Financial subsidies and bank lending: substitutes or complements? Micro level evidence from Italy

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Abstract

We exploit Italian Central Credit Register data to investigate the effectiveness of subsidized credit programs for public financing to firms via the banking system. The effect of public incentives depends on the availability of financial resources for the beneficiary firms. Financially constrained firms are likely to use the subsidies to expand output, while less constrained firms will, at least partly, use the funds to replace more costly resources. Focusing on the relationship between bank credit and subsidized loans, we find that larger firms substitute public financing for bank lending, while there is not such evidence for smaller firms. The estimated degree of substitution is substantial, ranging from an estimated 70 per cent to 84 per cent.

JEL classification: G2, H2, O16

Keywords: Financial subsidies, Credit constraints, Banking

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1 Introduction

Many governments have programs to support the productive system, in particular small and medium-sized enterprises (SMEs). They consist largely of financial subsidies designed to reduce market failures, mainly financial constraints on SMEs. The European Commission has increased the leeway for State aid, especially to SMEs (European Commission, 2009). Subsidies to SMEs represent about 10 per cent of the total amount of state aid in the EU27. In Italy, where the productive system consists almost entirely of SMEs, the share was 37 per cent in 2007.

In view of the widespread use of these policies in the EU, and particularly in Italy, this paper analyzes the effectiveness of subsidized credit in alleviating financial constraints and hence promoting growth[1].

We focus on subsidized credit programs for public financing to firms via the banking system. The effect of public incentives is related to the availability of financial resources for the beneficiary firms. Financially unconstrained firms will presumably use public resources to substitute, at least partly, for more costly private credit, while firms with less access to external financing will use the subsidies to expand investment and output. To evaluate the effectiveness of subsidized lending we test the relationship of complementarity/substitutability between bank credit and public financing in a set of Italian firms that benefited from subsidized credit programs.

Both the theoretical and the empirical literature have studied the issue of firms' financial constraints on firms (for a review see Hubbard (1998), Bond and Van Reenen (2007)), although this work has suffered from paucity of data and methodological problems. Fazzari, Hubbard and Petersen (1988) investigate the effects on investment of the availability of close substitutes for credit, using the sensitivity of investments to cash flow as a measure of financial constraints. This approach has been challenged by Kaplan and Zingales (1997), who observed that this gauge might reflect endogeneity problems, since both investment and cash flow depend on profitability. In order to test for this causality, a large body of research has examined the differences in the investment-cash flow correlation between groups of firms that are reasonably expected to face different financial constraints. For the most part the results support Fazzari et al. (1988)[2].

In a related stream of literature, Banerjee and Duflo (2008) test for the existence of credit constraints by exploiting variations in policy measures

[1] Among the research papers indicating a relationship between internal finance and small firms growth see Carpenter and Petersen (2002).

[2] Whited (1992) provides empirical evidence supporting the dependence of some firms' investment on liquidity variables; Shaller (1993) finds that investment is far less liquidity-constrained for firms with less costly access to equity financing; Bond and Meghir (1994) use UK data and find that current investment positively depends on lagged cash flow. See Bond and Van Reenen (2007) for a survey.

involving the supply of directed credit in India. Zia (2008) identifies credit constraints by exploiting a change in eligibility criteria for subsidized loans and comparing outcomes before and after the policy change. Lamont (1997) exploits the 1986 oil price shock to find an exogenous instrument for cash, showing that a decrease in cash flow leads to a fall in investment. For Italy, similar issues are investigated by Albareto, Bronzini, de Blasio and Rassu (2008) with regard to public grants channelled to companies through a specific incentive scheme aimed at promoting investment (Law 488/92).

The empirical literature mainly focuses on larger firms, owing to data availability. In this paper we fill the gap by exploiting a unique dataset that has bank-firm information on small and micro enterprises from 1998 to 2007, drawn from the Central Credit Register database. Using a program evaluation approach, we compare the proportional change in the amount of bank credit used by firms before and after the policy intervention. While both "more constrained" and "less constrained" firms seek subsidized lending, since it is cheaper, the latter will mainly use it to substitute for bank credit.

Our analysis shows that subsidized loans are used as substitutes for bank lending by the larger firms, but not by partnerships and small firms. Overall, the degree of substitution between public resources and bank lending is substantial, ranging from about 70 to 84 per cent. While this evidence supports the thesis that small firms are at a disadvantage in attracting financing (Berger and Udell, 2002) it also suggests a significant misallocation of public resources: only a small part of the funds is allocated to truly constrained firms (small firms). Our results are robust to a broader notion of treatment, alternative model specifications and the introduction of firms' balance-sheet data.

The remainder of the paper is structured as follows. In section 2 we provide some information on the system of firm subsidies in Italy and our dataset, while section 3 describes the rationale behind our evaluation exercise and illustrate the empirical strategy. The main results are given in section 4, robustness checks in sections 5 and 6. Section 7 concludes.

2 Firm subsidies and the Central Credit Register

State aid to the productive system includes the following measures: grants, subsidized loans, tax relief and tax credits, state guarantees and holdings. Grants and subsidized loans have been extensively used in Italy. In the case of grants, the subsidy takes the form of a lump sum, which is proportional either to the amount of the investment or to the costs borne by the firm. In the case of subsidized loans, the incentive can be either a transfer aimed at reducing the interest rate of an underlying bank loan, or a public loan granted at a lower-than-market interest rate.

In this paper we focus on the latter type of subsidy, where the State (both central and local governments) disburses the loan, and we will refer to it interchangeably as subsidized lending, public loans or subsidized credit. These incentives essentially involve medium and long term financing and represent the main type of subsidy employed in the Centre and North of Italy. On the other hand, grants have been historically employed in the South of the country, since the launch in 1951 of the "Fund for the South" program (Cassa per il Mezzogiorno). The initiative had been set up to attract private investment in Southern Italy but turned out to be unsuccessful and was ended in 1992[3]. It was replaced by a program based on a similar design (the so called Law 488) which shared the same destiny (Bronzini and de Blasio (2006)). After the failure of the policies based on grants, Italian policy makers have focused on public loans to sustain the productive system. As present, little is known about the effectiveness of these measures.

State aid to firms in Italy is provided by means of a series of programs, which are managed by central, regional and local governments. Aggregate data on firm aids are provided by the Ministry of Economic Development, while micro level data are available only for a very small set of measures. By exploiting the Central Credit Register (CCR) held at the Bank of Italy, in this paper we employ a unique dataset consisting of micro-level data on a wide set of subsidized lending programs. Private banks, in fact, act as State agents for this type of subsidies and perform both the selection of applicants and the management of the public loans. According to the Italian Banking Regulation "for each borrower, financial intermediaries supervised by the Bank of Italy have to report to the CCR, on a monthly basis, the amount of each loan, either granted or disbursed by banks, for all loans exceeding a given threshold" (the threshold was € 75,000 until 31 December 2008[4]). Banks report to the CCR also the information on loans provided on behalf of central and local governments("third party account operations"; see Caprara, Carmignani and D'Ignazio (2009) for a detailed description of the data used in this work).

Our dataset refers to the period 1998-2007 and contains information on more than 200 intermediaries acting as State agents and more than 20,000 firms. In 2007 the amount of public loans reported in the CCR reached about €4.7 billion, representing about 12 per cent of total state aid to firms (which includes also grants, financial guarantees and lump sum transfers). If we focus only on measures involving, at least in part, a public loan, the share rises up to 30 per cent.

Regions in the North of the country and the autonomous regions with

[3]The funds channeled through the Fund for the South over the period 1951-1992 amounted to about €140,000,000.

[4]In January 2009 the threshold was lowered to € 30,000. Bad loans continue to be reported to the CCR regardless of the amount.

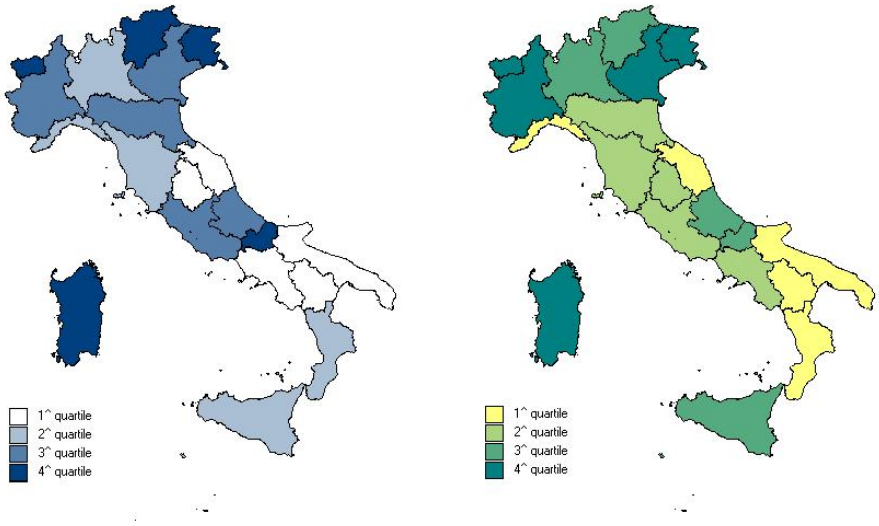

Figure 1: Public loans over Regional GDP (left panel) and share of beneficiary firms over total firms (right panel) in 2007

a special statute[5] have received the largest share of public loans. In 2007 about 36 per cent of the funding attained firms located in the regions with special statute. Figure 1 shows that these regions but one are in the highest quartile of the distribution in terms of both financial resources received and number of firms benefited. As for the funding, about 80 per cent of the resources are allocated to large firms, which represent about 50 per cent of the beneficiaries.

The public loans that we observe relate to a wide array of national and regional programs mostly aimed at boosting investments and easing access to credit. In particular, a large set of these measures indicate the aim to ease firms' access to credit[6], while the majority of the programs specify the investment target. Public loans are granted on favorable terms (the interest rate is lower-than-the market interest rate) and are provided to firms in one or more installments by the state agent bank. Firms reimburse the loans over a period of about 7-10 years; the repayment usually starts after a "grace period" (not exceeding two years). Banks screen the applicants on the

[5]The Italian state is administratively divided into twenty regions. Among them five regions are constitutionally given a broader amount of autonomy granted by special statutes (namely, Valle d'Aosta, Trentino-Alto Adige, Friuli-Venezia Giulia, Sicily and Sardinia).

[6]See regional law 18/99 and regional law 27/00 in Piedmont; regional law 27/06 in Lazio; regional law 1/99 in Veneto; regional law n. 34/96 in Lombardy; measure 2.1 of the regional law 1997/99 for Ferrara; and Seed capital fund in Reggio Calabria.

basis of the requirements of the law underlying the subsidy (such conditions mostly involve firm size, geographical location, sector of economic activity and investment plan) and, in some cases, provide a screening of the firm reimbursement capacity.

3 Theoretical background and empirical strategy

Following the seminal paper of Fazzari et al. (1988) (hereinafter FHP), a large body of research focussed on the role of capital market frictions and firm access to external finance in determining investments. In their departure from the keynesian assumption that all firms respond similarly to the cost of capital, FHP introduced a model of financing hierarchy, where internal finance has cost advantages over external funds. In the FHP model, firms have different abilities to raise funds externally, depending on information asymmetries. Firms subject to stricter constraints in raising funds externally have greater investment-cash flow sensitivity, so for them the investment response to an increase in internal funds is greater.

Figure 2 shows the case of two firms with the same technology (represented by the marginal revenue curve, MR_K) and amount of internal funds (k_0), but facing different levels of financial constraints (high or low). The constraint is represented by the steepness of the upward-sloping part of the fund supply curve (represented by the marginal costs, S_H and S_L, respectively). Let k_0 be the amount of the firm internal funds, and k_H and k_L the initial equilibrium levels of capital for the more constrained (type-H) and the less constrained (type-L) firm, respectively. After a windfall increase in internal funds Δs is introduced, the fund supply curve for both firms shifts to the right. A positive effect on investment will follow. The effect will be greater for the more severely constrained firm. In the extreme case of total credit rationing (vertical fund supply curve), the new funds will translate fully into additional capital. On the other hand, in the case of perfect capital markets (flat supply curve), they will entirely crowd out more costly credit.

In the hierarchy-of-finance framework, the introduction of subsidized credit (at an interest rate lower than r_0) is equivalent to a windfall increase in internal funds. The FHP model then predicts that subsidies will be more effective if they go to financially constrained firms. Less financially constrained firms, on the other hand, will use the subsidy to replace more costly credit, the degree of substitution being inversely proportional to the severity of the financial constraints.

This framework relies on two key assumptions: the cost of external funds to the firm does not fall when the firm gets the subsidy; firms technology must not change with the subsidy. According to the literature, firm size is a proxy for transparency of enterprises (Berger and Udell, 2002): the larger the firm, the smaller the informational gap and the greater the ability to

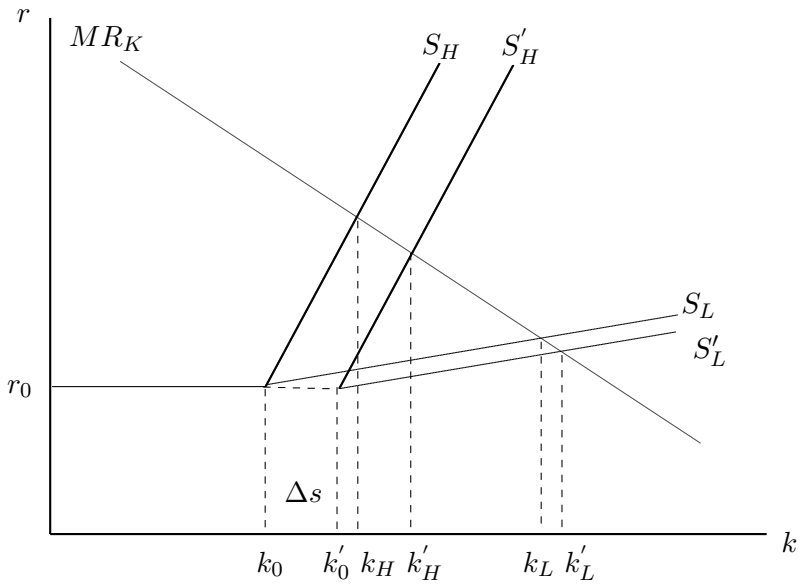

Figure 2: The impact of a windfall increase in internal funds on investments

raise external funds. Hence, we expect that larger firms will be marked by greater substitutability between subsidized credit and bank loans.

Our dataset refers to the period 1998-2007 and contains information on sector of economic activity, legal form, location, amount of credit both granted and disbursed by banks, and for the beneficiary firms the amount of subsidized loans. We compare the dynamics of subsidized credit with that of medium and long term bank loans[7].

Building on the rationale presented before, we devise a test to estimate the extent to which public resources actually reach truly credit-constrained enterprises. Our dependent variable is recourse to bank credit[8]; however, since the amount of credit used is strongly auto-correlated, we consider its proportional change (see Banerjee and Duflo (2008)).
Ideally, in order to identify the causal effect of the policy we should compare firms' recourse to bank credit in the presence of the treatment (getting the subsidy) with the recourse to bank credit in the case of no treatment. Evidence of substantial substitutability would indicate that the program's effect was limited. However, for subsidized firms we can only observe the outcome under the program (factual outcome; see Holland (1986)). To overcome this problem we consider average causal effects by comparing distinct units exposed and not exposed to the program. These units can be either different physical units or the same unit at different times.

[7]In an unreported exercise we perform our analysis by considering total bank loans, obtaining very similar results. The subsidized loans represent, on average, slightly less than 10 per cent of total bank loans for the entire set of beneficiary firms.

[8]According to Cerved archive, which groups balance sheet data on all Italian limited companies from 1993 onwards, in 2007 bank debt represents almost 80 per cent of medium and small firms' financial debt.

We exploit the longitudinal nature of our dataset to estimate the causal effect. Let Y be the outcome variable we are interested in, D a dummy equal to 1 for treated firms and 0 for untreated. Let us assume that the treatment is carried out in a time period between τ and t. We are interested in estimating the average treatment effect on the treated (ATT). If in the absence of treatment the difference between the groups of treated and untreated firms is constant over time, the ATT is correctly estimated by the following difference-in-differences (DID) model, following Ashenfelter and Card (1985):

$$Y_i = \beta_0 + \beta_1 D_i + \beta_2 POST + \delta D_i POST + \epsilon_{i,t} \tag{1}$$

where Y_i is the outcome variable and $POST$ is a dummy assuming value 1 in the treatment years. The estimated parameter of interest is $\widehat{\delta}$.

"Treated" firms are those receiving subsidies. Although the financial subsidies are provided under different laws, the dataset has no information to distinguish among them. The subsidized loans differ in disbursement and reimbursement schemes. In some cases, firms start repayment the next year; in most, after a two year "grace period". In order to have an homogeneous form of treatment, we take only the latter scheme and thus consider a three-year treatment period window: the year of the first disbursement followed by a two-year grace period, where the amount of subsidies enjoyed by the beneficiary firms is non-decreasing.

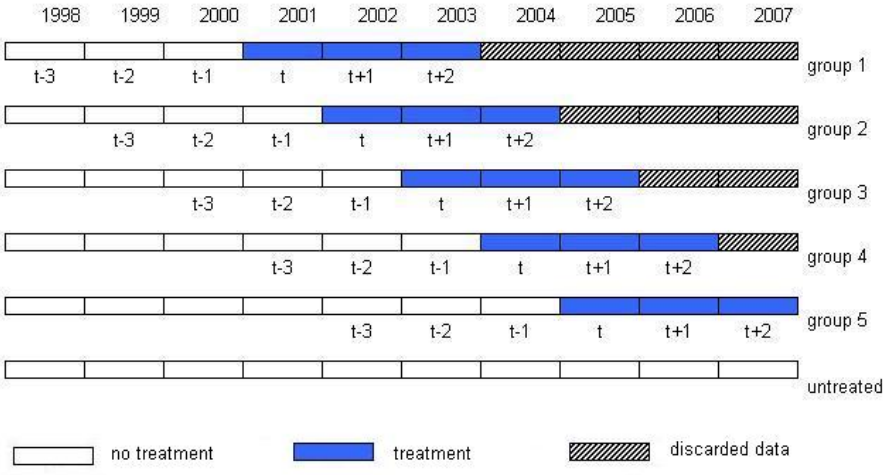

Figure 3: Sampling groups

The the pre-intervention window considered is also three years. Hence, our first group of treated subjects consists of firms that were not subsidized in the period 1998-2000 and that received their first subsidy in 2001. We end

up with five groups of "treated" firms, one for each possible "first year of treatment" between 2001 and 2005. Figure 3 shows the groups, with t being the first year of treatment. The dataset we end up with is a rotating panel, with five groups of firms in the sample for a period of six consecutive years, centered on the first year of treatment. The total number of beneficiaries is almost 400. The set of untreated firms comprises all the firms that have never received a public credit subsidy in the Credit register.

The main challenge for our analysis is constructing a valid control group. In assessing firms' elegibility for the incentives, the intermediaries acting as state agents take into account both firm characteristics and credit history. On this basis, we use the information contained in the CCR dataset to perform a one-to-one exact matching procedure. Given our rotating dataset, we consider one group of treated at a time. For each, in the first step we associate to each treated firm all the untreated firms characterized by the same sector, location and legal form. To avoid the general equilibrium effects that could arise when both treated and untreated firms are selected from the same local area (Busso and Kline (2008)), we match firms using regional rather than provincial boundaries.

To take account of the firm's loan pre-treatment dynamics, we also perform a match on the class of debt (credit used) over the years *(t-3)*, *(t-2)* and *(t-1)*, where t is the first year of treatment. We also consider the amount granted in the pre-intervention period. For each of the five groups of matched units, we define the first year of treatment as year t, and aggregate the samples to obtain a single dataset. Besides firms' characteristics, for which we performed exact matching, the control group exactly mirrors the set of treated firms also with regard to the distribution of debt growth rates in the pre-treatment period (see figure 4).

After performing the exact matching and trimming both the set of treated and untreated firms at the 5th and 95th percentile of debt growth rates, our dataset consists of 255 treated and 255 untreated firms[9]. They are mostly limited companies, firms headquartered in the Centre and North, and firms whose average debt is more than € 500,000 (labeled as "large" firms). Table A.1 and table A.3 show respectively the yearly evolution in the stock of both bank debt and subsidy and the average amount of debt for both treated and untreated firms.

4 Baseline results

Table 1 shows the average bank debt before and after the policy intervention for both treated and untreated firms. By construction, the difference between treated and untreated firms is small in the pre-treatment period;

[9]Having an equal sample size for both treated firms and controls increases the power to detect a difference between the two groups.

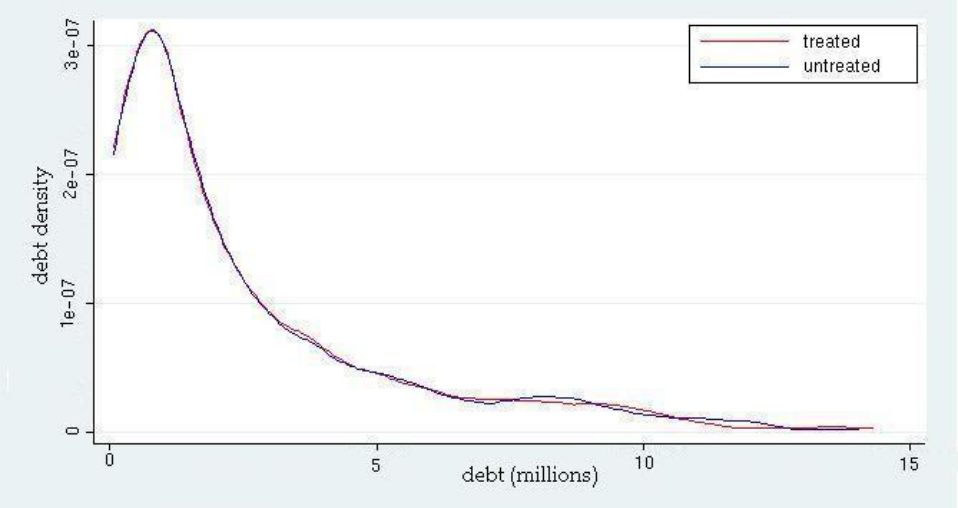

Figure 4: Kernel density, debt in the pre-treatment years for treated and untreated firms

in the post-intervention period, treated firms have less bank debt.

To study the relationship between public subsidies and bank credit, we estimate the following difference-in-differences (DID) model:

$$y_i = \beta_0 + \beta_1 dsubsidy_i + \beta_2 post + \delta dsubsidy_i \cdot post + \epsilon_{i,t} \tag{2}$$

where y_i is the rate of growth of the debt, "dsubsidy" is a dummy indicating whether or not the firm received the public loan, and "post" is a dummy equal to 1 from time t onwards. If the model's assumptions hold, the DID correctly estimates $\widehat{\delta}$, measuring how much the firms actually getting the subsidies changed their recourse to bank credit.

Table A.5 reports the estimates of the DID model. On average, firms do use subsidized credit mostly as a substitute for market credit. The effect, however, varies with firms' characteristics, being marked for large firms and companies, trivial for smaller firms (those with average private debt below €500,000) and partnerships. Using the median in firms' debt distribution to identify large and small firms could represent a source of potential bias. To control for this issue, we refined our strategy dropping from the sample all firms with a debt level close to the median in the pre-treatment years. The results obtained on the smaller sample (not reported) confirm the findings in the baseline model. Moreover, the results vary with the geographical area, the substitution effect characterizing essentially the Centre and the North of the country (see table A.5). However, we interpret the results for the South cautiously since the number of observations available for that area is very small.

To control for the possibility that our results suffer from anticipation

Table 1: Debt toward banks for treated and untreated firms
(*Baseline sample; million €*)

	pre treatment years average	post treatment years average
treated firms	640.4	602.6
untreated firms	644.6	661.0

effects, which might influence private debt dynamics in the year immediately preceding the treatment, we re-estimated the DID model considering a long pre-intervention window (five years). The results (not reported) are very similar to those in the baseline. Finally, taking into account that in the period under consideration securitization played a crucial role in the economy, we performed a robustness check by removing from the sample all firms involved in securitization operations (about 2 percent of the sample); the results did not change.

4.1 Degree of substitution

In order to assess the significance of our results we need to measure the magnitude of the substitution effect between private and public loans. To calculate the degree of substitution (ds) we use the estimated δ and the average level of debt in the pre-treatment period:

$$ds = \frac{\overline{debt}_{pre}(1 + g_e T) - \overline{debt}_{pre}(1 + g_c T)}{\sum_t^{t+2} subsidy_t} \tag{3}$$

where T is the number of years of treatment; $\overline{debt}_{pre}$ is the average amount of debt in the pre-treatment period; g_e is the actual average growth rate of bank credit after the subsidy, g_c is the counterfactual (unobservable) growth rate of bank credit that would have occurred had there been no treatment; $subsidy_t$ is the amount of subsidies in year t.

Since $\widehat{\delta} = g_e - g_c$, we can estimate the degree of substitution, which for the entire sample appears to be substantial: on average it is about 74 per cent. To check for robustness, we performed the same DID analysis for three subsamples of firms, selected according to the amount of subsidized credit in proportion to bank debt. In subsample 1 the share is from 10 per cent to 75 per cent; in subsample 2, between 10 and 100 per cent; in subsample 3, from 10 per cent to 200 per cent. As table A.6 shows, the results obtained with the subsamples are quite similar to those for the entire sample. Table 2 summarizes the estimated degree of substitution for the four samples of treated firms.

Table 2: Degree of substitution estimates

	Entire sample	Subsample 1	Subsample 2	Subsample 3
no. of treated firms	255	140	179	199
estimated ds (%)	73.7	83.5	81	69.2
standard errors (%)	35.0	37.4	36.3	16.0

Subsamples are selected according to the relevance of subsidized credit over private credit. The ranges are 10 - 75 per cent, 10 - 100 per cent, 10 - 200 per cent.

4.2 Broader notion of treatment

In order to enhance the external validity of the model, we increase the sample size by limiting the post-intervention period to two years and considering a broader definition of treated firms that includes firms that start repayment in the second year of treatment but keep subsidies equal to at least 80 per cent of the initial level. After matching, the sample numbers 1,326 firms, each observed for five years. As in the baseline sample, the largest share consists of limited companies and large firms, although the predominance is less marked (see table A.3 and table A.4).

The results, reported in table A.7, confirm the negative impact of subsidized lending on private lending. The effect is now statistically significant in the South as well, indicating that the previous findings may have been distorted by the lower sample size. As in the baseline model, the size of the effect depends on firms' characteristics: the impact is statistically significant for large firms and limited companies.

4.3 Degree of financial tension

The model of Fazzari et al. (1988) predicts that the more financially constrained firms will have greater investment-cash flow sensitivity. In our framework, this thesis translates into a larger degree of substitution between public and private credit for firms that are less financially constrained. To test this prediction, we use the degree of financial tension (measured by the ratio of short term credit actually disbursed and short term credit granted by banks) as a rough measure of financial constraints.

Using the sample described in the previous section we split the firms into two groups at the median of the financial tension indicator in the pre-treatment period. We then replicate the DID exercise on each of the two groups. The results, reported in table A.9, show that firms under greater financial tension do not substitute public financing for bank lending, while those below the median do substitute public financing for more costly private credit. If rather than the median we consider the 80th percentile to select the two groups, the same results are obtained. Expectedly, however, the extent of substitution is now lower for the firms under "low tension" (see

table A.10).

5 Robustness I

Here we address the potential selection bias arising from our matching procedure. While treated and untreated firms are matched using a set of observable variables that are relevant for firm participation in the programs, other unobservable variables could also be in play, leading to selection bias (a systematic difference between treated firms and control group). The difference-in-differences specification is at least a partial solution, as it controls for the selection bias resulting from permanent differences between the treatment and the control group. In this section we attempt to tackle the case where selection bias is not constant, and estimate the impact of the treatment by considering only the firms that benefited from the subsidies. In the first exercise we employ a different approach by estimating a dynamic model for firm bank credit, while in the second we return to the difference-in-differences methodology.

5.1 GMM approach

In order to assess the impact of subsidized lending on bank credit, we estimate the following dynamic model:

$$debt_{i,t} = \alpha_1 debt_{i,t-1} + \alpha_2 post_{i,t} + \eta_i + \epsilon_{i,t} \tag{4}$$

where $debt_{i,t}$ is the log of the level of private credit at time t, $post_{i,t}$ is a dummy variable assuming value 1 in the years when the firm receives a subsidy, and η_i is a firm-time-invariant component. The variable of interest is the dummy *post*: a negative coefficient would imply a lower recourse to bank credit after the subsidy, thus suggesting substitution between subsidized credit and bank loans.

To deal with the potential bias arising from the presence of the lagged dependent variable among the covariates, which would affect a fixed-effects model, we use the general method of moments (GMM) estimator developed by Arellano and Bond (1991). Since firm debt seems to be close to a random walk process (estimations non reported), difference-GMM might perform poorly. In this case, past levels of a variable are not very good instruments for current changes, so we also apply the augmented version of the estimator, developed by Blundell and Bond (1998), instrumenting current levels with past changes. We estimate the models using both a baseline sample, including all firms receiving the treatment (non-decreasing level of subsidy) for three years, and an extended sample, including all firms receiving the treatment for at least two years. The results are reported in table

A.11 and table A.12. We focus on the Blundell-Bond GMM model(GMM-system) and report, for comparison, the results for the fixed effects and the Arellano-Bond GMM (GMM-difference) models.

Overall, the results indicate less debt growth in the post-intervention period: the estimated coefficient of the dummy *post* is negative and statistically significant. This evidence, which is consistent across the three models, supports our previous findings of heterogeneous effects across firms. The subsample estimates show that the coefficient of *post* is statistically significant only for the set of limited companies and large firms.

5.2 DID on the subsidized firms

To ensure homogeneity between groups, we exploit the features of the incentive scheme to select both the treated firms and the control group among the pool of beneficiaries that can be considered similar in terms of all characteristics relevant to obtain the subsidy. To maximize sample size we adopt a broad notion of treatment and a very narrow observation window: the pool consists of enterprises that one year after the initial disbursement still enjoy at least 80 per cent of the subsidized credit.

We distinguish six groups of beneficiaries on the basis of the first year of disbursement (2001 to 2006). The firms that received the subsidy in 2001, 2003 and 2005 are considered "treated"; those that received the subsidy in 2002, 2004 and 2006 are "controls" (see figure 5). For each group we take a four-year window (t-2, t-1, t and t+1). For the treated the window goes from two years before to the year after the disbursement; for the controls we take the four years before the disbursement. In this way we end up with 900 firms "treated" and the same number of "controls". The results, reported in table A.13, confirm our previous findings: on average, firms substitute cheaper subsidized credit for more expensive private loans. The substitution effect is essentially associated with large firms and limited companies.

6 Robustness II

This paper relies upon the hypothesis that the extent to which subsidized credit is used to expand output and investment depends on the severity of firms' financial constraints. We check this assumption with an evaluation exercise based on real outcomes (output, investment), using balance-sheet data.

The information is available for limited companies only, hence this section excludes partnerships. The results of the baseline specification show that limited companies use subsidized credit as a substitute for bank loans (see table A.5); therefore, in our theoretical framework, we expect no real effect of the incentive program for these enterprises.

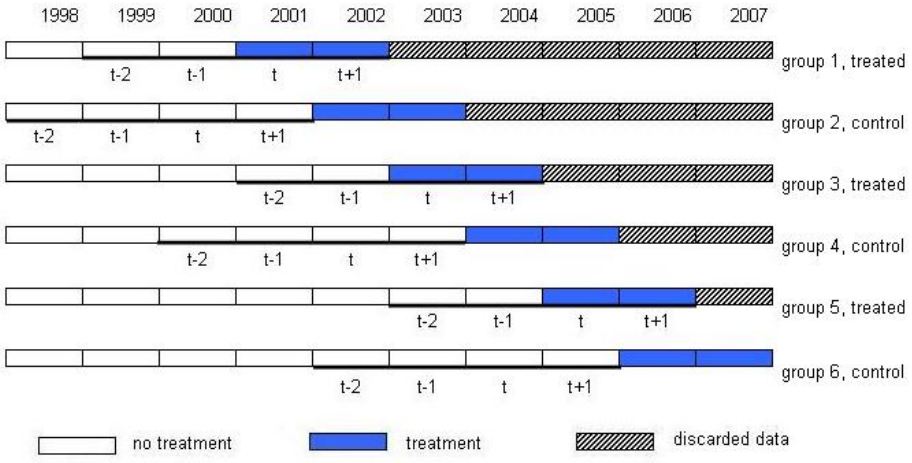

Figure 5: Sampling groups of subsidized firms

We merge our dataset with the Cerved archive, which contains balance-sheet data on all Italian limited companies from 1993 onwards. Again, we use a DID estimator after having performed a one-to-one matching, now based also on balance-sheet information. We carry out exact matching on the following variables: sector of economic activity, location and legal form. To take account of pre-treatment dynamics, we also perform exact matching on the class of both fixed capital and assets over the years *(t-3)* and *(t-1)*, where t is the first year of treatment. Finally, we consider average investment in the pre-intervention period. Our final dataset contains 120 treated and the same number of untreated firms.

Since in general the incentive programs aim at enhancing the productive system, we take $investment(t)/assets(t_0)$ as the outcome variable and estimate model (2). The results, reported in table A.14, show that overall the credit subsidy has no effect on investment. To look for heterogeneous effects across firms we split the sample between small and large companies at the median of assets in the period. In both sub-samples, the estimates show that the policy intervention has no impact on firms' investment. These findings support the previous results based on credit data.

7 Conclusion

Given the widespread use of state aid to SMEs in Italy, we have analyzed to what extent policies based on subsidized loans are effective. The effect of public incentives is related to the availability of financial resources for the beneficiary firms. Accordingly, our analysis focused on the complemen-

tarity/substitutability of public financing and bank credit. We found that subsidized lending is used as substitute for bank loans by large firms and limited companies, while we did not find such evidence for small firms and partnerships. The degree of substitution between the two sources of funding is considerable, ranging from 70 to 84 per cent according to our baseline estimates. This result indicates that the effect of subsidized lending programs in Italy has been modest. Our findings are robust to a broader notion of treatment, to alternative model specifications and are also supported by results of a model based on firm balance sheet information.

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Table A.1: Baseline sample (treated firms) - Stock of long term debt and subsidy

Year	All	Partnerships	Companies	Small	Large	Centre & North	South
				debt			
t-3	627.9	11.2	606.0	17.6	610.2	566.1	61.8
t-2	643.6	11.1	620.6	17.0	626.6	580.9	62.7
t-1	649.7	11.8	624.0	15.8	633.9	590.5	59.2
t	622.3	12.2	596.8	12.3	610.0	566.3	55.9
t+1	589.3	11.4	561.2	12.3	577.0	537.1	52.2
t+2	596.2	10.7	569.6	11.5	584.7	541.4	54.8
				subsidy			
t-3	-	-	-	-	-	-	-
t-2	-	-	-	-	-	-	-
t-1	-	-	-	-	-	-	-
t	123.6	3.9	116.5	16.3	107.3	108.5	15.1
t+1	180.0	5.1	170.1	23.8	156.2	156.5	23.5
t+2	203.2	6.1	190.9	26.3	176.9	176.8	26.4
				observations			
	255	21	224	53	202	224	31

Data in million €. Total number of firms includes also enterprises whose legal form is unknown.

Table A.2: Extended sample (treated firms) - Stock of long-term debt and subsidy

Year	All	Partnerships	Limited companies	Small	Large	Centre & North	South
				debt			
t-3	2189.1	152.6	1965.0	146.9	2042.2	2024.8	164.3
t-2	2233.7	160.8	1997.0	144.7	2088.9	2067.0	166.7
t-1	2259.5	160.2	2021.7	138.9	2120.6	2092.3	167.2
t	2207.9	156.2	1982.4	133.2	2074.6	2053.8	154.1
t+1	2139.9	142.9	1927.1	122.1	2017.8	1988.9	151.0
				subsidy			
t-3	-	-	-	-	-	-	-
t-2	-	-	-	-	-	-	-
t-1	-	-	-	-	-	-	-
t	454.0	52.0	383.6	90.9	363.1	390.3	63.7
t+1	523.4	50.8	453.4	100.2	423.2	451.9	71.5
				observations			
	1326	382	892	541	785	1189	137

Data in million €. Total number of firms includes also enterprises whose legal form is unknown.

Table A.3: Baseline sample - Long term debt (pre-treatment period)

TREATED	Obs.	%		t-3	t-2	t-1
All	255	100.0	Mean	2462.2	2523.9	2548.0
			Std. Dev.	*2736.5*	*2696.7*	*2763.3*
Partnerships	21	8.2	Mean	535.0	530.0	564.0
			Std. Dev	*547.9*	*502.2*	*502.7*
Limited companies	224	87.8	Mean	2705.5	2770.5	2785.8
			Std. Dev.	*2826.5*	*2779.3*	*2855.1*
Small	53	20.8	Mean	332.5	321.1	298.6
			Std. Dev.	*238.2*	*173.7*	*152.3*
Large	202	79.2	Mean	3020.9	3101.8	3138.2
			Std. Dev.	*2817.6*	*2750.8*	*2821.1*
Centre & North	224	87.8	Mean	2527.2	2593.2	2636.3
			Std. Dev.	*2701.9*	*2679.2*	*2793.9*
South	31	12.2	Mean	1992.3	2023.0	1910.0
			Std. Dev.	*2979.1*	*2814.1*	*2478.6*

UNTREATED	Obs.	%		t-3	t-2	t-1
All	255	100.0	Mean	2488.0	2545.7	2549.8
			Std. Dev.	*2704.0*	*2734.1*	*2791.1*
Partnerships	21	8.2	Mean	586.1	542.3	563.6
			Std. Dev	*625.8*	*518.1*	*511.3*
Limited companies	224	87.8	Mean	2728.2	2796.1	2792.5
			Std. Dev.	*2791.6*	*2818.4*	*2885.3*
Small	56	22.0	Mean	348.2	325.1	344.7
			Std. Dev.	*244.7*	*179.4*	*214.8*
Large	199	78.0	Mean	3090.1	3170.6	3170.3
			Std. Dev.	*2775.6*	*2791.7*	*2866.9*
Centre & North	224	87.8	Mean	2564.1	2628.3	2626.0
			Std. Dev.	*2696.8*	*2737.6*	*2819.1*
South	31	12.2	Mean	1937.4	1949.3	1999.0
			Std. Dev.	*2736.4*	*2676.4*	*2554.7*

Data in thousands €. Observations in the three years preceding the treatment (year t). Total number of firms includes also enterprises whose legal form is unknown. The size of the treated groups "small" and "large" might slightly differ from that of the corresponding control groups, owing to the fact that the matching procedure considered classes of debt while the two groups of firms were selected according to the median of the firm debt distribution.

Table A.4: Extended sample 1 - Long-term debt (pre-treatment period)

TREATED	Obs.	%		t-3	t-2	t-1
All	1326	100.0	Mean	1650.9	1684.5	1704.0
			Std. Dev.	*2342.6*	*2326.6*	*2361.0*
Partnerships	382	28.8	Mean	399.4	420.9	419.3
			Std. Dev.	*390.3*	*422.0*	*434.4*
Limited companies	892	67.3	Mean	2203.0	2238.8	2266.5
			Std. Dev.	*2644.9*	*2615.5*	*2650.4*
Small	541	40.8	Mean	271.5	267.5	256.7
			Std. Dev.	*155.5*	*141.2*	*132.4*
Large	785	59.2	Mean	2601.5	2661.1	2701.4
			Std. Dev.	*2653.3*	*2606.5*	*2639.5*
Centre & North	1189	89.7	Mean	1703.0	1738.4	1759.7
			Std. Dev.	*2375.2*	*2360.5*	*2404.7*
South	137	10.3	Mean	1198.9	1216.6	1220.6
			Std. Dev.	*1988.3*	*1954.3*	*1879.5*

UNTREATED	Obs.	%		t-3	t-2	t-1
All	1326	100.0	Mean	1662.7	1696.5	1708.5
			Std. Dev.	*2342.7*	*2347.9*	*2402.6*
Partnerships	382	28.8	Mean	400.9	422.6	418.6
			Std. Dev.	*390.0*	*426.5*	*427.3*
Limited companies	892	67.3	Mean	2218.5	2257.8	2277.1
			Std. Dev.	*2641.3*	*2642.4*	*2708.6*
Small	549	41.4	Mean	276.0	270.8	261.5
			Std. Dev.	*162.3*	*140.8*	*137.1*
Large	777	58.6	Mean	2642.6	2703.8	2730.9
			Std. Dev.	*2651.6*	*2635.3*	*2704.6*
Centre & North	1189	89.7	Mean	1715.5	1755.5	1761.9
			Std. Dev.	*2378.3*	*2387.7*	*2438.7*
South	137	10.3	Mean	1204.7	1183.9	1245.4
			Std. Dev.	*1955.8*	*1900.7*	*2011.8*

Data in thousands €. Observations in the three years preceding the treatment (year t). Total number of firms includes also enterprises whose legal form is unknown. The size of the treated groups "small" and "large" might slightly differ from that of the corresponding control groups, owing to the fact that the matching procedure considered classes of debt while the two groups of firms were selected according to the median of the firm debt distribution.

Table A.5: Long-term debt growth rate - DID model (baseline estimates)

ENTIRE SAMPLE	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.016	-0.016	0.024	0.038	0.013
	(0.025)	(0.067)	(0.027)	(0.083)	(0.027)
post	-0.028	-0.146*	0.006	-0.081	-0.020
	(0.028)	(0.076)	(0.028)	(0.057)	(0.031)
dsubsidy*post	-0.078**	-0.016	-0.097**	-0.004	-0.086**
	(0.037)	(0.101)	(0.038)	(0.095)	(0.040)
constant	0.067***	0.086*	0.062***	0.053	0.066***
	(0.017)	(0.046)	(0.018)	(0.055)	(0.019)
observations	2550	545	2005	210	2240
CENTRE & NORTH	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.017	-0.031	0.028	0.037	0.015
	(0.027)	(0.077)	(0.028)	(0.064)	(0.030)
post	-0.029	-0.164*	0.004	-0.044	-0.025
	(0.029)	(0.083)	(0.030)	(0.048)	(0.033)
dsubsidy*post	-0.071*	0.020	-0.093**	-0.029	-0.074*
	(0.039)	(0.112)	(0.040)	(0.073)	(0.043)
constant	0.058***	0.064	0.056***	0.013	0.058***
	(0.019)	(0.053)	(0.019)	(0.044)	(0.020)
observations	2240	430	1810	180	1970
SOUTH	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.005	0.044	-0.013	0.038	-0.000
	(0.074)	(0.133)	(0.088)	(0.428)	(0.072)
post	-0.019	-0.082	0.021	-0.307	0.015
	(0.089)	(0.186)	(0.087)	(0.273)	(0.096)
dsubsidy*post	-0.134	-0.149	-0.131	0.147	-0.175
	(0.113)	(0.232)	(0.116)	(0.549)	(0.116)
constant	0.136***	0.169*	0.115*	0.289	0.122**
	(0.048)	(0.083)	(0.059)	(0.269)	(0.047)
observations	310	115	195	30	270

Total number of firms includes also enterprises whose legal form is unknown.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.6: Long term debt growth rate - DID model (subsamples estimates)

RANGE 1	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.001	-0.041	0.010	0.043	-0.005
	(0.032)	(0.101)	(0.033)	(0.116)	(0.035)
post	-0.008	-0.166*	0.026	-0.074	-0.006
	(0.036)	(0.086)	(0.039)	(0.084)	(0.040)
dsubsidy*post	-0.105**	-0.027	-0.124**	-0.093	-0.107**
	(0.047)	(0.132)	(0.050)	(0.132)	(0.052)
constant	0.064***	0.072	0.063***	0.062	0.068***
	(0.022)	(0.064)	(0.024)	(0.078)	(0.024)
observations	1400	240	1160	140	1210
RANGE 2	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.008	-0.057	0.021	0.042	0.003
	(0.030)	(0.101)	(0.031)	(0.110)	(0.033)
post	-0.019	-0.217**	0.022	-0.066	-0.011
	(0.032)	(0.085)	(0.033)	(0.078)	(0.035)
dsubsidy*post	-0.096**	-0.013	-0.117***	-0.093	-0.095**
	(0.043)	(0.127)	(0.044)	(0.124)	(0.046)
constant	0.069***	0.131**	0.056***	0.049	0.067***
	(0.021)	(0.064)	(0.021)	(0.073)	(0.022)
observations	1790	290	1500	150	1560
RANGE 3	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.009	-0.038	0.022	0.037	0.005
	(0.029)	(0.077)	(0.030)	(0.099)	(0.031)
post	-0.004	-0.168**	0.043	-0.065	0.007
	(0.032)	(0.082)	(0.033)	(0.069)	(0.035)
dsubsidy*post	-0.091**	0.051	-0.132***	-0.053	-0.095**
	(0.042)	(0.112)	(0.043)	(0.113)	(0.046)
constant	0.055***	0.069	0.051**	0.032	0.053**
	(0.020)	(0.052)	(0.021)	(0.066)	(0.021)
observations	1990	425	1565	170	1730

Total number of firms includes also enterprises whose legal form is unknown. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Subsamples are selected according to the ratio of subsidized loans over total bank credit (three ranges are considered: range 1, 10%-75%; range 2, 10%-100%; range 3, 10%-200%).

Table A.7: Long term debt growth rate - DID model (extended sample estimates)

ENTIRE SAMPLE	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.011	0.005	0.014	0.010	0.012
	(0.011)	(0.017)	(0.014)	(0.017)	(0.014)
post	-0.051***	-0.075***	-0.034*	-0.065***	-0.041**
	(0.014)	(0.022)	(0.018)	(0.022)	(0.018)
dsubsidy*post	-0.043**	-0.005	-0.070***	-0.016	-0.056**
	(0.018)	(0.028)	(0.023)	(0.029)	(0.023)
constant	0.065***	0.042***	0.082***	0.050***	0.071***
	(0.008)	(0.012)	(0.010)	(0.012)	(0.010)
observations	10608	4360	6248	3056	7136
CENTRE & NORTH	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.010	0.004	0.014	0.010	0.010
	(0.012)	(0.018)	(0.015)	(0.018)	(0.015)
post	-0.051***	-0.081***	-0.030	-0.063***	-0.042**
	(0.014)	(0.023)	(0.019)	(0.024)	(0.019)
dsubsidy*post	-0.037*	0.013	-0.070***	-0.019	-0.046*
	(0.019)	(0.030)	(0.024)	(0.031)	(0.024)
constant	0.065***	0.037***	0.083***	0.051***	0.070***
	(0.008)	(0.013)	(0.010)	(0.012)	(0.010)
observations	9512	3776	5736	2808	6360
SOUTH	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.015	0.015	0.014	0.006	0.021
	(0.034)	(0.047)	(0.048)	(0.065)	(0.042)
post	-0.055	-0.039	-0.074*	-0.085	-0.033
	(0.041)	(0.067)	(0.040)	(0.056)	(0.054)
dsubsidy*post	-0.096*	-0.125	-0.062	0.016	-0.139**
	(0.054)	(0.084)	(0.064)	(0.094)	(0.069)
constant	0.072***	0.073**	0.070**	0.047	0.081***
	(0.022)	(0.032)	(0.031)	(0.045)	(0.028)
observations	1096	584	512	248	776

Total number of firms includes also enterprises whose legal form is unknown.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.8: Long term debt growth rate - DID model (extended sample estimates with dummy South interactions)

ENTIRE SAMPLE	All	Small	Large	Partnerships	Limited companies	All	Small	Large	Partnerships	Limited companies
dsubsidy	0.011	0.005	0.014	0.010	0.012	0.010	0.004	0.014	0.010	0.010
	(0.011)	(0.017)	(0.014)	(0.017)	(0.014)	(0.012)	(0.018)	(0.015)	(0.018)	(0.015)
dsubsidy*South						0.004	0.012	-0.000	-0.004	0.011
						(0.035)	(0.050)	(0.050)	(0.067)	(0.045)
post	-0.051***	-0.075***	-0.034*	-0.065***	-0.041**	-0.051***	-0.081***	-0.030	-0.063***	-0.042**
	(0.014)	(0.022)	(0.018)	(0.022)	(0.018)	(0.014)	(0.023)	(0.019)	(0.024)	(0.019)
post*South						-0.004	0.042	-0.043	-0.022	0.009
						(0.043)	(0.070)	(0.044)	(0.060)	(0.057)
dsubsidy*post	-0.038**	0.001	-0.066***	-0.016	-0.049**	-0.037*	0.013	-0.070***	-0.019	-0.046*
	(0.018)	(0.029)	(0.023)	(0.029)	(0.023)	(0.019)	(0.030)	(0.024)	(0.031)	(0.024)
South						0.007	0.036	-0.013	-0.003	0.011
						(0.024)	(0.034)	(0.032)	(0.046)	(0.030)
dsubsidy*post*South	-0.052*	-0.049	-0.049	0.006	-0.062*	-0.059	-0.139	0.008	0.034	-0.093
	(0.031)	(0.042)	(0.045)	(0.056)	(0.038)	(0.057)	(0.089)	(0.069)	(0.098)	(0.073)
constant	0.065***	0.042***	0.082***	0.050***	0.071***	0.065***	0.037***	0.083***	0.051***	0.070***
	(0.008)	(0.012)	(0.010)	(0.012)	(0.010)	(0.008)	(0.013)	(0.010)	(0.012)	(0.010)
observations	10608	4360	6248	3056	7136	10608	4360	6248	3056	7136

Total number of firms includes also enterprises whose legal form is unknown. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.9: Long term debt growth rate - DID model (extended sample estimates according to the financial tension indicator)

	ALL		SMALL		LARGE		PARTNERSHIPS		LIMITED COMPANIES	
	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens
dsubsidy	0.018	0.005	-0.018	0.024	0.041**	-0.015	0.003	0.015	0.023	-0.001
	(0.016)	(0.015)	(0.027)	(0.022)	(0.019)	(0.021)	(0.029)	(0.022)	(0.019)	(0.021)
post	-0.010	-0.087***	-0.051	-0.090***	0.012	-0.084***	-0.037	-0.080***	-0.002	-0.082***
	(0.021)	(0.018)	(0.039)	(0.025)	(0.025)	(0.025)	(0.042)	(0.025)	(0.025)	(0.025)
dsubsidy*post	-0.070***	-0.021	0.015	-0.026	-0.117***	-0.018	-0.028	-0.013	-0.081**	-0.028
	(0.026)	(0.024)	(0.047)	(0.036)	(0.032)	(0.033)	(0.051)	(0.036)	(0.032)	(0.033)
constant	0.046***	0.082***	0.041**	0.043***	0.048***	0.118***	0.045**	0.054***	0.047***	0.097***
	(0.011)	(0.011)	(0.021)	(0.014)	(0.012)	(0.015)	(0.021)	(0.014)	(0.013)	(0.015)
Observations	5024	5584	1808	2552	3216	3032	1168	1888	3660	3476

Total number of firms includes also enterprises whose legal form is unknown. The financial tension is measured by the ratio of short term credit actually disbursed and short term credit granted by banks; we split the firms into two groups at the median of the indicator. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.10: Long term debt growth rate - DID model (extended samples estimates according to the financial tension indicator)

	ALL		SMALL		LARGE		PARTNERSHIPS		LIMITED COMPANIES	
	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens	low-tens	hi-tens
dsubsidy	0.011	0.018	-0.013	0.047	0.025	-0.018	0.002	0.025	0.015	0.004
	(0.012)	(0.023)	(0.021)	(0.030)	(0.015)	(0.037)	(0.023)	(0.027)	(0.015)	(0.037)
post	-0.024	-0.121***	-0.059**	-0.101***	-0.004	-0.145***	-0.044	-0.094***	-0.017	-0.132***
	(0.016)	(0.024)	(0.029)	(0.032)	(0.020)	(0.037)	(0.030)	(0.032)	(0.020)	(0.038)
dsubsidy*post	-0.054***	-0.029	0.010	-0.047	-0.089***	-0.008	-0.033	0.005	-0.061**	-0.048
	(0.021)	(0.036)	(0.036)	(0.048)	(0.025)	(0.055)	(0.038)	(0.047)	(0.025)	(0.055)
constant	0.058***	0.086***	0.041***	0.043**	0.067***	0.140***	0.051***	0.049***	0.060***	0.116***
	(0.009)	(0.015)	(0.015)	(0.018)	(0.010)	(0.025)	(0.016)	(0.018)	(0.010)	(0.025)
Observations	7940	2668	2868	1492	5072	1176	1912	1144	5740	1396

Total number of firms includes also enterprises whose legal form is unknown. The financial tension is measured by the ratio of short term credit actually disbursed and short term credit granted by banks; we split the firms into two groups at the 80th percentile of the indicator's distribution. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.11: Long term debt level - GMM model (baseline sample:3 years treatment)

	Fixed Effects		GMM-DIF		GMM-SYS	
ALL	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.348***	0.350***	0.416***	0.507***	1.047***	1.000***
	(0.023)	(0.023)	(0.134)	(0.168)	(0.047)	(0.041)
post	-0.071**	-0.037*	-0.099***	-0.070**	-0.094***	-0.136***
	(0.031)	(0.020)	(0.033)	(0.030)	(0.035)	(0.028)
observations	2053	2053	1619	1619	2053	2053
firms	432	432	432	432	432	432
SMALL	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.299***	0.304***	0.467***	0.381***	1.014***	1.097***
	(0.053)	(0.053)	(0.114)	(0.137)	(0.184)	(0.166)
post	-0.034	-0.067	-0.167*	-0.172***	0.037	-0.029
	(0.079)	(0.051)	(0.097)	(0.063)	(0.124)	(0.087)
observations	452	452	345	345	452	452
firms	105	105	105	105	105	105
LARGE	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.363***	0.365***	0.543***	0.606***	0.955***	0.939***
	(0.026)	(0.026)	(0.108)	(0.192)	(0.079)	(0.076)
post	-0.055*	-0.031	-0.087**	-0.065*	-0.105***	-0.135***
	(0.033)	(0.022)	(0.035)	(0.038)	(0.035)	(0.029)
observations	1601	1601	1274	1274	1601	1601
firms	327	327	327	327	327	327
PARTNERSHIPS	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.289***	0.286***	0.011	-0.441**	1.025***	1.029***
	(0.076)	(0.075)	(0.558)	(0.184)	(0.072)	(0.081)
post	0.053	0.067	0.039	0.058	0.007	0.015
	(0.092)	(0.059)	(0.190)	(0.066)	(0.122)	(0.080)
observations	180	180	141	141	180	180
firms	38	38	38	38	38	38
LIMITED COMPANIES	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.352***	0.353***	0.379***	0.511***	1.068***	1.012***
	(0.025)	(0.025)	(0.136)	(0.162)	(0.053)	(0.044)
post	-0.040	-0.048**	-0.108***	-0.082***	-0.105***	-0.153***
	(0.034)	(0.022)	(0.034)	(0.031)	(0.037)	(0.030)
observations	1812	1812	1430	1430	1812	1812
firms	381	381	381	381	381	381

Total number of firms includes also enterprises whose legal form is unknown. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. (1) Year dummies included. (2) Year dummies excluded.

Table A.12: Long term debt level - GMM model (extended sample:2 years treatment)

	Fixed Effects		GMM-DIF		GMM-SYS	
ALL	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.259***	0.260***	0.495***	0.442***	0.885***	0.868***
	(0.019)	(0.019)	(0.119)	(0.126)	(0.040)	(0.035)
post	-0.002	0.004	-0.061***	-0.034*	-0.097***	-0.075***
	(0.020)	(0.015)	(0.021)	(0.019)	(0.024)	(0.018)
observations	3464	3464	2576	2576	3464	3464
firms	888	888	888	888	888	888
SMALL	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.209***	0.204***	0.584***	0.484**	0.696***	0.693***
	(0.043)	(0.043)	(0.107)	(0.203)	(0.077)	(0.075)
post	0.032	-0.038	-0.006	-0.057	0.052	-0.026
	(0.044)	(0.031)	(0.053)	(0.035)	(0.058)	(0.036)
observations	944	944	695	695	944	944
firms	249	249	249	249	249	249
LARGE	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.266***	0.272***	0.574***	0.511***	0.816***	0.782***
	(0.021)	(0.021)	(0.073)	(0.104)	(0.067)	(0.061)
post	0.000	0.016	-0.072***	-0.037*	-0.104***	-0.078***
	(0.023)	(0.017)	(0.023)	(0.021)	(0.027)	(0.021)
observations	2520	2520	1881	1881	2520	2520
firms	639	639	639	639	639	639
PARTNERSHIPS	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.262***	0.251***	0.776**	0.157	0.914***	0.871***
	(0.059)	(0.059)	(0.316)	(0.405)	(0.056)	(0.065)
post	0.068	0.019	-0.047	0.021	-0.036	-0.012
	(0.053)	(0.038)	(0.050)	(0.050)	(0.048)	(0.043)
observations	434	434	324	324	434	434
firms	110	110	110	110	110	110
LIMITED COMPANIES	(1)	(2)	(1)	(2)	(1)	(2)
$debt_{t-1}$	0.259***	0.261***	0.511***	0.454***	0.890***	0.869***
	(0.021)	(0.021)	(0.118)	(0.138)	(0.049)	(0.041)
post	0.007	0.001	-0.069***	-0.040*	-0.105***	-0.083***
	(0.023)	(0.017)	(0.023)	(0.021)	(0.027)	(0.019)
observations	2832	2832	2105	2105	2832	2832
firms	727	727	727	727	727	727

Total number of firms includes also enterprises whose legal form is unknown. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. (1) Year dummies included. (2) Year dummies excluded.

Table A.13: Long term debt growth rate - DID model (subsidized firms only, 2 years treatment)

	All	Small	Large	Partnerships	Limited companies
dsubsidy	-0.028	-0.087***	0.011	-0.060	-0.019
	(0.022)	(0.033)	(0.028)	(0.039)	(0.027)
post	-0.019	-0.030	-0.011	-0.011	-0.022
	(0.019)	(0.028)	(0.024)	(0.031)	(0.024)
dsubsidy*post	-0.054**	-0.047	-0.062*	-0.021	-0.058*
	(0.027)	(0.042)	(0.034)	(0.050)	(0.033)
constant	0.078***	0.058***	0.093***	0.073***	0.077***
	(0.016)	(0.022)	(0.019)	(0.025)	(0.019)
observations	5134	2083	3051	1293	3520

Total number of firms includes also enterprises whose legal form is unknown.
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table A.14: Investments over assets - DID model

	All	Small	Large
dsubsidy	0.015*	0.021	0.011
	(0.008)	(0.013)	(0.009)
post	-0.003	-0.016**	0.012
	(0.006)	(0.007)	(0.009)
dsubsidy*post	0.009	0.017	0.001
	(0.012)	(0.019)	(0.015)
constant	0.022***	0.032***	0.011***
	(0.005)	(0.008)	(0.003)
observations	1116	544	572

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1