

The Evaluation of the Efficacy of the R&D European Funds in Piedmont*

Davide Fantino[•] and Giusy Cannone[◇]

October 2010

Abstract

This paper provides some empirical evidence of the impact of two policy measures, aiming at supporting innovative activity of small and medium firms in Piedmont. Both measures use European Structural Funds, but are managed at a regional level. Measure 2.1b, a concessional loan aiming at stimulating the introduction of innovative plants, machinery and equipments, had positive effects on investments, assets and sales in the short run; but there are hints that investments could have been anticipated from already scheduled projects in the following periods. Measure 2.6b, a free grant aiming at stimulating research activity of firms, had positive effects on intangible investments and capital, but this new knowledge does not seem to be able to directly impact on the production process of the firm. When evaluating the effect for specific groups of firms, for both measures we do not find stronger effects for firms characterized by a high intensity of subsidy. When considering firms with a high cost of capital, we find that Measure 2.1b significantly reduced the interest rate asked by the lenders also after the end of the project, while Measure 2.6b had not been effective at all.

Keywords: R&D, public policy, evaluation

JEL Classification: O32, O38

*We thank Finpiemonte for providing us with the data regarding the firms applying to the European Structural Funds for Piedmont. Usual disclaimers apply.

[•] Bank of Italy, Department of Congiuntural and Monetary Policy Studies.

[◇] Polytechnic University of Turin.

1. Introduction

Public intervention is usually crucial to foster innovation and economic development of a country. The reason is that exists a gap between the optimal social level of R&D investments and the private one; there is therefore a systematic under-provision of R&D investments that could hamper the economic growth of a country. This gap is due to the difficult appropriability of returns to investment by innovators: Arrous (1962) sustains that the primary output of R&D activities is knowledge, a non-rival good, whose spread cannot be avoided by the innovators; therefore, the returns from the acquisition of new knowledge cannot be completely appropriated by the firm undertaking the R&D investments and firms underinvest. Levin et al. (1978) and Mansfield et al. (1981) find that imitating a new activity is costly and accounts for 50-75 percent of the R&D cost sustained by the first entrepreneur; one reason is that imitators still have to acquire complementary assets and to go down on their learning curve. There is another reason to justify public intervention: the cost of financing R&D from sources external to the firm (Hall, 2002) may be higher because asymmetric information problems arise between borrowers and lenders. An additional gap between the private rate of return and the cost of capital may therefore exist with imperfect financial markets and borrowing constraints for risky projects like the R&D ones.

Strategic tools mainly used by governments in almost all the OECD countries to stimulate innovation are public subsidies (in the form of concessional loans or free grants or a mixture of the two) and tax incentives. The aim of these instruments is the creation of an “additionality” effect: a subsidy reduces the cost of the R&D investment and therefore the firm now performs additional projects whose overall expected profits were negative in absence of the public intervention. The economic literature exhibits little consensus on the ability of public funding to create additionality: Hussinger (2008) finds that a small grant for domestic plants (Irish plants) may cause additionality effects, while a larger one simply crowds out private spending. Loof and Heshmati (2005) using Swedish data find an additionality effect only on small firms. Busom (2000) found that smaller firms are more likely to apply for and be granted a subsidy. Lach (2002), Almus and Czarnitzki (2003) and Duguet (2003), respectively with Israeli, German and French data, find some additionality effects. Wallsten (2000) finds no hints of additionality for the SBIR program in US.

Although the evaluation of public policies is a widely recognized issue in all the OECD countries, there is a scarcity of studies regarding the Italian policies. Evangelista (2007), using data from the Community Innovation Survey by Eurostat, finds a positive correlation between public funding and resources designated to innovation, while that one between public funding and the introduction of new products is very weak. Bagella and Becchetti (1998) study the short-run effects of incentives to firms on the credit market in different phases of the business cycle. Cariola et al. (2000) evaluate the efficacy of two national programs approved by the European Union (EU) for small and medium firms (“Programmi Operativi Plurifondo” and “Programmi di Iniziativa Comunitaria”), and find a very weak effect due to the low average amount of

provided funds and to some missing policy measures scheduled by the EU, but not implemented. Bronzini and de Blasio (2006) investigate the effectiveness of Law 488/1992 and find a temporal substitution between private and public investments. Bronzini et al. (2008) examine how business investment responds to investment tax credit, as enacted by Law 388/2000, and find some evidence of effectiveness in stimulating investments.

The heterogeneity in results is obviously due to the heterogeneity of samples and programs analyzed. The variety of methods of public intervention poses several difficulties in the impact evaluation of the programs. The criticality of the estimation directly increases with the width, the complexity and the duration of the public program and with the level of intervention, local or national (Cariola et al., 2000). The wider is the program, the more numerous are the tools used to encourage the economic development and the more difficult becomes evaluating their effectiveness; the longer are the time horizons of the programs, the greater are the complexity of the interactions and the difficulty in isolating spurious relationships.

For these reasons, the management of the funds from the EU is particularly difficult; the peculiarities of each geographic area have to be taken into account both in the evaluation phase and in the interaction with the firm during the project. For this reason, the EU defined the general guidelines for the countries, while the definition of specific programs is usually committed to the local authorities. To further enhance the effectiveness, the management of many national programs has been delegated at a regional level. The responsibility given to the local authorities in innovative and economic development aspects responds to the understood necessity at the EU level to assign the management of innovation to public authorities which have closer linkages with the local areas (i.e. the importance of “place”).

Impact evaluation of regional policies is quite a difficult task too: most regional laws do not oblige regional councils to prepare technical and financial reports on the measures carried out and there is a widespread lack of information on them. Among the few studies for the Italian regional policies, Bronzini and Iachini (2009) evaluate the effectiveness of the Regional Program for the Industrial Research, Innovation and Technological Transfer of the region of Emilia Romagna (Regional Law n. 7/2002) and find that small firms increased their investments by about the amount of the subsidy, whereas there was no effect for larger firms; Gabriele et al. (2007) analyze the effect of local subsidies of the province of Trento (Provincial Law 4/81) and find that subsidized firms increased their investments in the short run, with a transitory increase in labor productivity.

This work sheds some light on whether the management at a regional level of the Structural Funds from the EU has been effective; we focus on the evaluation of the effectiveness of two regional programs of subsidies for the development and the implementation of innovative technologies managed by the local government of Piedmont. We find that Measure 2.1b, a concessional loan aiming at stimulating the

introduction of innovative plants, machinery and equipments, had positive effects on investments, assets and sales in the short run; but there are hints that investments could have been anticipated from already scheduled projects in the following periods. Measure 2.6b, a free grant aiming at stimulating research activity of firms, had positive effects on intangible investments and capital, but this new knowledge does not seem to be able to directly impact on the production process of the firm. We also evaluated the effects of the two subsidies for some specific groups of firms; we do not find stronger effects for firms characterized by a high intensity of subsidy for both measures; when considering firms with a high cost of capital, we find that Measure 2.1b reduced the interest rate asked by the lenders, while Measure 2.6b had not been effective at all for these firms.

The remaining of the paper is organized as follows: the second section briefly introduces the framework of the main public policies defined in the recent years to foster the economic development of SMEs with a focus on the policy analyzed in this work; the third section describes the dataset and the empirical strategy; results are reported in the fourth section, while the fifth one presents the analysis of the results obtained for two subsets of firms; finally section six concludes.

2. Description of the policy

The role played by the local authorities in the development of the economic policies, has increased in the recent years. The local management of the structural funds provided by the EU has offered an important tool for regional governments in order to stimulate the innovative behavior of firms and reduce the socio-economic gaps between the different areas. The two main EU programs to support these policy issues are the European R&D Framework Program and the Structural Funds.

The EU main objectives and lines of activity in the field of science, research and innovation are defined in the Sixth European Framework Program for Research, Technological Development and Demonstration. The activities framed in this program received a budget of 17.5 billion of euros for the years 2002-2006 and represents about 5 percent of the overall expenditure on R&D in the EU Member States. The main objective is the creation of a European Research Area by improving integration and co-ordination of research in Europe, with the aim of strengthening competitiveness and solving major societal questions.

The European Structural Funds are primarily finalized to sustain regions with structural weaknesses. The main financial resources for the European Structural Funds policy originated from the European Fund for the Regional Development, aimed at regulate the regional unbalances, and the Social European Fund, which aims at the sustaining the employment and the social cohesion. The Structural Funds for the period 2000-2006 are addressed to three objectives: the structural adjustment of the regions characterized by a lower economic and industrial development, in particular for the areas whose GDP was less than 75 percent of the EU average (Objective 1), the economic and social reconversion of areas with structural problems (Objective

2) and finally the general renewal of the education and employment systems (Objective 3). The first two objectives are fully addressed to the industrial system.

The framework of the management of the Structural Funds is defined by the Council of the European Union with the regulation 1260/1999. According to these guidelines the national governments approve the Strategic National Framework and the National Operative Programs; a negotiation between the EU and the national governments occurs to determine the amount of funds assigned to each Country. After that, coherently with the national guidelines, the regional governments define the Regional Operative Programs. A second negotiation between the national government and the regions occurs to define the amount of funds available for each area. Piedmont regional government defined its policy instruments and aims in a regional single programming document (DOCUP 2000-2006), approved by the European Commission with the decision C/5237 in 2005.

The EU provided 29 billion of euros to the Italian government within the framework of the Structural Funds; in particular around the 70 percent was addressed to the Objective 1 and the remaining was equally divided between the Objective 2 and the Objective 3. The Piedmont, that is not classified as a region Objective 1, presents 483 municipalities classified as Objective 2 areas and 373 municipalities classified in a phasing-out condition, which means that they are authorized to receive subsidies in the considered period to consolidate the results obtained when they were Objective 2 areas in the previous period (1994-1999). The European Structural Funds assigned to Piedmont for the Objective 2, including the phasing-out areas, amount to 510 million of euros, which is the highest amount among the Italian regions; these funds totally derived from the European Fund for the Regional Development. Additional 780 million of euros derived from national and regional resources.

Piedmont DOCUP develops policy tools for Objective 2 local areas in four main fields of intervention: internationalization, support to the economic system, local development and social cohesion. Within the support to the economic system area, six kinds of subsidies (called Measures) are provided: incentives to innovative investments, to the creation of new firms, to the development of new infrastructures, to the information and communication technologies, to tourism and to stimulate research activity. We focus on the two measures whose aim is the incentivization of the innovation activity: the subsidies to innovative investments (Measure 2.1) and those to research activity (Measure 2.6).

In detail, Measure 2.1 aims at stimulating the introduction of innovative plants, machinery and equipments. This measure includes the implementation of some national plans of incentives (laws 488/92, 1329/65, 598/94 and 388/2000), an integration to grants already delivered by the European Investment Bank and a funding scheme directly managed by the region. We focus on the funding scheme directly managed by the region (Measure 2.1b). Measure 2.6 includes two lines of intervention, both directly managed by the

region: a general subsidy for R&D activity of firms (in the form of a non-refundable grant) and a specific contribution for environmental investments (in the form of a concessional loan). Only 28 loans have been awarded for the second kind of intervention, not enough to allow a significant analysis; we therefore restrict our analysis to the first line (Measure 2.6b).

The funding scheme of Measure 2.1b is a partially public concessional loan for small and medium firms¹, operating in industry and services; applications were accepted between the 10th of December 2001 and the 30th of September 2007. The proposed project had to be completed within 18 months after being selected, or 36 months for touristic real estate projects. The funding scheme of the Measure is the following: the public share of the funding is 50 percent (with a maximum amount of half a million of euros) and the borrowed amount is paid back in 48 month with no interest rate; a private bank provides the remaining funding with an interest rate equal to the Euribor - 3 months, augmented by a 1-month spread. The total amount of funding is paid to the firm after the end of the selection procedure. Projects are subsidized until funds are available according to the chronological order of the project approved; the other selected projects are waitlisted and funded when the already subsidized firms pay back their loans.

Measure 2.6b is a free grant for small and medium firms operating in industry and services, except consortiums; the fund accepted applications between the 29th of January 2004 and the 31st of September 2006. The overall amount of expenditures of the projects should be not lower than 25 thousands of euros; the project had to be completed within 30 months after being selected. The fund may account up to 35 percent of costs for the component regarding precompetitive research, patents or services and counseling for research activities and up to 50 percent for the component regarding feasibility studies. Moreover, the overall percentage of contribution may be increased up to an additional 15 percent if the project satisfies other criteria: 5 percent if the investment is realized in a 83.7c area; ² 10 percent if there is technological transfer between firms, between countries or between the public and the private sector; 15 percent if the same project has been submitted to the EU R&D Framework Program. However, the provided grant for each project cannot exceed the 50 percent of the total cost, with an upper bound of 150 thousands of euros.

For Measure 2.1b, the effective funding received by beneficiaries corresponds to the difference between the cost of capital at market price and the lower cost of capital at the price offered by the public agency. Considering a hypothetical average market interest rate of 3.5 percent and the scenario characterized by a public funding of 500 thousands of euros, the amount of savings corresponds to around 18 thousands of

¹ According to the “Community Guidelines on State Aid for Small and Medium-Sized Enterprises” (Information from the European Commission C/213, published in 1996), small and medium firms are those with less than 250 employees, and with annual revenues lower than 50 millions of euros or an annual value of the balance sheet lower than 43 millions of euros.

² The article 87 of the “Treaty Establishing a Constitution for Europe” discipline the procedure for state aids; in particular the article 87.3a indicates that the regional areas whose GDP is under the 75 percent of the EU level are authorized to receive a major amount of state aids; article 83.7c lists the regional areas authorized to receive state aids, but for a lower amount.

euros each year. The maximum subsidy received by beneficiaries considering a 3-year project (the maximum allowed) is therefore about one third of the maximum funding directly received by free grant for Measure 2.6b, that is 150 thousands of euros.

The agency accountable to manage these funds is Finpiemonte, a corporation controlled by the regional government. For both the policy measures we are analyzing, a Technical Committee in Finpiemonte evaluates the formal aspects and the content of the applications, according to the following criteria: economic impact on employment and local industry system, internationalization, environmental sustainability, investment rapidity and innovativeness (Measure 2.1b) or compatibility with the EU Framework Programs for R&D projects (Measure 2.6b). The evaluation is not comparative, but one-by-one, with priority determined by the order of submission of the applications: if the formal requirements of the application are satisfied and the overall content evaluation is better than a pre-defined threshold, the subsidy is awarded.

The total number of requests received for Measure 2.1b was 1837 and the 73 percent of them (1339) has been funded, for a total amount of public provided funds of around 150 millions of euros. For Measure 2.6b, 1443 applications have been submitted and the 45 percent of them (643) has been funded, for a total amount of provided funds of around 42 millions of euros.

3. Data and empirical strategy

3.1 Data

For the evaluation exercise we combine two data sets. The first one, provided by Finpiemonte S.p.A., includes information on the firms applying for the subsidy: name, date of application, programmed investments, assigned grants, revoked subsidies and renunciations. We match these data with the balance sheets of the firms from Cerved archives, which include information about almost all the Italian companies.

Because of missing data, only a small subset of firms was available in all the years; we used therefore an unbalanced panel, where all the firms with complete observations in the pretreatment years (1999-2000) and in at least one of the following years (2001-2008) are included. Moreover, to remove outliers, we eliminated firms experiencing mergers, acquisitions and other similar operations; for each considered treatment year (2001-2008), we eliminated the first and last percentile of the variation of the net overall investments and of the revenues with respect the pretreatment year (2000).

[Table 1]

Table 1 shows the distribution of firms by sector according to the Ateco 2002 sector code (2 digits). The first two columns are referred to the firms applying respectively to Measure 2.1b and Measure 2.6b; the third

column shows the sector distribution for firms in Piedmont (according to the Census 2001). Comparing the first two columns with the third one, we notice that for Measure 2.1b about the 23 percent of the firms are included in the metalworking sector, far more than its share in the regional economy. Other significant over-represented sectors are hotels and restaurants, general purpose machinery and rubber and plastic products respectively with a share of around 9, 8 and 4 percent. The background is similar for Measure 2.6b, where, apart from general purpose machinery (with 22 percent) and metalworking (with 13 percent), the most significant over-represented sectors are computer services with a share of 16 percent and medical, optical and measuring equipment (6 percent).

The difference in the sector distribution within the two Measures is clearly due to the different characteristics of these measures. In particular it is possible to notice that Measure 2.6b presents a higher percentage of firms coming from the high-tech sectors, according to the OECD classification. The 50 percent of firms applying for Measure 2.6b comes from high-tech sectors, while this percentage is equal to 19.4 percent for firms applying for Measure 2.1b and they correspond only to 3.4 percent of firms in Piedmont.

In our analysis we monitored several aspects of the activity of firms: investments, dimension, financial structure and profitability. The investments activity is taken into account through the net overall and intangible investments, scaled by a dimension variable in the pre-treatment year (2000); net investments should be a good proxy to capture additional investments from the firm, after considering the substitution of the depreciated capital. The main drawback is that this variable may be influenced by the fiscal policies of the firm; unfortunately alternative measures such as gross investments are not available in our dataset to complement the analysis.

The dimension of the firm is monitored through four variables: the overall accumulated capital, the intangible one, the overall amount of assets and the revenues from sales. The intangible capital allows understanding if the beneficiaries exploited R&D and patenting activities to make their firm grow. The overall capital gives hints about both the overall accumulation process of the firm. Assets and sales allow a more general point of view and monitor the overall level of activity of the firm. The net working capital, scaled either by sales or by overall assets, monitors the amount of financial resources used for the current management of the firm.

The financial structure of the firm is considered in order to detect signals of substitution of private with public funding and more in general changes in the amount and the characteristics of financial resources available to the firm. The debt structure is monitored by the share of overall and long-term debts over assets. They give signals about the ability and the necessity of the firm of accessing external financial resources both in general and for the long term. Moreover, the average debt cost should complement these indexes with the perception of the risk associated with the debt and therefore indirectly with the reputation and the

perceived quality of the assets of the firm. The liquidity of the firm is used to monitor its ability of creating internal financial resources, normalized by either the sales or the overall assets.

Finally we observe three profitability indexes: the return on equity (ROE), calculated as net income before taxes over equity, monitors variations in the capability of the firm of producing income for the shareholders; the return on assets (ROA), calculated as gross operating surplus over assets, is an index of the general profitability of the assets of the firm; the return on investments (ROI), calculated as gross operating surplus over the sum of equity and long term debts, shows the profitability of the permanent component of the financial resources of the firm.

[Table 2]

After matching the Cerved and Finpiemonte data and polishing the dataset, the final size of our sample of subsidized firms is 396 firms for Measure 2.1b and 456 for Measure 2.6b. The descriptive statistics of the variables in the pretreatment year (2000) are described in Table 2 for both Measure 2.1b and Measure 2.6b. There are relatively few relevant differences between the two measures. The most important are that the value of the intangible assets is 18 percent greater for Measure 2.6b than for Measure 2.1b; on the other hand, the value of the tangible assets is around 11 percent greater for Measure 2.1b. This dissimilarity clearly reflects the self-selection due to the different aims of the two Measures.

3.2 Empirical strategy

The evaluation of a policy program aims at assessing whether firms receiving the subsidy behaved differently because of public intervention. This is a well-known counterfactual situation, because we cannot simultaneously observe the behaviour of a firm under the hypotheses of receiving a subsidy and not receiving it. Usually this problem is econometrically solved comparing the behaviour of the subsidized firms (“treated”) with that one of another firm not receiving the subsidy (“control”) with similar characteristics. An external control group needs to be constructed³ and suitable techniques have to be used to safely conclude that the control group is a good proxy for the treated firms in absence of the subsidy program.

We use a nearest-neighbour matching technique to improve the similarity between the two groups: for each treated firm we choose a vector of characteristics X , and we select a firm among the controls whose characteristics minimize a distance objective function from the characteristics of the treated. The pool of the potential controls is the set of all the firms from Piedmont in Cerved; we excluded from them all those receiving any kind of regional subsidy from the European Union in the period 2000-2006. We use the ATECO code sector classification to identify seven technological sectors: three of them are public utilities,

³ The group of the rejected firms which applied for the subsidy is obviously structurally different from the treated ones, because the rejection is a strong negative signal.

constructions, services; the remaining four ones follow the partition of the manufacturing by technological level of the OECD⁴. We partition the matching by technological sector. Because our panel of treated firms is unbalanced, we repeated the matching procedure for each year in the period 2001-2008.

The objective function we use is the Mahalanobis distance, which is a sum of the squares and the cross products of the differences between characteristics, weighted using the inverse of the covariance matrix of the distribution of the vector of characteristics. This type of matching procedure weights the effect of the policy on the outcome according to the distribution of the treated; we estimate therefore the average treatment effect on the treated (ATT). The vector of characteristics used in the matching procedure is chosen in the pretreatment year to increase the likelihood of exogeneity with respect to the policy and includes overall and intangible investments, the dimensional variables (overall and intangible capital, assets and sales) and the other variables with a significant difference between the treated firms and the pool of potential controls. The matching procedure has been done with replacement: a firm selected as a matching for a treated firm is not removed from the pool of the potential matching of the other firms; the same control firm can therefore be selected more than once.

The approach used to evaluate the impact of the public program is the difference-in-differences technique. We compare the behaviour of the treated (T) and the control (C) firms between the pretreatment period (2000) and a posttreatment year, where the treatment is the receipt of the public subsidy. Given the different length of the project for different firms and the length of the interval where firms were able to begin the project, the temporal overlapping among the timing of the projects was only partial and there were firms at different stages of completion of the project for a given year. We decided therefore to group firms according to the stage of completion of the project: we observed each treated firm in the year where they reached either one third, two thirds or three thirds of the project and one and two (and, for the Measure 2.1b, three and four) years after the end of the project; for each selected year, we compared the behaviour of the treated firm and of the twin control firm selected using the matching procedure. The overall effect of the program for a given stage of completion is calculated as the average of the differences in the outcome variable between each couple of treated and control in the year where that stage of completion is reached:

$$\hat{\alpha}_{sh} = \frac{1}{N} * \sum (\Delta y_{sh}^T - \Delta y_{sh}^C)$$

where y is the outcome variable, the superscripts T and C are respectively for the treated and the control firms and the subscript sh is the share of completion of the project we are analyzing. The hypothesis implied by this kind of approach is that the fixed effects are sufficient to capture the differences due to the different schedule of the projects. The quality of the matching procedure is tested checking the mean differences for the whole group of variables under observation between treated and controls for each stage of completion; the results are reported in Tables 3a and 3b, where no mean difference results to be significant.

⁴ See Hatzichronoglou, T. (1997).

[Table 3a]

[Table 3b]

4. Empirical evidence

The results obtained from the difference-in-differences estimation for Measure 2.1b are reported in Table 4a. The errors are clusterized using the ATECO code 2 digits sectors.

[Table 4a]

The net overall investments intensity shows a significant coefficient at two thirds of the project completion for all the normalizations and this is a favorable result for the effectiveness of the program. In the case of the net intangible investments intensity, there are no hints of effectiveness in the same period.

The variables accounting for the firms dimension show a positive, but decreasing in the last few years of the considered period, impact during the project and immediately after: the effect on the overall accumulated capital has been positive since two thirds of the project completion until two years after the completion; the effects on the overall amount of assets and the revenues from sales are positive since the last third of project completion until three years after; finally, the impact on intangible assets has been significant and positive at two thirds of the project completion, but becomes less significant afterwards. The positive effect on the accumulated capital begins at two thirds of the project, is contemporaneous to the positive effect on tangible investments and comes before the positive impact on sales: this is clearly coherent with the timing of the projects. All the effects on the dimensional variables become weaker and not significant at the end of the considered time period. This fact, together with the fact that the coefficients of investments after the conclusion of the project becomes negative, even if not significant, suggest a weak effect of anticipation of investments already scheduled in the following periods, partially compensating the short term stimulation effect of the subsidy on investments.

The net working capital is not consistently significant in any estimation, showing that there has not been any effect on the management of the current activity of the firm. The liquidity is significant and positive only at two thirds of the project: the subsidy provided additional liquidity, but the subsidized projects do not seem to be more efficient in generating additional current financial resources than the already accumulated assets of firms. While the share of debts over assets has not been influenced by the policy, the effect on the share of long-term debts is positive in almost all the considered period; the average cost of capital shows a significant

decrease at two and three thirds of the project completion. This is coherent with the award of the concessional loan, which reduced the average cost of capital for the firm.

Finally the profitability indexes do not seem to receive significant and consistent impact from the public program, during the development of the project or after its completion, either in terms of return on equity or return on investments. The return on assets shows positive effects at two thirds of the project, but also this effect fades away afterwards. Given the positive dynamics of assets and capital, this is a signal that the additional capital cumulated with the subsidized project has the same profitability of the previously cumulated one.

[Table 4b]

The results for Measure 2.6b are reported in Table 4b. We consistently find a significant positive effect on investments at two thirds of the project, mainly due to the intangible component, as expected given the focus on research and knowledge capital of the Measure. Coherently, when we consider the firm dimension, we find a significant and positive impact on the overall capital and in particular on the intangible component, during and after the project, and a slightly less significant effect on the overall assets. We do not find effects on the amount of sales of the firm in the time window we are considering (up to two years after the completion of the project).

The net working capital and the liquidity do not seem to receive any direct consistent effect from the subsidy. The share of debts on total assets only reveals a significant and positive impact at two years after the end of the project, while the effect on the share of long term debts is significantly positive at one third and two third of the project. No significant results are obtained for the average cost of debt. Being this Measure a free grant, the subsidy did not directly affect the debt structure of the firm; but, because the amount of provided funds is less than the overall amount needed for the project, firms often had to recur to external capital during the development of the project in order to complement public funding. The results concerning profitability are generally not significant.

The results for this Measure show that the policy probably stimulated additional activity mainly aimed at the accumulation of intangible capital; but we do not detect effects of the additional accumulated knowledge capital on the production process, at least up to two years after the completion of the project.

5. Effect on some subsamples

We now evaluate the impact of the Measures on two subsamples in order to verify whether particular conditions could influence the efficacy of the program. For each subsample the matching procedure has been repeated, including in the vector of characteristics used to minimize the distance between firms the variable

discriminating the observations of the subsample. The mean comparisons for the pretreatment year after the matching procedure for the subsamples are reported in the Tables of the Appendix.

The first subsample includes the subsidized firms whose ratio between the amount of the received subsidy and the total amount of net investments is above the median of the distribution of the total sample of subsidized firms, to understand whether a high intensity of subsidy may improve the efficacy of the program. Indeed, if the subsidy covers a small share of the investments, its influence on the behaviour of the firm may be not observable because hidden by the overall variance of the investments.

[Table 5a]

The results regarding this subsample for Measure 2.1b are shown in Table 5a. The results are very similar to those for the full sample. The exceptions are the effect on the intangible capital, very small for the full sample, which here becomes more relevant, and that one for the average cost of debt, which here is not significant.

[Table 5b]

Results for Measure 2.6b are shown in Table 5b and are very similar to those for the full sample. The higher intensity of funding does not seem to consistently impact sales in the considered time window, while there is a positive effect on overall and intangible capital and on the overall assets.

The second considered subsample is composed by the firms whose average cost of capital is above the median of the distribution of this variable. These firms are perceived as riskier by the lenders; therefore they are more likely to be financially constrained and benefit from the additional financial capital from the subsidy.

[Table 6a]

Results for Measure 2.1b are shown in Table 6a. The effects in this subsample are positive for overall capital, assets and sales; while the positive effect was stronger during the project it lasted only up to one year after the end of the project, a shorter time period than for the overall sample. There is no effect on intangible capital. While the effect of the debt structure is not different from that one reported for the full sample, there is a more significant effect on the average cost of the debt in most years, notably after conclusion of the project; while part of this effect is directly due to the concessional nature of the loan for the project, the persistence of the effect at the same level after the end of the project could suggest that the award of the

subsidy may have improved the reputation of the firm with the lenders and therefore may have reduced the interest rate asked by them. The effects on the other variable are very similar to those for the full sample.

[Table 6b]

Results for Measure 2.6b are shown in Table 6b. The effect of the subsidy in this case is weaker than for the full sample, probably reflecting the fact that, in absence of a concessional loan, the firm has not been able to improve its likelihood of raising additional capital in the financial market.

6. Conclusions and policy implications

Despite the large records of studies on the evaluation of R&D public subsidies, there is still a controversial discussion about their effectiveness. The aim of this paper is to contribute to this debate by providing some evidence of the impact of two policy measures, using European Structural Funds, but locally managed, which aim at the support of innovative activity for small and medium firms in Piedmont.

The results obtained show that in the case of Measure 2.1b, which aims at stimulating the introduction of innovative plants, machinery and equipments through a public concessional loan, the subsidy had a positive impact on investments in the short and medium terms. However, there are some signals that part of the investments could have been anticipated from already scheduled projects in the following periods. The subsidy seems to have been effective in stimulating also the economic activity of the firm in the short run through an increase of assets and sales. Results on liquidity and profits suggest that the new machineries and equipment have not been more efficient to generate additional financial resources and profits than the already accumulated assets of firms. Considering the financial structure of the firm, the subsidy caused a positive impact on the share of long-term debts in almost all the considered period, coherently with the increase of the investments.

Results obtained from Measure 2.6b, aiming at stimulating research projects through a free grant, show a positive effect of the program on intangible investments and capital, coherently with the focus on research and knowledge capital of the Measure. But the new knowledge accumulated with the project does not seem to be able to directly impact on the production process of the firm at least in the time windows we are considering. When analyzing the financial structure, a positive impact in the short term is found for the share of long-term debts.

When evaluating the effect of the two policy measures for some specific groups of firms, we find that for both Measures, the effects on the firms characterized by a high intensity of subsidy are very similar to those for the full sample. When considering the firms with a high cost of capital, for Measure 2.1b the

positive effects for overall capital, assets and sales last for a smaller time window, while there are hints that the award of the subsidy improved the reputation of the firm and reduced the interest rate asked by the lenders after the end of the project. For Measure 2.6b, the effect of the subsidy is weaker than for the full sample; this may suggest that a partial free grant still forces the firms to access to external capital for other resources, and thus creates more difficulties for financially constrained beneficiaries to fully benefit from the subsidy.

References

- Almus, M., and Czarnitzki, D. (2003), “The Effects of Public R&D Subsidies on Firms’ Innovation Activities: The Case of Eastern Germany”, *Journal of Business and Economic Statistics*, 21(2), pp. 226-236
- Archibugi, D., e Pianta, M. (1996). “Measuring Technological Change through Patent and Innovation Surveys”. *Technovation*, 16(9), pp. 451-468
- Arrow, K. J. (1962), “Economic Welfare and the Allocation of Resources for Invention” in R. Nelson (ed.), *The Rate and Direction of Inventive Activity*, Princeton University Press, Princeton
- Bagella, M., and Becchetti, L. (1998), “La politica degli incentivi creditizi in Italia tra la fine degli anni ’80 e gli inizi degli anni ’90”, in Bagella, M. (a cura di), *Gli incentivi di politica industriale: presupposti teorici e valutazioni empiriche*, MCC, Roma
- Bondonio, D. (2000), *Metodi per la Valutazione degli Aiuti alle Imprese con Specifico Target Territoriale*, working paper, Università del Piemonte Orientale “A. Avogadro”
- Bostic, R.W. (1996), *Enterprise Zones and the Attraction of Business and Investment: the Importance of Implementation Strategies and Program Incentives*, working paper, Federal Reserve Board of Governors
- Bronzini, R., and de Blasio, G. (2006), “Evaluating the Impact of Investment Incentives: the Case of Italy’s Law 488/1992”, *Journal of Urban Economics*, 60, pp. 327-349
- Bronzini R., de Blasio, G., Pellegrini, G., and Scognamiglio, A. (2008), *The effect of Investment Tax Credit: Evidence from an Atypical Programme in Italy*, Temi di Discussione n. 661, Banca d’Italia
- Bronzini, R., and Iachini, E. (2009), *Are incentives for R&D effective? Evidence from a regression discontinuity approach*, working paper, Banca d’Italia
- Busom, I. (2000), “An Empirical Evaluation of the Effects of R&D Subsidies”, *Economics of Innovation and New Technology*, 9(2), pp. 111-148
- Canepa, A., and Stoneman, P. (2008), “Financial Constrains to Innovation in the UK: Evidence from CIS2 and CIS3”, *Oxford Economic Papers*, 60, pp. 711-730
- Cariola, M., Calabrese, G., and Rolfo, S. (2000), *Principi Teorici ed Evidenze Empiriche nella Valutazione delle Politiche per l’Innovazione delle Regioni Italiane*, III Convegno Nazionale AIV, 23-25/3/2000, Torino
- Colombo, M. G., and Grilli, L. (2007), “Funding Gaps? Access to the Loan Market by High-tech Start-ups”, *Small Business Economics*, 29(1-2), pp. 25-46
- Dowall, D. E. (1996), “An Evaluation of California’s Enterprise Zone Programs”, *Economic Development Quarterly*, 10, pp. 352-368
- Duguet, E. (2003), *Are Subsidies a Substitute or a Complement to Privately Funded R&D? Evidence from France using Propensity Score Methods for Non-experimental Data*, Working Paper n. 75/2003, Université de Paris I

- Dutch-Brown, N., Garcia-Quevedo, J., and Montolio, D. (2008), *Assessing the Assignment of Public Subsidies: Do the expert choose the most efficient R&D Projects?*, Document de Treball 2008/5. Institut d'Economia de Barcelona
- Erickson, R. A., Friedman, S. W. (1991), "Comparative Dimensions of State Enterprise Zone Policies", in *Enterprise Zones, New Directions in Economic Development*, Green R. E. (ed.), Sage Publications, Newbury Park CA
- Evangelista, R. (2007), "Rilevanza e Impatto delle Politiche d'Innovazione in Italia. I Risultati delle Indagini CIS", *Economia e politica industriale*, 1, pp. 103-124
- Gabriele, R., Zamarian, M., Zaninotto, E. (2007), *Assessing the Economic Impact of Public Industrial Policies: An Empirical Investigation on Subsidies*, working paper
- Griliches, Z. (1990), "Patent Statistics as Economic Indicators: a Survey", *Journal of Economic Literature*, 28, pp. 1661-1707
- Hall, B. H. and Van Reenen, J. (2000), "How Effective are Fiscal incentives for R&D? A Review of the Evidence", *Research Policy*, 29, pp. 449-469
- Hall, B. H. (2001), *Market Value and Patent Citations: A First Look*, working paper
- Hall, B. H. (2002), "The Financing of Research and Development", *Oxford Review of Economic Policy*, 18(1), pp. 35-51
- Hanel, P. (2003), *Impact of government support programs on innovation by Canadian manufacturing firms*, paper presented at the conference "Evaluation of Government Funded R&D Activities", May 2003, Vienna.
- Hatzichronoglou, T. (1997), "Revision of the High-Technology Sector and Product Classification", OECD Science, Technology and Industry Working Papers 1997/2, OECD
- Hujer, R., and Radic, D. (2005), *Evaluating the Impacts of Subsidies on Innovation Activities in Germany*, working paper, ZEW - Centre for European Economic Research
- Hussinger, K. (2008), "R&D and Subsidies at the Firm Level: An Application of Parametric and Semi-Parametric Two-Step Selection Models", *Journal of Applied Econometrics*, 23, pp. 729-747
- Irwin, D. and Klenow, P. (1996), "High-tech R&D Subsidies: Estimating the Effects of SEMATECH", *Journal of International Economics*, 40, pp. 323-344
- Jaffe, A.B. (2002), "Building Programme Evaluation into Design of Public Research-support Programmes", *Oxford Review of Economic Policy*, 18(1), pp. 22-34.
- Klette, T., Moen, J. and Griliches, Z. (2000), "Do Subsidies to Commercial R&D Reduce Market Failures? Microeconomic Evaluation Studies", *Research Policy*, 29, pp. 471-495
- Lach, S. (2002), "Do R&D Subsidies Stimulate or Displace Private R&D? Evidence from Israel", *The Journal of Industrial Economics*, 50(4), pp. 369-390
- Lerner, J. (1999), "The Government as Venture Capitalist: The Long-Run Impact of SBIR Program". *Journal of Business*, 72(3), pp. 285-318

- Lööf H. and A. Heshmati (2007), “The Impact of Public Funds on Private R&D Investment: New Evidence from a Firm Level Innovation Study”, in Heshmati A., Y-B. Sohn and Y-R. Kim (eds.), *Commercialization and Transfer of Technology: Major Country Case Studies*, Nova Science Publishers
- Mayers, S. C., and Majluf N. S. (1984), “Corporate Financing and Investment Decisions when Firms have Information that Investors do not have”, *Journal of Financial Economics*, 13, pp. 187-221
- Schilling, M. P. (2005), *Strategic Management of Technological Innovation*, McGraw-Hill
- Schumpeter, J. (1942), *Capitalism, Socialism, and Democracy*, New York, Harper
- Wallsten, S. J. (2000), “The Effect of Government-industry R&D Programs on Private R&D: the Case of Small Business Innovation Research Program”, *RAND Journal of Economics*, 31(1), pp. 82-100

Table 1: Distribution of firms by Ateco

Ateco	Measure 2.1b	Measure 2.6b	Piedmont
Food products	2.08%	1.02%	1.544%
Textiles	2.00%	1.60%	0.702%
Wood products	2.62%	1.45%	1.075%
Paper products	1.23%	0.29%	0.101%
Printing and publishing	2.47%	0.29%	0.655%
Chemicals	2.16%	4.22%	0.132%
Rubber and plastic products	4.39%	1.74%	0.412%
Non-metallic mineral products	3.78%	1.31%	0.463%
Basic metals	1.62%	0.58%	0.100%
Metalworking	22.82%	12.65%	3.092%
General purpose machinery	8.02%	22.38%	1.477%
Computers	0.31%	1.89%	0.057%
Electrical equipment	3.70%	8.87%	0.574%
Radio and communication equipment	0.93%	3.05%	0.231%
Medical, optical and measuring equipment	1.39%	5.96%	0.696%
Motor vehicles	2.31%	2.18%	0.144%
Other transport equipments	0.62%	1.16%	0.067%
Furniture	3.01%	1.31%	1.211%
Construction	9.10%	2.47%	14.627%
Wholesale trade	2.08%	0.00%	9.345%
Retail trade	3.16%	0.00%	15.683%
Hotels and restaurants	9.02%	0.00%	5.259%
Computer services	2.85%	15.99%	2.005%
R&D services	0.46%	2.91%	0.181%
Professional activities to firms	3.62%	5.23%	13.846%

Sectors where the share of applications for both Measures was less than 1 percent have not been included in the Table

Table 2: Descriptive statistics

Variable	Measure	Mean	Std. Dev.	Min	Median	Max
Overall capital	2.1b	1131.879	1877.133	4	536.5	17337
	2.6b	1049.505	1470.538	0	466	8440
Sales	2.1b	4770.682	5550.834	30	2812	40645
	2.6b	5098.159	5440.123	0	3336	40357
Assets	2.1b	4210.419	5351.318	26	2304.5	39894
	2.6b	4603.619	5025.625	0	2755	31772
Intangible capital	2.1b	118.5	404.468	0	36	6505
	2.6b	140.4366	346.917	0	48	3918
Investments over sales	2.1b	0.0429	0.1484	-0.2118	0.0066	0.8369
	2.6b	0.0402	0.1808	-1.5833	0.0070	2.0688
Investments over assets	2.1b	0.0520	0.2403	-0.2143	0.0092	3.7895
	2.6b	0.0446	0.1449	-25	0.0083	1.9346
Investments over capital	2.1b	0.3335	2.0169	-48	0.0461	36
	2.6b	0.3545	1.2027	-1	0.0433	15
Intangible investments over sales	2.1b	0.0032	0.0365	-0.2282	-0.0006	0.3478
	2.6b	0.0197	0.1368	-0.2282	0	2
Intangible investments over assets	2.1b	0.0055	0.0490	-0.1309	-0.0006	0.6316
	2.6b	0.0147	0.0665	-0.1012	0	0.8827
Intangible investments over capital	2.1b	1.1281	6.9258	-1	-0.0751	107
	2.6b	1.3494	5.9594	-1	0	71
Net working capital over sales	2.1b	-0.1134	0.3336	-3.2115	-0.0664	0.7639
	2.6b	-0.1249	0.3351	-3.7188	-0.0818	1.0930
Net working capital over assets	2.1b	-0.1040	0.2844	-1.2777	-0.0810	0.5746
	2.6b	-0.1200	0.2691	-1.2546	-0.1003	0.7287
Liquidity over sales	2.1b	0.0640	0.0725	-0.1920	0.0493	0.8667
	2.6b	0.0583	0.0694	-0.7391	0.0455	0.4583
Liquidity over assets	2.1b	0.0724	0.0755	-0.1553	0.0581	1
	2.6b	0.0660	0.0556	-0.0647	0.0543	0.3469
Debts over assets	2.1b	0.7244	0.2000	0.1714	0.7620	2.6154
	2.6b	0.7223	0.1717	0.1705	0.7573	1.0041
Long term debts over assets	2.1b	0.0991	0.1340	0	0.0561	1.3846
	2.6b	0.0783	0.1091	0	0.0355	0.8244
Average cost of debt	2.1b	0.0343	0.0219	0	0.0298	0.1190
	2.6b	0.0337	0.0291	0	0.0294	0.4154
ROE	2.1b	0.4584	1.5039	-10	0.2390	20.4615
	2.6b	0.5833	2.1738	-2.0865	0.2833	43.2593
ROA	2.1b	0.0706	0.0788	-0.2430	0.0604	0.8846
	2.6b	0.0708	0.0760	-0.3853	0.0612	0.5306
ROI	2.1b	0.2199	0.6319	-1.0556	0.1250	9.375
	2.6b	0.2154	0.3811	-3.2	0.1501	4.7012

The Cerved dataset includes 396 firms for Measure 2.1b and 456 firms for Measure 2.6b.

Table 3a: Mean differences after matching at different stages and up to 4 years after completion of the project for Measure 2.1b

	1/3	2/3	3/3	1	2	3	4
Overall capital	-275.528 (0.279)	-126.469 (0.307)	-112.438 (0.435)	-175.667 (0.239)	-156.972 (0.245)	-173.338 (0.219)	-189.944 (0.228)
Sales	-1033.033 (0.238)	-195.600 (0.678)	155.128 (0.746)	-469.964 (0.378)	-368.408 (0.471)	-468.007 (0.424)	-253.389 (0.714)
Assets	-861.242 (0.235)	-128.192 (0.766)	-321.847 (0.429)	-391.662 (0.414)	-475.492 (0.286)	-584.972 (0.272)	-445.741 (0.461)
Intangible capital	-31.473 (0.480)	6.110 (0.749)	-30.061 (0.307)	-18.574 (0.466)	-29.397 (0.176)	-37.552 (0.154)	-29.926 (0.280)
Investments over sale	-0.013 (0.507)	-0.006 (0.732)	-0.001 (0.975)	-0.009 (0.648)	-0.022 (0.113)	-0.023 (0.355)	-0.032 (0.172)
investments over assets	-0.048 (0.286)	-0.013 (0.553)	-0.019 (0.312)	-0.019 (0.446)	-0.016 (0.368)	-0.017 (0.368)	-0.025 (0.305)
investments over capital	-0.519 (0.201)	0.351 (0.485)	0.006 (0.973)	-0.088 (0.723)	0.104 (0.601)	-0.117 (0.295)	0.150 (0.670)
Intangible investments over sales	0.007 (0.472)	0.003 (0.572)	0.003 (0.517)	-0.001 (0.744)	-0.001 (0.694)	-0.007 (0.208)	-0.003 (0.524)
Intangible investments over assets	-0.007 (0.404)	0.000 (0.961)	0.001 (0.838)	-0.002 (0.650)	0.000 (0.961)	-0.003 (0.520)	-0.001 (0.903)
Intangible investments over Intangible capital	-1.758 (0.155)	0.014 (0.983)	-0.491 (0.321)	-0.117 (0.773)	-0.137 (0.784)	-0.294 (0.576)	-0.315 (0.704)
Net working capital over sales	-0.002 (0.950)	-0.008 (0.841)	-0.055 (0.407)	-0.014 (0.789)	0.021 (0.562)	-0.001 (0.984)	0.033 (0.561)
Net working capital over assets	0.005 (0.897)	0.016 (0.549)	0.003 (0.914)	-0.019 (0.520)	-0.003 (0.924)	-0.038 (0.261)	-0.022 (0.564)
Liquidity over sales	-0.004 (0.704)	-0.007 (0.304)	-0.024 (0.389)	0.000 (0.994)	-0.010 (0.135)	-0.005 (0.472)	-0.005 (0.641)
Liquidity over assets	-0.005 (0.516)	-0.007 (0.249)	-0.009 (0.176)	-0.005 (0.486)	-0.008 (0.303)	-0.008 (0.263)	-0.009 (0.266)
Debts over assets	-0.020 (0.474)	-0.004 (0.805)	-0.013 (0.463)	0.003 (0.875)	-0.007 (0.725)	0.012 (0.568)	0.009 (0.712)
Long term debts over assets	-0.014 (0.350)	0.011 (0.415)	-0.003 (0.766)	0.006 (0.668)	0.007 (0.603)	0.000 (0.975)	-0.011 (0.493)
Average cost of debt	-0.002 (0.394)	-0.001 (0.523)	-0.001 (0.706)	-0.001 (0.686)	-0.003 (0.246)	-0.001 (0.598)	-0.003 (0.221)
ROE	-0.067 (0.650)	0.059 (0.565)	-0.135 (0.282)	0.018 (0.903)	0.010 (0.939)	0.093 (0.509)	0.052 (0.709)
ROA	0.005 (0.494)	0.005 (0.499)	-0.003 (0.689)	-0.003 (0.655)	-0.005 (0.575)	-0.005 (0.571)	0.003 (0.786)
ROI	0.025 (0.522)	-0.218 (0.303)	-0.038 (0.481)	0.006 (0.881)	-0.062 (0.302)	-0.060 (0.389)	-0.050 (0.585)

Significance level reported between brackets. The Cerved dataset includes 396 treated firms.

Table 3b: Mean differences after matching at different stages and up to 2 years after completion of the project for Measure 2.6b

	1/3	2/3	3/3	1	2
Overall capital	-124.810 (0.410)	1.042 (0.994)	-146.742 (0.250)	-23.497 (0.861)	-215.033 (0.182)
Sales	-241.163 (0.673)	-504.137 (0.270)	36.057 (0.946)	-208.040 (0.690)	-950.575 (0.120)
Assets	-352.544 (0.514)	-422.378 (0.333)	-526.074 (0.231)	-217.305 (0.652)	-795.525 (0.115)
Intangible capital	-18.912 (0.533)	-40.220 (0.217)	-40.074 (0.226)	-24.876 (0.541)	-59.283 (0.125)
Investments over sale	0.272 (0.358)	-0.021 (0.137)	-0.011 (0.495)	-0.029 (0.122)	-0.019 (0.356)
investments over assets	0.007 (0.837)	-0.013 (0.323)	-0.004 (0.792)	-0.014 (0.411)	-0.018 (0.392)
investments over capital	-0.160 (0.385)	0.423 (0.396)	-0.039 (0.783)	-0.204 (0.155)	-0.197 (0.266)
Intangible investments over sales	0.127 (0.344)	-0.010 (0.278)	-0.009 (0.292)	-0.011 (0.338)	0.005 (0.495)
Intangible investments over assets	0.008 (0.561)	-0.006 (0.352)	-0.003 (0.605)	-0.004 (0.561)	-0.002 (0.717)
Intangible investments over Intangible capital	-0.250 (0.561)	0.415 (0.512)	0.201 (0.772)	0.248 (0.708)	0.321 (0.724)
Net working capital over sales	0.047 (0.215)	0.016 (0.594)	-0.019 (0.680)	0.028 (0.417)	0.058 (0.130)
Net working capital over assets	0.021 (0.507)	-0.002 (0.917)	0.010 (0.677)	0.020 (0.543)	0.041 (0.255)
Liquidity over sales	-0.004 (0.484)	-0.007 (0.266)	0.003 (0.697)	0.007 (0.411)	-0.004 (0.656)
Liquidity over assets	-0.001 (0.863)	-0.005 (0.387)	0.003 (0.582)	0.005 (0.512)	-0.006 (0.478)
Debts over assets	-0.012 (0.598)	0.014 (0.384)	0.024 (0.140)	-0.019 (0.368)	0.005 (0.815)
Long term debts over assets	0.000 (0.977)	-0.003 (0.771)	0.010 (0.353)	0.002 (0.893)	0.004 (0.824)
Average cost of debt	-0.002 (0.638)	-0.002 (0.545)	0.000 (0.930)	0.002 (0.423)	-0.003 (0.244)
ROE	-0.161 (0.114)	-0.319 (0.160)	-0.148 (0.481)	-0.234 (0.384)	0.096 (0.264)
ROA	0.005 (0.516)	0.000 (0.984)	0.008 (0.258)	0.002 (0.826)	-0.003 (0.733)
ROI	-0.014 (0.637)	-0.028 (0.325)	-0.011 (0.731)	-0.057 (0.174)	0.571 (0.322)

Significance level reported between brackets. The Cerved dataset includes 456 treated firms.

Table 4a: Difference-in-differences results for Measure 2.1b for different stages of the project and up to 4 years after completion

	1/3	2/3	3/3	1	2	3	4
Overall capital	86.31 (136.22)	256.91*** (75.40)	406.69*** (119.62)	233.30*** (73.84)	355.68*** (103.26)	212.94 (198.04)	263.78 (161.94)
Sales	-146.75 (425.49)	512.70 (354.63)	743.66** (297.26)	681.66*** (187.87)	1145.72*** (239.61)	1032.26*** (348.55)	109.20 (325.58)
Assets	162.59 (240.59)	520.67 (351.28)	913.95*** (289.98)	779.88*** (186.86)	1184.29*** (220.47)	1015.87** (377.58)	445.55 (295.42)
Intangible capital	41.80 (42.11)	52.27*** (13.49)	58.88* (31.03)	44.40 (27.57)	58.68 (39.50)	66.44* (39.55)	85.76 (57.28)
Investments over sales	0.05 (0.03)	0.06* (0.03)	0.02 (0.03)	-0.01 (0.02)	-0.04 (0.03)	-0.02 (0.04)	0.004 (0.063)
investments over assets	0.02 (0.02)	0.10** (0.04)	0.001 (0.029)	-0.02 (0.03)	-0.04 (0.04)	-0.02 (0.03)	-0.05* (0.03)
investments over capital	-0.06 (0.16)	1.30** (0.58)	0.33 (0.26)	0.12 (0.28)	-0.27 (0.31)	-0.24 (0.26)	-0.05 (0.39)
Intangible investments over sales	0.02 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	0.19 (0.20)
Intangible investments over assets	-0.003 (0.01)	0.01 (0.01)	0.001 (0.005)	-0.001 (0.008)	-0.01 (0.01)	-0.004 (0.006)	0.01 (0.01)
Intangible investments over Intangible capital	6.23 (6.21)	0.84 (1.30)	0.33 (2.14)	0.42 (1.70)	-4.25 (2.87)	2.78 (3.10)	0.09 (1.54)
Net working capital over sales	-0.03 (0.04)	0.32 (0.22)	-0.27 (0.41)	-0.02 (0.03)	1.77 (1.64)	0.46 (0.48)	0.20 (0.19)
Net working capital over assets	-0.06* (0.03)	0.06 (0.04)	0.01 (0.03)	-0.03 (0.02)	-0.004 (0.036)	-0.07 (0.08)	-0.02 (0.05)
Liquidity over sales	-0.01 (0.02)	0.08*** (0.03)	-0.20 (0.17)	0.06 (0.04)	-0.09 (0.08)	-0.02 (0.05)	-0.02 (0.02)
Liquidity over assets	0.01 (0.01)	0.03*** (0.01)	0.01 (0.01)	0.03** (0.01)	0.01 (0.01)	-0.02 (0.03)	-0.01 (0.02)
Debts over assets	0.03 (0.02)	-0.03 (0.03)	0.02 (0.02)	0.01 (0.01)	0.02 (0.03)	0.08* (0.04)	0.03 (0.02)
Long term debts over assets	0.004 (0.02)	0.04*** (0.01)	0.05*** (0.01)	0.03*** (0.01)	0.05*** (0.02)	0.06*** (0.02)	0.01 (0.02)
Average cost of debt	-0.02 (0.01)	-0.004** (0.00)	-0.005** (0.00)	-0.003 (0.00)	-0.004 (0.00)	-0.005 (0.01)	0.003 (0.01)
ROE	-0.15 (0.24)	-0.07 (0.28)	-0.08 (0.13)	-0.14 (0.17)	0.005 (0.17)	0.01 (0.15)	-0.05 (0.16)
ROA	0.01 (0.01)	0.03*** (0.01)	0.01 (0.01)	0.001 (0.01)	0.01 (0.02)	-0.02 (0.03)	-0.02 (0.02)
ROI	0.04 (0.06)	-0.20 (0.19)	-0.02 (0.06)	-0.09 (0.09)	-0.38 (0.29)	-0.04 (0.04)	0.06 (0.13)

Clustered standard errors included between brackets. 2488 observations.

Table 4b: Difference-in-differences results for Measure 2.6b for different stages of the project and up to 2 years after completion

	1/3	2/3	3/3	1	2
Overall capital	112.86** (54.81)	197.35** (81.10)	-44.91 (78.33)	191.80** (71.92)	170.54 (134.42)
Sales	-384.05 (291.42)	104.69 (284.15)	123.52 (250.76)	123.86 (235.50)	777.93 (520.54)
Assets	71.23 (181.27)	651.24** (285.41)	-10.19 (282.10)	538.22* (308.67)	1134.88*** (378.47)
Intangible capital	-2.69 (35.83)	69.13** (32.38)	79.08** (30.71)	102.54*** (32.49)	147.37** (53.53)
Investments over sales	0.36 (0.38)	0.05** (0.02)	-0.01 (0.04)	0.002 (0.034)	-0.02 (0.07)
investments over assets	0.05 (0.04)	0.06*** (0.02)	0.03 (0.05)	0.01 (0.04)	-0.02 (0.08)
investments over capital	0.23* (0.13)	0.94 (0.59)	0.78* (0.45)	0.14 (0.24)	1.21 (1.12)
Intangible investments over sales	0.18 (0.18)	0.04** (0.02)	-0.01 (0.02)	0.002 (0.016)	0.02 (0.02)
Intangible investments over assets	0.03 (0.02)	0.05*** (0.01)	-0.004 (0.020)	-0.003 (0.018)	0.01 (0.03)
Intangible investments over Intangible capital	1.36* (0.71)	5.97*** (1.99)	1.29 (1.57)	1.24 (0.85)	2.86 (1.73)
Net working capital over sales	-0.86 (1.00)	0.33 (0.29)	1.19 (0.83)	0.14 (0.27)	0.22 (0.19)
Net working capital over assets	0.04 (0.03)	0.01 (0.04)	0.04 (0.04)	-0.11 (0.08)	-0.04 (0.04)
Liquidity over sales	-1.34 (1.39)	0.20 (0.23)	0.01 (0.04)	-0.18 (0.29)	0.004 (0.02)
Liquidity over assets	-0.01 (0.01)	0.03* (0.02)	0.03 (0.02)	0.01 (0.02)	-0.01 (0.01)
Debts over assets	0.003 (0.023)	0.002 (0.017)	-0.01 (0.02)	0.03 (0.03)	0.07*** (0.02)
Long term debts over assets	0.04** (0.01)	0.03** (0.01)	0.02 (0.02)	0.01 (0.01)	0.02 (0.02)
Average cost of debt	-0.0003 (0.0046)	-0.004 (0.003)	-0.001 (0.002)	0.005 (0.004)	-0.01 (0.01)
ROE	-0.51*** (0.14)	-0.19 (0.15)	-0.31 (0.20)	0.09 (0.25)	-0.10 (0.09)
ROA	0.003 (0.013)	0.01 (0.02)	-0.02 (0.01)	-0.01 (0.02)	-0.01 (0.02)
ROI	-0.02 (0.05)	0.05 (0.11)	-0.038* (0.02)	-0.02 (0.05)	0.59 (0.49)

Clustered standard errors included between brackets. 1818 observations.

Table 5a: Difference-in-differences results for Measure 2.1b for different stages of the project and up to 4 years after completion, firms with high subsidy over investments ratio

	1/3	2/3	3/3	1	2	3	4
Overall capital	261.95 (160.76)	358.12*** (89.94)	515.65*** (109.28)	272.72** (107.25)	221.14 (186.16)	69.53 (316.54)	12.91 (182.52)
Sales	567.07 (409.73)	784.88* (434.74)	1033.12*** (286.99)	657.78* (385.13)	1141.53*** (401.91)	1210.80** (491.44)	196.30 (273.19)
Assets	738.82** (328.66)	1019.69*** (236.30)	1085.10*** (301.90)	650.04*** (160.84)	1159.61*** (279.85)	996.30** (385.33)	268.35 (352.29)
Intangible capital	38.05 (41.36)	46.35*** (16.33)	49.54** (22.72)	35.09* (20.21)	41.33* (24.67)	12.36 (32.05)	65.52* (39.07)
Investments over sales	0.05 (0.04)	0.43 (0.38)	0.10* (0.05)	-0.04 (0.03)	-0.09** (0.04)	-0.02 (0.06)	-0.25 (0.23)
investments over assets	0.04 (0.04)	0.14* (0.08)	0.05 (0.06)	-0.07 (0.06)	-0.08 (0.05)	-0.05 (0.09)	-0.11* (0.06)
investments over capital	-0.01 (0.27)	1.28** (0.51)	0.33 (0.49)	0.21 (0.80)	-0.02 (0.65)	-0.23 (0.46)	-0.49** (0.21)
Intangible investments over sales	0.01 (0.01)	0.16 (0.14)	0.003 (0.009)	-0.01 (0.01)	-0.01* (0.01)	-0.01 (0.01)	0.03 (0.03)
Intangible investments over assets	-0.01 (0.02)	0.03* (0.02)	-0.004 (0.008)	-0.02 (0.02)	-0.01 (0.01)	-0.01 (0.01)	0.02 (0.03)
Intangible investments over Intangible capital	7.98 (8.95)	3.53 (3.49)	-0.20 (1.33)	-0.50 (3.07)	-5.87 (5.82)	6.82 (6.78)	-0.40 (2.63)
Net working capital over sales	-0.03 (0.05)	0.01 (0.06)	-0.87 (0.85)	0.002 (0.072)	0.29 (0.33)	0.17 (0.10)	0.15** (0.06)
Net working capital over assets	-0.09** (0.04)	-0.001 (0.04)	-0.05 (0.04)	-0.07** (0.03)	-0.04 (0.05)	0.02 (0.04)	0.04 (0.05)
Liquidity over sales	0.02** (0.01)	0.03* (0.01)	-1.52 (1.30)	0.03 (0.04)	-0.01 (0.04)	-0.05 (0.05)	0.22 (0.17)
Liquidity over assets	0.01 (0.01)	0.03** (0.01)	0.01 (0.03)	0.04** (0.02)	0.01 (0.02)	0.01 (0.02)	0.09 (0.06)
Debts over assets	0.04** (0.02)	0.004 (0.025)	0.04 (0.03)	0.01 (0.02)	0.04 (0.03)	0.03 (0.04)	-0.05 (0.04)
Long term debts over assets	0.02 (0.02)	0.05** (0.02)	0.07*** (0.02)	0.08*** (0.02)	0.08*** (0.02)	0.09* (0.05)	-0.02 (0.04)
Average cost of debt	-0.0013 (0.0029)	0.0000 (0.0028)	0.002 (0.002)	0.003 (0.003)	0.002 (0.003)	0.001 (0.005)	-0.02 (0.02)
ROE	0.65 (0.49)	-0.87 (0.78)	0.02 (0.23)	-0.02 (0.22)	-0.02 (0.20)	0.59 (0.45)	0.24 (0.42)
ROA	0.01 (0.01)	0.01 (0.01)	-0.01 (0.02)	0.01 (0.02)	0.01 (0.02)	0.02 (0.01)	0.07 (0.06)
ROI	0.06 (0.06)	-0.36 (0.26)	-0.23 (0.23)	-0.09* (0.05)	-0.99 (0.63)	-0.12 (0.08)	-0.07 (0.26)

Clustered standard errors included between brackets. 1220 observations.

Table 5b: Difference-in-differences results for Measure 2.6b for different stages of the project and up to 2 years after completion, firms with high subsidy over investments ratio

	1/3	2/3	3/3	1	2
Overall capital	232.28** (88.28)	288.10*** (77.61)	263.39** (122.15)	96.58 (208.95)	331.21** (151.14)
Sales	10.05 (287.60)	511.61* (286.98)	495.30 (340.58)	-165.63 (459.15)	666.96 (393.36)
Assets	561.44** (263.80)	897.10*** (246.31)	809.23** (347.05)	205.69 (496.99)	1203.29*** (326.82)
Intangible capital	69.68 (50.20)	117.66*** (31.12)	142.95*** (45.86)	11.31 (70.22)	155.96** (65.48)
Investments over sales	0.67 (0.71)	0.03 (0.02)	0.05 (0.05)	0.29 (0.25)	0.40 (0.52)
investments over assets	0.10 (0.07)	0.06** (0.02)	0.10 (0.07)	0.06 (0.07)	-0.03 (0.18)
investments over capital	0.60* (0.30)	0.40 (0.69)	2.35*** (0.84)	1.32 (1.12)	2.99 (2.45)
Intangible investments over sales	0.32 (0.35)	0.03** (0.01)	-0.01 (0.03)	0.0003 (0.04)	0.02 (0.04)
Intangible investments over assets	0.04 (0.04)	0.05*** (0.02)	-0.002 (0.04)	-0.01 (0.04)	0.01 (0.05)
Intangible investments over Intangible capital	2.46 (1.67)	3.83** (1.45)	2.74 (2.53)	1.74 (1.79)	5.49 (3.55)
Net working capital over sales	0.19* (0.09)	-0.02 (0.17)	-0.14 (0.28)	-0.26 (0.17)	0.003 (0.212)
Net working capital over assets	0.16*** (0.05)	0.04 (0.05)	-0.03 (0.06)	-0.17 (0.15)	-0.01 (0.08)
Liquidity over sales	0.01 (0.01)	0.07* (0.03)	-0.004 (0.035)	-0.02 (0.05)	0.09 (0.07)
Liquidity over assets	0.01 (0.01)	0.03** (0.01)	0.01 (0.02)	-0.02 (0.06)	0.10 (0.06)
Debts over assets	-0.05 (0.03)	-0.004 (0.019)	-0.004 (0.029)	0.05 (0.08)	-0.10 (0.07)
Long term debts over assets	0.08*** (0.02)	0.05*** (0.01)	0.003 (0.019)	0.03 (0.02)	-0.04 (0.03)
Average cost of debt	-0.01 (0.01)	0.001 (0.005)	0.0003 (0.003)	0.008*** (0.003)	0.008* (0.005)
ROE	-0.21 (0.17)	-0.36 (0.52)	-0.74 (0.44)	-0.64 (0.53)	-0.16 (0.24)
ROA	0.02 (0.02)	0.01 (0.02)	-0.02 (0.02)	-0.06 (0.06)	0.02 (0.03)
ROI	-0.11** (0.04)	-0.05 (0.08)	-0.09 (0.06)	-0.16* (0.08)	0.06 (0.08)

Clustered standard errors included between brackets. 890 observations.

Table 6a: Difference-in-differences results for Measure 2.1b for different stages of the project and up to 4 years after completion, firms with high average cost of debt

	1/3	2/3	3/3	1	2	3	4
Overall capital	61.93 (142.37)	465.62*** (104.10)	502.83*** (151.26)	364.91*** (116.17)	376.79 (262.50)	167.47 (347.15)	300.00 (399.20)
Sales	-210.98 (195.60)	978.21*** (271.69)	668.51** (307.93)	1091.03*** (261.34)	879.69* (478.20)	768.89 (480.33)	185.66 (634.70)
Assets	163.22 (245.73)	1034.27*** (189.51)	1192.99*** (280.96)	968.24** (360.06)	962.65 (689.34)	683.55 (672.25)	296.62 (808.93)
Intangible capital	3.67 (53.34)	46.86 (29.75)	76.25 (60.15)	3.22 (42.12)	55.74 (57.67)	27.30 (50.90)	-12.04 (56.54)
Investments over sales	0.04 (0.03)	0.09*** (0.03)	-2.20 (2.31)	-0.03 (0.02)	-0.03 (0.03)	-0.01 (0.05)	-0.02 (0.04)
investments over assets	0.02 (0.04)	0.13** (0.05)	0.02 (0.03)	0.02 (0.04)	-0.03 (0.03)	0.002 (0.053)	-0.01 (0.05)
investments over capital	0.06 (0.15)	1.55 (1.01)	1.27 (0.88)	0.11 (0.22)	-0.07 (0.40)	0.05 (0.26)	0.15 (0.24)
Intangible investments over sales	0.01 (0.02)	-0.001 (0.006)	-2.69 (2.81)	0.002 (0.012)	-0.004 (0.008)	-0.01 (0.01)	-0.01 (0.01)
Intangible investments over assets	-0.01 (0.03)	-0.001 (0.995)	-0.0003 (0.0114)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)
Intangible investments over Intangible capital	1.87 (1.23)	0.99 (1.22)	0.16 (1.09)	-3.03 (4.27)	4.51 (4.68)	0.30 (0.61)	-1.20 (0.92)
Net working capital over sales	0.01 (0.07)	1.07 (0.96)	0.24* (0.12)	2.11 (1.45)	1.02 (0.72)	-0.06 (0.18)	0.15 (0.23)
Net working capital over assets	-0.02 (0.06)	0.02 (0.05)	0.06 (0.05)	0.02 (0.06)	-0.06 (0.05)	-0.11 (0.17)	-0.06 (0.07)
Liquidity over sales	-0.004 (0.016)	0.16 (0.12)	0.03 (0.05)	0.16 (0.15)	0.05 (0.07)	-0.01 (0.07)	0.20 (0.18)
Liquidity over assets	0.01 (0.01)	0.03 (0.02)	-0.18 (0.22)	0.03 (0.02)	-0.001 (0.015)	0.04 (0.07)	0.02 (0.04)
Debts over assets	0.02 (0.03)	-0.06 (0.04)	-0.04 (0.03)	-0.04 (0.04)	0.06* (0.03)	0.04 (0.09)	0.03 (0.03)
Long term debts over assets	0.04 (0.02)	0.004 (0.024)	0.03* (0.02)	-0.002 (0.021)	0.05** (0.03)	0.06 (0.04)	0.03 (0.03)
Average cost of debt	-0.01 (0.01)	-0.01*** (0.00)	-0.01** (0.00)	-0.002 (0.002)	-0.01** (0.00)	-0.01* (0.00)	0.002 (0.006)
ROE	-0.28* (0.16)	-0.45 (0.83)	-2.31 (2.91)	-0.01 (0.18)	-0.01 (0.19)	0.06 (0.37)	0.05 (0.40)
ROA	0.01 (0.01)	0.02 (0.01)	0.10 (0.09)	0.01 (0.01)	-0.01 (0.02)	-0.06 (0.05)	-0.02 (0.33)
ROI	-0.19** (0.09)	-0.38 (0.32)	1.57 (1.41)	0.08 (0.06)	-0.30 (0.44)	-0.09 (0.09)	0.10 (0.27)

Clustered standard errors included between brackets. 1254 observations.

Table 6b: Difference-in-differences results for Measure 2.6b for different stages of the project and up to 2 years after completion, firms with high average cost of debt

	1/3	2/3	3/3	1	2
Overall capital	177.89 (110.71)	186.126* (96.96)	206.92 (131.41)	235.21* (124.95)	399.20 (263.97)
Sales	-247.79 (356.70)	233.69 (302.34)	-137.18 (404.32)	-630.92 (458.20)	1262.33* (665.94)
Assets	466.93 (316.45)	477.39* (233.01)	598.74 (354.11)	509.11 (494.05)	1637.21*** (574.02)
Intangible capital	103.32 (61.17)	111.85** (45.87)	128.48* (62.55)	102.78 (62.11)	162.30 (104.52)
Investments over sales	0.02 (0.03)	0.04 (0.03)	0.04 (0.03)	0.05 (0.04)	0.09 (0.06)
investments over assets	0.02 (0.02)	0.04 (0.03)	0.05 (0.04)	0.08 (0.06)	0.09 (0.08)
investments over capital	0.27 (0.19)	0.22 (0.18)	0.53** (0.21)	0.29 (0.26)	0.70* (0.38)
Intangible investments over sales	0.01 (0.01)	0.03 (0.02)	0.02 (0.02)	0.02 (0.02)	0.04 (0.04)
Intangible investments over assets	0.02** (0.01)	0.03 (0.02)	0.01 (0.03)	0.01 (0.02)	0.02 (0.06)
Intangible investments over Intangible capital	2.82* (1.62)	6.30 (3.79)	2.93* (1.70)	0.28 (1.42)	1.24 (1.35)
Net working capital over sales	1.50 (1.12)	1.38 (1.25)	-0.09 (0.17)	-0.40 (1.48)	-0.57 (0.45)
Net working capital over assets	0.04 (0.09)	-0.04 (0.06)	-0.04 (0.05)	-0.07 (0.15)	0.21* (0.12)
Liquidity over sales	0.19** (0.09)	-0.09 (0.16)	-0.10 (0.07)	1.15 (0.99)	0.10** (0.04)
Liquidity over assets	0.05 (0.03)	0.01 (0.01)	-0.01 (0.01)	-0.04 (0.05)	0.08*** (0.03)
Debts over assets	-0.07 (0.05)	0.01 (0.03)	0.05 (0.04)	-0.005 (0.077)	-0.17** (0.08)
Long term debts over assets	0.02 (0.02)	0.02 (0.01)	0.04 (0.02)	-0.0003 (0.0165)	0.02 (0.02)
Average cost of debt	-0.01 (0.01)	-0.01** (0.004)	-0.01 (0.01)	0.002 (0.003)	0.003 (0.004)
ROE	-0.49* (0.25)	0.30 (0.30)	-0.71** (0.28)	0.08 (0.21)	0.54 (0.38)
ROA	0.02 (0.02)	0.004 (0.019)	-0.02 (0.02)	-0.01 (0.05)	0.05** (0.02)
ROI	-0.05 (0.05)	0.67 (0.44)	0.44 (0.43)	0.80 (0.57)	1.23 (0.87)

Clustered standard errors included between brackets. 926 observations.

Appendix

Table 7a: Mean differences after matching at different stages and up to 4 years after completion of the project for Measure 2.1b, firms with high subsidy over investments ratio

	1/3	2/3	3/3	1	2	3	4
Overall capital	397.317 (0.235)	-31.211 (0.781)	-102.362 (0.230)	-74.528 (0.426)	-79.025 (0.522)	-16.797 (0.907)	-8.348 (0.919)
Sales	-164.817 (0.853)	-490.594 (0.278)	-520.754 (0.129)	-312.607 (0.413)	-261.725 (0.561)	-304.328 (0.557)	-356.696 (0.307)
Assets	528.833 (0.503)	-386.135 (0.316)	-474.391 (0.128)	-309.730 (0.369)	-213.800 (0.688)	-260.797 (0.690)	-177.761 (0.472)
Intangible capital	-9.783 (0.378)	-13.827 (0.152)	-12.971 (0.146)	-10.472 (0.144)	-16.225 (0.197)	-12.016 (0.436)	-1.652 (0.857)
Investments over sales	-0.034 (0.242)	0.281 (0.390)	0.099 (0.437)	-0.007 (0.766)	-0.009 (0.688)	-0.026 (0.223)	-0.010 (0.755)
investments over assets	-0.072 (0.298)	-0.035 (0.454)	-0.015 (0.720)	-0.038 (0.480)	-0.010 (0.786)	-0.038 (0.283)	-0.050 (0.301)
investments over capital	-0.711 (0.252)	-0.262 (0.517)	-0.279 (0.379)	0.185 (0.781)	0.551 (0.349)	-0.359 (0.117)	-0.406 (0.191)
Intangible investments over sales	0.002 (0.794)	0.143 (0.334)	-0.004 (0.744)	-0.003 (0.641)	-0.002 (0.779)	-0.004 (0.518)	0.029 (0.345)
Intangible investments over assets	-0.009 (0.468)	0.006 (0.705)	-0.008 (0.187)	-0.008 (0.430)	0.002 (0.780)	-0.001 (0.887)	0.004 (0.726)
Intangible investments over Intangible capital	-1.674 (0.362)	1.130 (0.467)	-1.015 (0.290)	0.341 (0.753)	0.440 (0.720)	-0.810 (0.487)	-1.247 (0.391)
Net working capital over sales	-0.057 (0.241)	-0.014 (0.684)	-0.041 (0.211)	-0.013 (0.696)	-0.011 (0.751)	-0.007 (0.862)	0.056 (0.282)
Net working capital over assets	-0.050 (0.276)	-0.020 (0.570)	-0.026 (0.436)	-0.035 (0.381)	-0.024 (0.581)	-0.026 (0.589)	0.039 (0.515)
Liquidity over sales	0.009 (0.451)	-0.009 (0.358)	-0.013 (0.164)	0.000 (0.994)	0.000 (0.967)	-0.006 (0.489)	-0.002 (0.883)
Liquidity over assets	-0.004 (0.705)	-0.006 (0.556)	-0.012 (0.229)	0.010 (0.350)	0.007 (0.550)	-0.005 (0.677)	-0.007 (0.595)
Debts over assets	-0.020 (0.582)	-0.001 (0.723)	-0.010 (0.699)	-0.022 (0.445)	-0.026 (0.408)	0.012 (0.730)	-0.039 (0.343)
Long term debts over assets	-0.005 (0.800)	-0.007 (0.705)	-0.009 (0.604)	-0.005 (0.773)	-0.018 (0.312)	-0.005 (0.784)	-0.005 (0.857)
Average cost of debt	0.003 (0.541)	0.003 (0.287)	0.000 (0.877)	0.001 (0.738)	-0.001 (0.844)	0.003 (0.537)	-0.001 (0.889)
ROE	-0.011 (0.918)	0.098 (0.595)	0.183 (0.232)	0.154 (0.428)	0.112 (0.600)	0.216 (0.432)	0.048 (0.871)
ROA	0.002 (0.867)	-0.004 (0.709)	0.013 (0.317)	0.015 (0.225)	0.015 (0.378)	0.007 (0.693)	0.014 (0.510)
ROI	-0.029 (0.491)	-0.098 (0.265)	0.036 (0.451)	-0.020 (0.666)	-0.145 (0.238)	-0.123 (0.418)	-0.149 (0.476)

Significance level reported between brackets. The Cerved dataset includes 163 treated firms.

Table 7b: Mean differences after matching at different stages and up to 2 years after completion of the project for Measure 2.6b, firms with high subsidy over investments ratio

	1/3	2/3	3/3	1	2
Overall capital	25.203 (0.728)	-2.802 (0.955)	-15.579 (0.771)	95.583 (0.192)	24.327 (0.698)
Sales	-17.962 (0.965)	-242.362 (0.497)	-333.421 (0.338)	-440.357 (0.250)	-634.135 (0.195)
Assets	-139.747 (0.691)	-320.681 (0.277)	-388.088 (0.169)	-435.464 (0.169)	-487.404 (0.199)
Intangible capital	-2.785 (0.922)	-2.578 (0.903)	-14.702 (0.288)	0.119 (0.996)	-16.154 (0.256)
Investments over sales	0.514 (0.351)	-0.027 (0.116)	-0.020 (0.279)	0.164 (0.429)	0.393 (0.251)
investments over assets	0.010 (0.867)	-0.034 (0.173)	-0.025 (0.375)	-0.009 (0.820)	-0.016 (0.757)
investments over capital	-0.404 (0.218)	-0.127 (0.711)	0.187 (0.690)	0.415 (0.675)	-0.382 (0.345)
Intangible investments over sales	0.232 (0.353)	-0.013 (0.200)	-0.005 (0.571)	-0.011 (0.592)	0.032 (0.268)
Intangible investments over assets	0.010 (0.699)	-0.012 (0.312)	-0.002 (0.900)	-0.014 (0.326)	0.005 (0.659)
Intangible investments over Intangible capital	0.062 (0.899)	-0.159 (0.837)	-0.223 (0.806)	0.087 (0.946)	0.243 (0.899)
Net working capital over sales	0.077 (0.219)	0.056 (0.192)	0.032 (0.331)	0.041 (0.398)	0.014 (0.816)
Net working capital over assets	0.020 (0.675)	0.015 (0.655)	0.017 (0.633)	0.036 (0.431)	0.007 (0.894)
Liquidity over sales	-0.008 (0.254)	-0.007 (0.334)	-0.006 (0.416)	-0.008 (0.479)	-0.017 (0.241)
Liquidity over assets	0.003 (0.744)	0.001 (0.857)	0.003 (0.774)	-0.001 (0.938)	-0.005 (0.666)
Debts over assets	-0.011 (0.664)	-0.002 (0.934)	0.002 (0.943)	-0.045 (0.147)	-0.005 (0.880)
Long term debts over assets	0.013 (0.332)	0.001 (0.969)	-0.005 (0.692)	-0.001 (0.932)	0.003 (0.878)
Average cost of debt	0.001 (0.858)	-0.001 (0.840)	-0.003 (0.367)	-0.001 (0.792)	-0.002 (0.775)
ROE	-0.068 (0.718)	-0.463 (0.248)	-0.509 (0.218)	-0.598 (0.281)	0.005 (0.978)
ROA	0.012 (0.338)	0.007 (0.563)	-0.006 (0.625)	-0.001 (0.951)	-0.007 (0.661)
ROI	-0.014 (0.756)	-0.020 (0.729)	-0.080 (0.130)	-0.090 (0.234)	-0.030 (0.586)

Significance level reported between brackets. The Cerved dataset includes 125 treated firms.

Table 8a: Mean differences after matching at different stages and up to 4 years after completion of the project for Measure 2.1b, firms with high average cost of debt

	1/3	2/3	3/3	1	2	3	4
Overall capital	-420.522 (0.381)	-97.579 (0.644)	-239.949 (0.350)	-351.748 (0.163)	-211.637 (0.332)	-240.243 (0.291)	-408.434 (0.116)
Sales	-1828.609 (0.204)	-577.040 (0.428)	-837.087 (0.145)	-1042.556 (0.157)	-559.802 (0.372)	-785.635 (0.274)	-1058.717 (0.124)
Assets	-1524.500 (0.235)	-535.595 (0.398)	-856.109 (0.184)	-1038.111 (0.132)	-579.055 (0.334)	-867.392 (0.204)	-1174.340 (0.115)
Intangible capital	-63.413 (0.435)	-10.103 (0.761)	-35.870 (0.555)	-42.636 (0.344)	-49.066 (0.218)	-52.595 (0.280)	-58.283 (0.293)
Investments over sales	0.022 (0.336)	-0.004 (0.741)	-2.382 (0.314)	-0.028 (0.252)	-0.016 (0.366)	-0.022 (0.222)	-0.026 (0.164)
investments over assets	0.006 (0.697)	0.005 (0.722)	-0.013 (0.363)	0.028 (0.596)	-0.010 (0.637)	-0.014 (0.380)	-0.026 (0.210)
investments over capital	0.040 (0.541)	0.882 (0.328)	0.835 (0.311)	0.132 (0.530)	0.235 (0.458)	-0.040 (0.548)	-0.084 (0.279)
Intangible investments over sales	0.016 (0.333)	-0.002 (0.641)	-2.743 (0.319)	-0.004 (0.587)	-0.008 (0.115)	-0.012 (0.113)	0.001 (0.926)
Intangible investments over assets	0.004 (0.620)	0.001 (0.894)	-0.001 (0.919)	0.009 (0.470)	-0.006 (0.269)	-0.008 (0.232)	0.000 (0.967)
Intangible investments over Intangible capital	-0.142 (0.522)	0.301 (0.534)	0.151 (0.710)	0.047 (0.916)	0.062 (0.898)	0.282 (0.627)	0.147 (0.761)
Net working capital over sales	-0.026 (0.660)	0.004 (0.918)	0.037 (0.374)	-0.065 (0.296)	-0.042 (0.580)	-0.021 (0.737)	0.038 (0.666)
Net working capital over assets	-0.013 (0.844)	-0.010 (0.774)	0.002 (0.944)	-0.052 (0.226)	-0.041 (0.348)	-0.054 (0.271)	0.017 (0.755)
Liquidity over sales	0.015 (0.296)	-0.010 (0.278)	0.004 (0.723)	0.004 (0.775)	0.008 (0.421)	0.000 (0.969)	0.018 (0.270)
Liquidity over assets	0.008 (0.508)	-0.006 (0.526)	-0.003 (0.735)	-0.007 (0.343)	0.000 (0.962)	-0.002 (0.834)	0.011 (0.404)
Debts over assets	-0.029 (0.398)	-0.032 (0.189)	-0.026 (0.283)	0.007 (0.783)	0.013 (0.602)	0.010 (0.713)	-0.023 (0.487)
Long term debts over assets	-0.025 (0.270)	-0.013 (0.484)	-0.012 (0.499)	-0.007 (0.695)	-0.008 (0.690)	-0.009 (0.711)	-0.027 (0.259)
Average cost of debt	-0.002 (0.527)	-0.003 (0.330)	-0.001 (0.701)	-0.003 (0.258)	-0.003 (0.206)	-0.004 (0.189)	-0.005 (0.222)
ROE	-0.069 (0.578)	0.032 (0.828)	-0.051 (0.643)	0.063 (0.621)	0.107 (0.432)	0.072 (0.691)	0.067 (0.735)
ROA	0.008 (0.489)	-0.003 (0.724)	-0.005 (0.585)	-0.008 (0.381)	-0.004 (0.679)	-0.006 (0.574)	0.002 (0.903)
ROI	-0.015 (0.784)	-0.002 (0.978)	0.015 (0.563)	0.135 (0.218)	0.085 (0.571)	-0.051 (0.697)	-0.015 (0.424)

Significance level reported between brackets. The Cerved dataset includes 167 treated firms.

Table 8b: Mean differences after matching at different stages and up to 2 years after completion of the project for Measure 2.6b, firms with high average cost of debt

	1/3	2/3	3/3	1	2
Overall capital	-260.575 (0.164)	-7.693 (0.970)	71.452 (0.741)	70.908 (0.753)	-334.672 (0.167)
Sales	-922.329 (0.220)	-694.969 (0.297)	-770.044 (0.268)	-711.046 (0.377)	-1270.967 (0.169)
Assets	-936.480 (0.218)	-702.898 (0.292)	-796.244 (0.247)	-729.287 (0.336)	-1291.410 (0.112)
Intangible capital	-38.370 (0.459)	-60.181 (0.192)	-56.783 (0.295)	-65.667 (0.219)	-96.197 (0.187)
Investments over sales	-0.013 (0.433)	0.002 (0.908)	0.005 (0.764)	0.026 (0.308)	0.002 (0.884)
investments over assets	-0.013 (0.499)	-0.005 (0.713)	0.008 (0.660)	0.068 (0.273)	0.008 (0.620)
investments over capital	-0.102 (0.433)	-0.031 (0.703)	-0.005 (0.954)	0.176 (0.475)	0.026 (0.726)
Intangible investments over sales	0.001 (0.905)	-0.004 (0.605)	-0.001 (0.942)	0.001 (0.904)	-0.002 (0.845)
Intangible investments over assets	0.001 (0.945)	-0.006 (0.412)	-0.003 (0.729)	0.008 (0.553)	-0.003 (0.715)
Intangible investments over Intangible capital	0.365 (0.508)	0.392 (0.497)	0.736 (0.276)	0.533 (0.495)	0.012 (0.965)
Net working capital over sales	-0.007 (0.854)	-0.042 (0.310)	-0.026 (0.535)	-0.008 (0.861)	0.017 (0.737)
Net working capital over assets	-0.015 (0.718)	-0.047 (0.208)	-0.024 (0.539)	-0.026 (0.567)	-0.006 (0.918)
Liquidity over sales	-0.003 (0.770)	-0.007 (0.336)	0.002 (0.841)	-0.001 (0.951)	0.010 (0.703)
Liquidity over assets	0.001 (0.930)	-0.004 (0.569)	0.007 (0.372)	0.005 (0.591)	-0.003 (0.796)
Debts over assets	0.021 (0.427)	0.019 (0.344)	-0.005 (0.819)	0.010 (0.706)	0.012 (0.694)
Long term debts over assets	-0.004 (0.813)	-0.010 (0.505)	0.001 (0.947)	-0.014 (0.443)	-0.009 (0.674)
Average cost of debt	-0.006 (0.318)	-0.005 (0.208)	-0.003 (0.317)	-0.003 (0.453)	-0.004 (0.320)
ROE	0.063 (0.802)	-0.026 (0.852)	-0.066 (0.679)	0.058 (0.760)	0.251 (0.200)
ROA	0.009 (0.432)	-0.003 (0.742)	0.010 (0.270)	0.014 (0.216)	0.005 (0.710)
ROI	-0.043 (0.449)	0.513 (0.346)	0.553 (0.358)	0.766 (0.335)	1.093 (0.335)

Significance level reported between brackets. The Cerved dataset includes 135 treated firms.