.006	**0.134**	0.309	0.554	0.211	7,671
Tax_d	**0.247**	0	0	**0**	0	1	0.431	7,671
Export_d	**0.825**	0	1	**1**	1	1	0.380	7,671
JSC	**0.159**	0	0	**0**	0	1	0.365	7,671
NP	**0.786**	0	0	**0.693**	1.099	6.743	0.927	7,671
LP	**0.604**	0	0	**0.693**	1.099	5.371	0.713	7,671
Bank account	**2.925**	0	2	**2**	4	48	2.158	7,671
ST_Loan	**0.073**	0	0	**0.033**	0.104	5.267	0.119	7,671
LT_loan	**0.105**	0	0	**0.049**	0.170	4.069	0.142	7,671
N_EQ	**0.022**	0	0	**0**	0	1	0.145	7,671
Variable	**Mean**	**Min**	**25%**	**Median**	**75%**	**Max**	**SD**	**N**
Panel C: All observations								
Size	15.539	0	14.453	15.130	16.233	26.998	1.925	67,489
Profitability	0.103	-97.034	0.050	0.094	0.158	78.164	0.786	67,489
Daysblock_d	0.251	0	0	0	1	1	0.433	67,489
Sales growth	4.021	-0.192	-0.023	0.010	0.179	42.072	12.247	67,489
PPE	0.339	0	0.111	0.314	0.527	1	0.253	67,489
WC	0.173	-0.157	-0.006	0.147	0.350	0.554	0.226	67,489
Tax_d	0.227	0	0	0	0	1	0.419	67,489
Export_d	0.770	0	1	1	1	1	0.421	67,489
JSC	0.073	0	0	0	0	1	0.260	67,489
NP	0.675	0	0	0.693	1.099	7.426	0.805	67,489
LP	0.550	0	0	0.693	1.099	5.881	0.667	67,489
Bank account	2.353	0	1	2	3	151	2.055	67,489
ST_Loan	0.063	0	0	0.007	0.082	11.727	0.136	67,489
LT_loan	0.082	0	0	0	0.122	26.022	0.182	67,489
N_EQ	0.038	0	0	0	0	1	0.192	67,489

Notes: Panels A and B present descriptive statistics for non-receiving and receiving financial grant observations, respectively. Observations are partitioned with respect to *II*, i.e., had firm-year observation was receiving a financial grant or not. In Panels A and B, means of variables with differences significant at 5% level or better (two-tailed t-test) are presented in bold as are medians with 5% significance of the Wilcoxon rank-sum test. Panel C shows descriptive statistics for the full sample.

Table 3

Correlations

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*	*(21)*	*(22)*
(1) Employee	1																					
(2) Cash flow	-0.003	1																				
(3) Productivity	**-0.347**	**0.057**	1																			
(4) Tangible fixed assets	**0.209**	-0.001	**-0.094**	1																		
(5) Value-added per employee	**-0.178**	**0.092**	**0.431**	**0.030**	1																	
(6) Exports	**0.078**	**0.105**	**0.122**	-0.004	**0.099**	1																
(7) II	**0.034**	**0.071**	**0.012**	**0.053**	**0.054**	**0.073**	1															
(8) Size	**-0.070**	**0.082**	-0.003	**-0.214**	**-0.010**	**0.034**	**0.055**	1														
(9) Profitability	**0.147**	**0.047**	**-0.057**	**0.052**	**-0.124**	**0.008**	0.001	**-0.025**	1													
(10) Daysblock_d	**0.214**	**-0.060**	**-0.241**	**-0.015**	**-0.052**	**-0.068**	**-0.056**	**0.224**	-0.002	1												
(11) Sales growth	**0.164**	**0.024**	**-0.100**	**-0.123**	**-0.036**	0.004	**-0.034**	**0.281**	**0.219**	**0.282**	1											
(12) PPE	**0.023**	**0.066**	-0.000	**-0.036**	**0.025**	**0.009**	**0.086**	**0.113**	**0.118**	**0.008**	**0.028**	1										
(13) WC	**0.054**	**-0.011**	**-0.013**	**0.057**	**-0.020**	0.004	**-0.022**	**-0.063**	**0.237**	0.007	**0.073**	**-0.430**	1									
(14) Tax_d	**-0.078**	**-0.025**	**0.021**	**-0.041**	**0.029**	**-0.025**	**0.017**	**-0.087**	**-0.313**	**0.067**	**-0.102**	**0.142**	**-0.249**	1								
(15) Export_d	**0.039**	**0.029**	-0.003	**0.013**	**0.018**	**0.361**	**0.046**	**0.122**	**0.133**	**-0.012**	**0.068**	**-0.010**	**0.086**	**-0.084**	1							
(16) JSC	**-0.066**	**0.035**	**0.039**	**0.011**	**0.027**	**0.014**	**0.118**	**0.201**	**-0.091**	**-0.083**	**-0.083**	**0.062**	**-0.076**	**0.023**	**-0.020**	1						
(17) NP	**-0.018**	**0.055**	**0.048**	**-0.011**	**0.029**	**0.048**	**0.035**	**-0.164**	-0.001	**-0.131**	**-0.041**	**0.047**	**-0.009**	**0.008**	0.003	**-0.197**	1					
(18) LP	**0.064**	-0.006	**-0.080**	**-0.014**	**-0.025**	**-0.040**	**0.023**	**0.134**	**-0.017**	**0.241**	**0.092**	**0.037**	**0.050**	-0.006	-0.001	**-0.060**	**-0.107**	1				
(19) Bank account	**-0.028**	**0.054**	0.003	**-0.023**	**0.024**	**0.066**	**0.118**	**0.283**	**-0.049**	**-0.046**	**-0.011**	**0.094**	**-0.126**	**-0.025**	**0.096**	**0.177**	**0.086**	**0.090**	1			
(20) ST_Loan	**-0.057**	**0.062**	**0.010**	**-0.040**	0.007	**0.091**	**0.086**	**0.144**	**-0.134**	**-0.036**	**-0.063**	**0.167**	**-0.397**	**0.086**	**0.057**	**0.145**	**0.116**	**-0.020**	**0.342**	1		
(21) LT_loan	-0.001	**0.046**	-0.001	**-0.032**	**0.012**	**0.047**	**0.095**	**0.131**	**-0.046**	**0.013**	0.001	**0.421**	**-0.306**	**0.067**	**0.040**	**0.068**	**0.112**	**0.041**	**0.296**	**0.437**	1	
(22) N_EQ	**-0.055**	**-0.042**	**0.018**	**-0.009**	0.001	**-0.041**	**-0.031**	**-0.079**	**-0.212**	**0.085**	**-0.098**	**-0.068**	**-0.244**	**0.251**	**-0.057**	**-0.011**	**-0.028**	**-0.037**	**-0.065**	**0.010**	**-0.038**	1

Notes: The table presents Spearman correlation coefficients for the whole sample of observations. Coefficients with a significance level of 5% or better (two-tailed t-test) are presented in bold.

Table 4. Main results

Dependent variable:	$\Delta Employee_{t,t+1}$	$\Delta Cash\ flow_{t,t+1}$	$\Delta Productivity_{t,t+1}$	$\Delta Tangible\ fixed\ assets_{t,t+1}$	$\Delta Value\ added\ per\ employee_{t,t+1}$	$\Delta Exports_{t,t+1}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II – DID estimate staggered	**2.161*** (4,28)**	**0.242*** (3.73)**	**-0.032*** (-3.73)**	**3.060*** (2.85)**	**0.148*** (4.31)**	**0.202*** (2.55)**
Size	-0.128 (-1.61)	**0.056** (2.31)**	**-0.022* (-1.87)**	-0.049 (-1.18)	**-0.015** (-2.11)**	**0.029*** (3.97)**
Profitability	0.004 (0.45)	-0.005 (-1.18)	-0.005 (-1.52)	0.000 (0.02)	-0.014 (-1.50)	-0.001 (-0.41)
Daysblock_d	**-1.138** (-2.01)**	**-0.038* (-1.78)**	0.008 (0.74)	-0.051 (-1.27)	**-0.018* (-1.66)**	**-0.035*** (-3.36)**
Sales growth	0.004 (0.82)	**0.005*** (3.36)**	-0.001 (-1.02)	**-0.025*** (-5.26)**	-0.001 (-1.46)	**-0.001* (-1.90)**
PPE	0.010 (0.18)	**-0.116* (-1.87)**	**0.059*** (2.82)**	**-2.096*** (-5.13)**	**0.049*** (3.88)**	-0.021 (-1.47)
WC	**-0.002*** (-2.84)**	0.000 (0.83)	**0.001*** (4.77)**	0.003 (1.09)	**0.001*** (3.19)**	0.000 (1.21)
Tax_d	**-0.105*** (-4.06)**	0.017 (1.21)	**0.027*** (4.05)**	**-0.177*** (-2.89)**	**0.052*** (6.66)**	0.007 (1.42)
Export_d	**-0.052** (-2.13)**	0.012 (1.15)	0.006 (1.06)	0.034 (1.09)	0.006 (1.24)	
Constant	**2.089** (2.19)**	**-0.610* (-1.62)**	**0.344* (1.87)**	**2.95*** (2.68)**	**0.256** (2.33)**	**-0.534*** (-3.86)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	66,337	66,337	66,337	66,337	66,337	66,337
R^2	0.484	0.126	0.496	0.306	0.379	0.222

Notes: the table presents regression results for the staggered DID approach presented in Eq. (1) over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table 5. Main results

Dependent variable:	$\Delta Employee_{t,t+2}$	$\Delta Cash\ flow_{t,t+2}$	$\Delta Productivity_{t,t+2}$	$\Delta Tangible\ fixed\ assets_{t,t+2}$	$\Delta Value\ added\ per\ employee_{t,t+2}$	$\Delta Exports_{t,t+2}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II – DID estimate staggered	**17.400*** ** (5.76)**	**1.140*** ** (4.58)**	**-0.026*** ** (-3.30)**	**1.987*** ** (2.96)**	3.950 (1.11)	**0.175** ** (2.22)**
Size	**-1.415*** ** (-2.84)**	**0.139** ** (2.14)**	**-0.019** ** (-1.96)**	-0.073 (-1.35)	0.344 (0.92)	**0.294*** ** (3.11)**
Profitability	0.052 (0.90)	-0.007 (-0.44)	-0.004 (-1.57)	-0.011 (-1.01)	-0.155 (-0.83)	-0.003 (-1.34)
Daysblock_d	0.614 (1.00)	-0.023 (-0.26)	0.006 (0.91)	-0.103 (-1.43)	**-3.696*** **(-1.71)**	**-0.042*** ** (-3.11)**
Sales growth	**0.018*** ** (1.11)**	-0.006 (-1.10)	-0.001 (-1.11)	-0.007 (-1.12)	-0.033 (-1.25)	**-0.002*** ** (-2.07)**
PPE	0.449 (0.90)	-0.112 (-0.78)	**0.048*** ** (2.80)**	**-1.818*** ** (-4.86)**	0.062 (0.13)	0.022 (1.14)
WC	**-0.008*** **(-1.84)**	0.003 (1.53)	**0.001*** ** (4.05)**	**0.003** ** (2.01)**	**0.087*** ** (10.86)**	0.000* (1.74)
Tax_d	-0.154 (-1.06)	0.042 (1.35)	**0.022*** ** (4.28)**	-0.034 (-0.07)	-0.369 (-1.00)	0.009 (1.51)
Export_d	**-0.465** ** (-2.50)**	0.025 (0.64)	0.004 (0.92)	0.046 (1.14)	0.410 (1.21)	
Constant	**25.809*** ** (3.34)**	-1.245 (-1.19)	**0.288** ** (1.94)**	0.784 (0.71)	3.739 (0.60)	**-0.656*** ** (-3.99)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	66,337	66,337	66,337	66,337	66,337	66,337
R^2	0.617	0.362	0.425	0.305	0.804	0.257

Notes: the table presents regression results for the staggered DID approach presented in Eq. (1) over the change in the outcome variable at the current time period t and the period q, where q is equal to 2. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

APPENDIX

Table A.1. DID robustness

Dependent variable:	$\Delta Employee_{t,t+1}$	$\Delta Cash\ flow_{t,t+1}$	$\Delta Productivity_{t,t+1}$	$\Delta Tangible\ fixed\ assets_{t,t+1}$	$\Delta Value\ added\ per\ employee_{t,t+1}$	$\Delta Exports_{t,t+1}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**0.108*** (5.43)**	**0.015** (2.17)**	**-0.016*** (-5.01)**	**0.075** (2.25)**	0.003 (1.03)	**0.018*** (3.95)**
Size	**-0.128*** (-10.18)**	**0.056*** (8.80)**	**-0.022*** (-9.32)**	**-0.049*** (-3.59)**	**-0.015*** (-8.06)**	**0.029*** (10.89)**
Profitability	0.004 (0.45)	-0.005 (-1.67)	**-0.004** (-2.36)**	0.000 (0.02)	**-0.014** (-2.55)**	-0.001 (-0.45)
Daysblock_d	**-1.135*** (-5.37)**	**-0.037*** (-3.57)**	0.007 (1.37)	-0.049 (-1.30)	**-0.018*** (-3.88)**	**-0.035*** (-6.17)**
Sales growth	**0.003*** (3.48)**	**0.005*** (5.04)**	**-0.001*** (-3.96)**	**-0.024*** (-12.44)**	**-0.001** (-2.25)**	**-0.001*** (-3.15)**
PPE	0.009 (0.23)	**-0.115*** (-4.07)**	**0.059*** (7.45)**	**-2.096*** (-28.87)**	**0.049*** (6.43)**	**-0.021** (-2.05)**
WC	0.042 (1.02)	0.000 (0.25)	**0.001*** (7.25)**	**0.003** (2.01)**	**0.001*** (5.86)**	0.000 (1.12)
Tax_d	**-0.105*** (-7.47)**	**0.017* (1.77)**	**0.028*** (9.47)**	**-0.177*** (-7.65)**	**0.051*** (18.98)**	**0.007*** (2.07)**
Export_d	**-0.053*** (-2.77)**	0.012 (0.91)	0.006 (1.56)	0.033 (1.02)	0.006 (1.60)	
Constant	**2.083*** (10.56)**	**-0.860*** (-8.29)**	**0.299*** (7.88)**	**1.174*** (5.09)**	**0.180*** (5.88)**	**-0.374*** (-8.66)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
R^2	0.249	0.115	0.368	0.154	0.287	0.025

Notes: the table presents regression results for the standard DID approach based on Eq. (1) over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.2. DID robustness

Dependent variable:	$\Delta Employee_{t,t+2}$	$\Delta Cash\ flow_{t,t+2}$	$\Delta Productivity_{t,t+2}$	$\Delta Tangible\ fixed\ assets_{t,t+2}$	$\Delta Value\ added\ per\ employee_{t,t+2}$	$\Delta Exports_{t,t+2}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**0.214****	**0.371*****	**-0.012*****	0.067	**0.343****	**0.038*****
	(2.18)	**(8.21)**	**(-4.61)**	(1.09)	**(2.00)**	**(4.99)**
Size	**-1.415*****	**0.139*****	**-0.018*****	0.001	**0.344*****	**0.035*****
	(-12.92)	**(7.54)**	**(-9.89)**	(0.22)	**(3.05)**	**(10.06)**
Profitability	0.052	-0.007	**-0.004***	-0.010	-0.155	-0.003
	(0.92)	(-0.83)	**(-2.38)**	(-1.05)	(-0.91)	(-1.06)
Daysblock_d	**-1.616*****	-0.022	0.005	**-0.104****	**-3.688*****	**-0.042*****
	(-3.89)	(-0.50)	(1.43)	**(-2.41)**	**(-10.23)**	**(-4.97)**
Sales growth	**0.018*****	**-0.006*****	**-0.001*****	**-0.007*****	**-0.032****	**-0.002*****
	(3.17)	**(-2.92)**	**(-4.59)**	**(-3.73)**	**(1.90)**	**(-4.70)**
PPE	**0.449***	-0.112	**0.048*****	**-1.818*****	0.060	0.022
	(1.87)	(-1.31)	**(7.62)**	**(-22.93)**	(0.14)	(1.43)
WC	-0.183	0.003	**0.001*****	**0.003****	**0.087*****	0.000
	(-0.81)	(1.49)	**(6.32)**	**(2.34)**	**(8.23)**	(1.47)
Tax_d	**-0.155****	0.041	**0.022*****	-0.033	**-0.369****	**0.009***
	(-2.04)	(1.33)	**(10.17)**	(-1.27)	**(-2.47)**	**(1.78)**
Export_d	**-0.466*****	0.024	0.004	0.047	**0.404***	
	(-4.46)	(0.60)	(1.33)	(1.30)	**(1.81)**	
Constant	**22.518*****	**-2.105*****	**0.256*****	**1.624*****	**-6.741**	**-0.327*****
	(13.57)	**(-6.96)**	(8.53)	**(6.28)**	**(-3.72)**	**(-5.82)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
R^2	0.445	0.165	0.281	0.100	0.875	0.048

Notes: the table presents regression results for the standard DID approach based on Eq. (1) over the change in the outcome variable at the current time period t and the period q, where q is equal to 2. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.3. PSM robustness

Dependent variable:	$\Delta Employee_{t,t+1}$	$\Delta Cash\ flow_{t,t+1}$	$\Delta Productivity_{t,t+1}$	$\Delta Tangible\ fixed\ assets_{t,t+1}$	$\Delta Value\ added\ per\ employee_{t,t+1}$	$\Delta Exports_{t,t+1}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**0.178*** **	**0.149*** **	**-0.044*** **	**0.519*** **	**0.009** **	**0.117*** **
	(5.57)	**(7.81)**	**(-7.51)**	**(9.94)**	**(2.03)**	**(15.27)**
Size	**0.017** **	**0.027*** **	-0.001	**0.033*** **	**0.003*** **	-0.002
	(2.21)	**(7.35)**	(-0.86)	**(3.33)**	**(3.07)**	(-1.55)
Profitability	0.001	**-0.002***	0.000	-0.004	**-0.002***	0.000
	(0.30)	**(-1.76)**	(1.44)	(-1.39)	**(-1.70)**	(0.93)
Daysblock_d	**1.152*** **	-0.015	**-0.149*** **	**1.154*** **	**-0.009** **	**-0.009***
	(37.87)	(-0.98)	**(-22.75)**	**(22.00)**	**(-2.14)**	**(-1.73)**
Sales growth	-0.002	0.008	-0.001	**-0.068*** **	-0.002	**0.004***
	(-0.19)	(1.08)	(-0.81)	**(-4.37)**	(-1.05)	**(1.88)**
PPE	**0.296*** **	**-0.087*** **	**-0.029*** **	**-0.474*** **	**-0.015** **	**-0.062*** **
	(5.34)	**(-3.11)**	**(-3.50)**	**(-6.57)**	**(-2.10)**	**(-5.39)**
WC	**0.245*** **	-0.017	**-0.024*** **	**0.263*** **	-0.005	**-0.028*** **
	(9.34)	(-1.20)	**(-4.52)**	**(7.20)**	(-1.13)	**(-5.41)**
Tax_d	**-0.248*** **	-0.010	**0.013*** **	**-0.233*** **	**0.012*** **	**-0.022*** **
	(-9.70)	(-0.79)	**(2.93)**	**(-6.58)**	**(3.24)**	**(-3.97)**
Export_d	**0.073*** **	0.073	0.005	**0.082** **	**0.007** **	
	(3.11)	(0.02)	(1.17)	**(2.40)**	**(2.12)**	
Constant	-0.107	**-0.145*** **	0.026	-0.110	-0.008	**0.103*** **
	(-0.94)	**(-2.67)**	(1.62)	(-0.76)	(-0.66)	**(4.53)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
Observations on support (PSM)	15,342	15,342	15,342	15,342	15,342	15,342
R^2	0.302	0.029	0.427	0.103	0.368	0.062

Notes: Table A.3 presents the results from the PSM approach over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.4. PSM robustness

Dependent variable:	$\Delta Employee_{t,t+2}$	$\Delta Cash\ flow_{t,t+2}$	$\Delta Productivity_{t,t+2}$	$\Delta Tangible\ fixed\ assets_{t,t+2}$	$\Delta Value\ added\ per\ employee_{t,t+2}$	$\Delta Exports_{t,t+2}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**1.218*** **	**0.701*** **	**-0.032*** **	**0.400*** **	**1.643*** **	**0.169*** **
	(6.63)	**(9.31)**	**(-6.96)**	**(6.63)**	**(4.74)**	**(14.20)**
Size	**-0.527*** **	**0.099*** **	-0.000	**-0.028** **	**0.156** **	-0.001
	(-10.31)	**(6.86)**	(-0.58)	**(-2.44)**	**(2.19)**	(-0.49)
Profitability	**0.057***	**-0.013** **	0.000	0.005	0.030	0.000
	(1.68)	**(-2.13)**	(0.99)	(1.25)	(0.84)	(0.10)
Daysblock_d	**-2.647*** **	**2.129*** **	**-0.119*** **	**-1.754*** **	**-1.881*** **	**-0.063*** **
	(-19.11)	**(23.90)**	**(-24.66)**	**(-31.55)**	**(-6.49)**	**(-8.10)**
Sales growth	**0.324*** **	**-0.101*** **	-0.002	**0.050*** **	-0.186	0.001
	(6.06)	**(-6.98)**	(-0.98)	**(4.19)**	(-1.19)	(0.68)
PPE	0.110	0.039	**-0.021*** **	**-0.528*** **	**2.205*** **	**-0.060*** **
	(0.35)	(0.35)	**(-3.05)**	**(-5.99)**	**(4.14)**	**(-3.15)**
WC	**-0.298***	**0.460*** **	**-0.018*** **	**-0.091** **	**1.815*** **	**-0.033*** **
	(-1.86)	**(8.80)**	**(-4.52)**	**(-2.37)**	**(4.65)**	**(-4.35)**
Tax_d	**-0.470*** **	**-0.107** **	**0.010*** **	-0.049	**-0.655*** **	**-0.034*** **
	(-3.12)	**(-2.04)**	**(2.98)**	(-1.21)	**(-2.55)**	**(-3.87)**
Export_d	**0.396*** **	0.040	0.004	0.028	-0.020	
	(3.06)	(0.82)	(1.23)	(0.72)	(-0.08)	
Constant	**10.322*** **	**-0.702*** **	0.014	**1.250*** **	**-3.250*** **	**0.103*** **
	(13.92)	**(-3.35)**	(1.15)	**(7.42)**	**(-3.06)**	**(2.75)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
Observations on support (PSM)	15,342	15,342	15,342	15,342	15,342	15,342
R^2	0.469	0.164	0.335	0.106	0.852	0.064

Notes: Table A.4 presents the results from the PSM approach over the change in the outcome variable at the current time period t and the period q, where q is equal to 2. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.5. Heckman robustness

Probit Regression	
Dependent variable: *II*	
Independent variables	**Coefficient**
JSC	**0.427*** (10.57)**
L_NP	**0.065*** (5.85)**
L_LP	**0.113*** (8.80)**
B_account	**0.033** (2.12)**
ST_LOAN	**-0.167*** (-2.03)**
LT_LOAN	**0.197*** (2.58)**
N_EQ	**-0.404*** (-4.95)**
Constant	**-1.867*** (-38.31)**
Robust standard errors	Yes
Clustered by firm	Yes
Industry controls	Yes
Year controls	Yes
Observations	67,489
Pseudo R^2	0.115

Notes: The table presents the selection model (first-stage Heckman model) results, on the conditional probability of a private firm choosing to engage in a grant scheme. The model is estimated considering industry and year controls. Coefficients are reported in the first row whereas the two-tailed z-statistics of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.6. Heckman robustness

Dependent variable:	$\Delta Employee_{t,t+1}$	$\Delta Cash\ flow_{t,t+1}$	$\Delta Productivity_{t,t+1}$	$\Delta Tangible\ fixed\ assets_{t,t+1}$	$\Delta Value\ added\ per\ employee_{t,t+1}$	$\Delta Exports_{t,t+1}$
Independent variables	(1) Heckman 2nd stage	(2) Heckman 2nd stage	(3) Heckman 2nd stage	(4) Heckman 2nd stage	(5) Heckman 2nd stage	(6) Heckman 2nd stage
II	**0.215*** **	0.011	**0.077*** **	**0.289** **	**0.023** **	**0.188*** **
	(2.56)	(0.23)	**(5.36)**	**(2.20)**	**(1.90)**	**(10.02)**
Size	**-0.016*** **	**0.027*** **	**-0.003*** **	**-0.013*** **	**0.002*** **	**0.003*** **
	(-5.34)	**(15.62)**	**(-6.09)**	**(-2.97)**	**(4.34)**	**(4.50)**
Profitability	**0.015** **	0.000	**-0.002** **	**0.002**	**-0.004*** **	0.000
	(2.30)	(0.26)	**(-1.99)**	**(0.44)**	**(-2.84)**	(0.12)
Daysblock_d	**1.119*** **	**0.021*** **	**-0.138*** **	**1.390*** **	-0.002	**0.009*** **
	(80.14)	**(2.71)**	**(-44.20)**	**(53.94)**	(-1.00)	**(3.22)**
Sales growth	**-0.031*** **	0.000	**0.003*** **	**-0.065*** **	**-0.000*** **	**-0.001*** **
	(-69.45)	(0.76)	**(39.56)**	**(-82.94)**	**(-4.20)**	**(-9.98)**
PPE	**0.165*** **	0.012	-0.004	**-0.353*** **	-0.003	0.006
	(8.98)	(1.02)	(-1.34)	**(-11.82)**	(-1.09)	(1.41)
WC	0.000	**0.000***	**0.001** **	**0.004***	**0.001*** **	**0.000*** **
	(0.14)	**(1.71)**	**(2.09)**	**(1.31)**	**(6.68)**	**(2.88)**
Tax_d	**-0.302*** **	-0.007	**0.024*** **	**-0.302*** **	**0.022*** **	**-0.007*** **
	(-28.19)	(-1.18)	**(12.15)**	**(-18.32)**	**(11.82)**	**(-2.99)**
Export_d	**0.118*** **	**0.019*** **	**-0.008*** **	**0.156*** **	**0.005*** **	
	(10.51)	**(2.73)**	**(-3.83)**	**(8.55)**	**(2.68)**	
IMR	0.013	0.036	**-0.059*** **	0.023	-0.007	**-0.093*** **
	(0.30)	(1.38)	**(-7.63)**	(0.32)	(-1.09)	**(-9.30)**
Constant	**0.456*** **	**-0.164*** **	**0.050*** **	**0.601*** **	-0.006	**0.045*** **
	(10.27)	**(-6.28)**	**(6.55)**	**(9.11)**	(-0.86)	**(4.56)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
R^2	0.248	0.012	0.367	0.148	0.286	0.026

Notes: Table A.6 presents the results from the second-stage Heckman model estimated in Eq. (3) over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed z-statistics of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.7. Heckman robustness

Dependent variable:	$\Delta Employee_{t,t+2}$	$\Delta Cash\ flow_{t,t+2}$	$\Delta Productivity_{t,t+2}$	$\Delta Tangible\ fixed\ assets_{t,t+2}$	$\Delta Value\ added\ per\ employee_{t,t+2}$	$\Delta Exports_{t,t+2}$
Independent variables	(1) Heckman 2nd stage	(2) Heckman 2nd stage	(3) Heckman 2nd stage	(4) Heckman 2nd stage	(5) Heckman 2nd stage	(6) Heckman 2nd stage
II	**-8.347*** (-13.98)**	**0.387** (2.05)**	**0.059*** (5.24)**	**-0.735*** (-4.70)**	**6.318*** (9.11)**	**0.276*** (9.80)**
Size	**-0.404*** (-21.04)**	**0.031*** (5.05)**	**-0.002*** (-5.20)**	**-0.015*** (-3.02)**	0.009 (0.31)	**0.005*** (6.09)**
Profitability	**0.076*** (2.91)**	0.003 (0.54)	**-0.001** (-2.05)**	-0.004 (-0.97)	-0.018 (-0.54)	-0.000 (-0.02)
Daysblock_d	**-1.570*** (-26.86)**	**2.533*** (56.20)**	**-0.112*** (-48.31)**	**-1.524*** (-64.87)**	**-1.743*** (-13.02)**	**-0.055*** (-14.15)**
Sales growth	**0.044*** (18.71)**	**-0.080*** (-63.00)**	**0.003*** (42.13)**	**0.022*** (30.77)**	**0.023*** (5.48)**	**-0.003*** (-23.93)**
PPE	**0.442*** (4.59)**	-0.015 (-0.39)	-0.001 (-0.62)	**-0.365*** (-10.54)**	**1.406*** (7.97)**	**0.045*** (6.78)**
WC	-0.009 (-1.25)	0.006 (1.20)	**0.000* (1.79)**	**0.001*** (3.25)**	**0.088*** (8.01)**	**0.000*** (3.15)**
Tax_d	**-0.674*** (-11.29)**	**-0.243*** (-10.42)**	**0.018*** (11.79)**	0.002 (0.13)	**-1.001*** (-9.35)**	**-0.014*** (-3.68)**
Export_d	**0.259*** (4.45)**	**0.204*** (8.34)**	**-0.005*** (-3.25)**	**0.068*** (3.26)**	**0.570*** (5.18)**	
IMR	**5.287*** (16.11)**	0.045 (0.41)	**-0.045*** (-7.38)**	**0.498*** (5.75)**	**-3.001*** (-8.61)**	**-0.133*** (-8.96)**
Constant	**8.368*** (29.54)**	0.110 (1.18)	**0.031*** (5.29)**	**0.902*** (11.86)**	**-1.028** (-2.22)**	**0.032*** (2.23)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	No	No	No	No	No	No
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	67,489	67,489	67,489	67,489	67,489	67,489
R^2	0.416	0.158	0.281	0.081	0.874	0.049

Notes: Table A.7 presents the results from the second-stage Heckman model estimated in Eq. (3) over the change in the outcome variable at the current time period t and the period q, where q is equal to 2. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry and grant-type controls. Coefficient estimates are reported in the first row whereas the two-tailed z-statistics of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.8. Time-Varying Average Treatment Effects Robustness

Dependent variable:	$\Delta Employee_{t,t+1}$	$\Delta Cash\ flow_{t,t+1}$	$\Delta Productivity_{t,t+1}$	$\Delta Tangible\ fixed\ assets_{t,t+1}$	$\Delta Value\ added\ per\ employee_{t,t+1}$	$\Delta Exports_{t,t+1}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**0.122*** **	0.003	**-0.013*** **	**0.131*** **	**0.009*** **	-0.001
	(5,19)	(0.18)	**(-3.55)**	**(3.35)**	**(2.90)**	(-0.11)
Size	**-0.176** **	**-0.007***	**-0.012*** **	**-0.107*** **	**-0.002** **	**-0.006*** **
	(-2.45)	**(-1.83)**	**(-11.83)**	**(-10.25)**	**(-2.19)**	**(-3.98)**
Profitability	**0.711*** **	-0.343	**-0.115*** **	-0.382	**-0.251*** **	**-0.083*** **
	(5.61)	(-1.11)	**(-6.34)**	(-1.65)	**(-10.36)**	**(-4.45)**
Daysblock_d	**1.402*** **	-0.014	**-0.189*** **	**1.866*** **	0.005	-0.002
	(59.60)	(-0.99)	**(-39.86)**	**(43.93)**	(1.31)	(-0.49)
Sales growth	**0.147*** **	0.002	**-0.013***	0.007	-0.005	**-0.003***
	(2.73)	(0.32)	**(-1.78)**	(0.28)	(-1.49)	**(-1.77)**
PPE	**0.255*** **	**-0.101*** **	-0.001	**-0.464*** **	-0.008	0.000
	(6.86)	**(-4.75)**	(-0.14)	**(-7.93)**	(-1.41)	(0.02)
WC	**0.189*** **	0.004	**-0.015** **	**0.529*** **	0.001	-0.009
	(5.26)	(0.20)	**(-2.29)**	**(11.21)**	(0.09)	(-1.45)
Tax_d	**-0.243*** **	**0.020***	**0.018*** **	**-0.259*** **	**0.019*** **	0.001
	(-11.51)	**(1.68)**	**(5.24)**	**(-8.38)**	**(5.95)**	(0.18)
Export_d	**0.074*** **	0.004	**-0.007***	**0.061***	0.004	
	(3.69)	(0.29)	**(1.88)**	**(1.78)**	(1.42)	
Constant	**0.421*** **	**0.603*** **	**0.198*** **	**2.339*** **	**0.091*** **	**0.237*** **
	(3.46)	**(9.13)**	**(11.10)**	**(13.73)**	**(5.00)**	**(9.88)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Lags and Leads	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,151	32,151	32,151	32,151	32,151	32,151
R^2	0.301	0.072	0.489	0.135	0.412	0.224

Notes: the table presents regression results for the time-varying average treatment effects approach over the change in the outcome variable at the current time period t and the period q, where q is equal to 1. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry, grant-type controls, and the corresponding lags and leads of the treatment variable. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.

Table A.9. Time-Varying Average Treatment Effects Robustness

Dependent variable:	$\Delta Employee_{t,t+2}$	$\Delta Cash\ flow_{t,t+2}$	$\Delta Productivity_{t,t+2}$	$\Delta Tangible\ fixed\ assets_{t,t+2}$	$\Delta Value\ added\ per\ employee_{t,t+2}$	$\Delta Exports_{t,t+2}$
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)
II	**0.732*** **	**0.257*** **	**0.012*** **	0.029	**0.342*** **	0.013
	(5.58)	**(4.68)**	**(4.73)**	(0.63)	**(3.25)**	(1.53)
Size	**-0.641*** **	**-0.085*** **	**-0.009** **	**-0.070*** **	**-0.088** **	**-0.005** **
	(-15.11)	**(-5.88)**	**(-3.08)**	**(-5.48)**	**(-2.48)**	**(-2.31)**
Profitability	**2.213*** **	**0.754*** **	**-0.092*** **	**-0.603*** **	**-2.189*** **	**-0.124*** **
	(4.06)	**(4.50)**	**(-6.47)**	**(-4.46)**	**(-3.68)**	**(-4.35)**
Daysblock_d	**-2.758*** **	**-4.813*** **	**-0.148*** **	**-2.744*** **	**-0.411*** **	**-0.029*** **
	(-25.18)	**(-66.81)**	**(-41.19)**	**(-56.40)**	**(-3.33)**	**(-3.11)**
Sales growth	**0.568*** **	-0.024	-0.010	**-0.063** **	-0.363	**-0.005** **
	(3.47)	(-1.09)	(-1.62)	**(-2.37)**	(-1.08)	**(2.41)**
PPE	**1.203*** **	**0.217*** **	0.004	**-0.658*** **	**1.676*** **	**0.036*** **
	(6.09)	**(2.72)**	(0.77)	**(-8.68)**	**(6.72)**	**(2.92)**
WC	**1.678*** **	**0.911*** **	**-0.009***	**0.179*** **	**1.062*** **	**-0.020***
	(8.61)	**(14.07)**	**(-1.92)**	**(2.01)**	**(4.08)**	**(1.90)**
Tax_d	**-0.806*** **	**-0.082***	**0.014*** **	-0.015	**-0.395*** **	0.005
	(-7.36)	**(-1.87)**	**(5.15)**	(-0.39)	**(-3.21**)	(0.68)
Export_d	**0.349*** **	**0.150*** **	-0.004	**0.088** **	**0.309*** **	
	(3.41)	**(3.31)**	(-1.42)	**(2.12)**	**(2.59)**	
Constant	**11.290*** **	**0.603*** **	**0.139*** **	**2.168*** **	0.828	**0.264*** **
	(16.45)	**(9.13)**	**(9.78)**	**(10.40)**	(1.53)	**(7.06)**
Robust standard errors	Yes	Yes	Yes	Yes	Yes	Yes
Clustered by firm	Yes	Yes	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes	Yes	Yes
Grant controls	Yes	Yes	Yes	Yes	Yes	Yes
Year controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,151	32,151	32,151	32,151	32,151	32,151
R^2	0.499	0.355	0.383	0.141	0.959	0.307

Notes: the table presents regression results for the time-varying average treatment effects approach over the change in the outcome variable at the current time period t and the period q, where q is equal to 2. For each model from (1) to (6), we use robust standard errors and we cluster the sample by firm to which we add year, industry, grant-type controls, and the corresponding lags and leads of the treatment variable. Coefficient estimates are reported in the first row whereas the two-tailed t-statistics (F-statistics for sum of coefficients significance) of significance are reported in parentheses. Asterisks **, and *** denote significance at 5%, and 1% levels, respectively.