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THE EFFECTIVENESS OF INVESTMENT SUBSIDIES: EVIDENCE FROM SURVEY DATA

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Abstract

This paper investigates the effects of subsidies on the investment decisions of a sample of Italian manufacturing firms. We use survey information on firms' subjective evaluations of the investment they would have undertaken without financing, finding that subsidies have limited effectiveness as a stimulus. Without subsidies, three-quarters of the firms financed would have made the same amount of investment at the same date; most of the remaining firms would have made the same amount of investment at a future date.

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Keywords: Investment incentives, State aid

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1. Introduction¹

The volume of State aid disbursed in the European Union is fairly substantial, amounting to 0.6 per cent of EU-15 GDP. Governments use it to pursue a number of objectives, such as furthering regional development, promoting R&D, or supporting SMEs. State aid is based on a belief that market failures are predominant and that therefore without aid the economy could not achieve socially desirable equilibrium. However, as State aid distorts competition and impacts on public finances, reducing its volume has become a pressing concern of the EU Commission.² The guidelines drawn up by the Commission indicate that before resorting to aid member states should make sure that it does effectively represent the most appropriate solution, and in particular that the amount is limited to what is necessary. Nonetheless, as Besley and Seabright (1999) have shown, it is hard to say whether this requirement is met as we know little about the effectiveness of State aid.

To shed some light on the question, our paper presents evidence on the effects of investment subsidies on the decisions of a sample of Italian manufacturing firms.

The extent to which investment incentives have an economic pay-off has been a major subject of economic research for decades (see, for instance, Hall and Jorgenson 1967 and King 1977). Yet, despite the voluminous literature, there is no agreement on the effectiveness of investment incentives (see Faulk 2002, Gabe and Karybill 2002, Harris and Trainor 2005, and Lee 1996 among others). The main problem is that any evaluation of the effects of government-sponsored projects raises the question of what would have happened without the subsidies. In other words, evaluating an incentive programme is a counterfactual exercise.

Counterfactual analyses generally employ evaluation methods (see, for instance, Angrist and Krueger 1999 and Blundell and Costa Dias 2000). The challenge is to construct a valid control group, as neither the subsidised nor the non-subsidised firms can be regarded as random draws from the total population of firms. Overall, since selection bias is endemic, it is extremely difficult to choose an untreated group for which one can safely say there would be no difference in outcomes with respect to the treated counterparts without an aid programme (see also Lalonde 1986). Our paper follows a different route. As part of the Bank of Italy's 2005 Survey of Industrial and Service Firms we asked the firms that had received subsidies to provide a counterfactual assessment of what their investment activity would have been, had they not been financed. Unlike evaluation methods, in our approach the evaluator is the recipient firm rather than the econometrician.

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² However, in spite of pledges by member states at successive European Councils to reduce the overall volume of State aid, there is still no sign of a reduction (see EU Commission 2005).

Recipient firms seemed *well-prepared* for such an assessment because investment and its financing is a recurrent activity for which they have put in place accurate planning and budgeting procedures. This contrasts with other types of counterfactual evaluation, such as that of a training programme, something that usually happens only once in a lifetime so that the trainee finds it hard to predict what he or she would have done otherwise. Moreover, recipient firms seemed to be quite *willing* to provide an assessment, there being a long tradition of collaboration between Italian industrial firms and the Bank of Italy for the collection of economic data. Firms know that the data are collected for the purpose of economic analysis only and that confidentiality is guaranteed. More importantly, the results show that with our approach strategic considerations in the answering process and social desirability do not affect the answers.

Our data are collected from questions designed to uncover whether the incentives made it possible to undertake investment that would not have been carried out otherwise. One of the first issues we have to tackle is that of *selection*. Recipient and non-recipient firms may differ in several respects. For instance, if subsidies go to the most efficient firms, then these might invest without aid as well. Another difficulty is *time substitution*: the availability of subsidies may persuade firms to bring forward projects originally planned for the future. A final consideration is that investment projects may only be profitable if they are subsidised. Thus, subsidised firms may take up investment opportunities that non-subsidised firms would have exploited if there had not been the incentives. However, lack of profitability could also be caused by factor inefficiency (because of the features of the award mechanisms, subsidised firms may undertake infra-marginal projects to improve their chances of getting aid) or *local external diseconomies*, which the incentive is intended to compensate.

The results show that according to the recipients' evaluation subsidies have limited effectiveness. Without them, 74 per cent of the recipient firms would have carried out exactly the same amount of investment, while 17 per cent would simply have postponed it. The investment was judged profitable only if subsidised by 7 per cent of recipient firms. Those deeming the investment profitable even if not subsidised, and therefore using subsidies to replace external financing (not available), represented as few as 2 per cent of the recipients.

The paper is structured as follows. The next section provides a snapshot of public financial assistance to manufacturing in Italy. Section 3 explains the issues involved in evaluating effectiveness. Section 4 presents the evidence. Finally, in Section 5 we offer some conclusions.

2. State aid to manufacturing

In Italy State aid to firms amounts to 0.52 per cent of GDP, similar to the share in France (0.54 per cent), lower than in Germany (0.78 per cent) and substantially higher than in the UK (0.32 per cent).³ It is concentrated in the manufacturing sector, which receives 72 per cent of the total (see European Commission 2005). According to the Ministry for Productive Activities (Ministero delle Attività Produttive 2005), roughly one half aid is in the form of investment incentives.

The bulk of financing is provided under two main policy instruments, Law 488 and Law 388 (see Ministero dello Sviluppo Economico 2006). The main difference between the two programs is that the former allocates aid on the basis of competitive auctions while the latter does it through automatic tax deductions. In particular, Law 488 offers project-related capital grants, applications for which are ranked on the basis of criteria such as the proportion of own funds invested in the project, the number of jobs involved, and the amount of aid sought. Aid is then awarded by order of merit up to the limit of the budget; successful applications receive the amount of funds requested.⁴ Firms are therefore not automatically entitled to assistance under Law 488 as only those that win the tender receive the grant. By contrast, Law 388 provides across-the-board subsidies, with firms investing in eligible areas being granted a tax exemption as a percentage of their annual net capital expenditure.⁵

3. Assessing investment incentives: the issues

In order to assess the effectiveness of incentives in stimulating investment one needs to gauge whether they actually trigger additional investment. Briefly, one must answer the following question: “Did the aid make possible investments that would not have been undertaken otherwise?”

This is not an easy question to answer, first of all because of the selection problem. There may be systematic differences between recipient firms and non-recipient firms, and these differences may be the factors behind the investment pattern observed. Selection is likely to be relevant in the actual policies implemented (see Section 2): auction-based award mechanisms (such as Law 488) are explicitly designed to benefit disproportionately more productive firms. At the same time, selection also affects automatic incentives (such as those envisaged under Law 388), as

³ Figures do not include the railway sector.

⁴ The Law 488 award mechanism has recently been revised. The new scheme envisages a more pro-active role of private banks, which will provide part of the financing (*Ministero dello sviluppo economico* 2006).

⁵ The two programmes are not cumulative. Firms receiving tax deductions under Law 388 cannot apply for Law 488 grants (or other State aid). Vice versa, firms applying for Law 488 funds are required to renounce other public subsidies.

firms that have no incentive to invest despite the tax deduction self-select out of the pool of participants. In our case, therefore, selection is likely to bias the assessment upwards: if the money goes to the most efficient firms, then it should come as no surprise that these firms invest more since they would have invested more even without aid.

Another difficulty is time substitution. The availability of subsidies may prompt firms to bring forward projects originally planned for the future. As shown by Abel (1982), a temporary investment subsidy gives firms a strong incentive to invest while the incentive is in effect (see also Auerbach and Hines 1988, and Adda and Cooper 2000). With regard to Law 488, Bronzini and de Blasio (2006) show that time substitution considerably affects the investment pattern of the firms financed. In short, a potential effect of aid may be to boost investment during the period in which the aid programme is in place, at the cost of reducing investment subsequently. In this case, a positive effect of the subsidies is not a proof of additionality, as without aid the same investment would have been made in the future.

A final concern is that investment projects may only be profitable if they are subsidised. This may be due to three factors. First, there could be displacement. Subsidised firms may take some of the investment opportunities that non-subsidised firms would have exploited otherwise. As Harris and Trainor (2005) and Lee (1996) show, subsidised firms may crowd out non-subsidised firms on the assumption that the size of the market is fixed and cannot support any additional production.⁶ Displacement implies that the project would not have been viable without the extra demand that the subsidised firms gain by crowding out competitors. In the case of displacement, a positive effect of the incentives is not a sign of additionality, as without aid the same investment would have been made by a different firm.

Second, incentives could drive factor inefficiency. To improve the chance of getting the subsidy, firms could move towards infra-marginal projects. For instance, firms applying for funds under Law 488 may choose to undertake more labour-intensive projects as the award scheme puts a premium on hiring. In the case of factor inefficiency, it will be not appropriate to interpret higher infra-marginal investment activity as evidence of the effectiveness of aid as these investments carry with them a wasteful component.⁷

Third, the fact that the project is not profitable without aid could be due to negative external economies. For instance, firms applying for regional aid may choose to locate their investment in

⁶ Displacement may also occur because of general equilibrium effects. The aid may change the price of capital as a whole if it affects a substantial number of firms. For instance, Goolsbee (1998) shows that investment incentives have little impact because much of the benefit does not go so much to investing firms as to suppliers of capital through higher prices.

⁷ The fact that subsidised investments have lower productivity is a common theme in the literature on the effectiveness of regional aid in Italy (see, for instance, Galli and Onado 1990).

backward areas with less infrastructure and remote access to markets. In the case of external negative economies, subsidising projects with a lower market rate of return than projects located elsewhere could be exactly the intended outcome of the policy.⁸ In other words, the subsidy compensates for local external diseconomies and makes investments in that area possible which would not have been carried out otherwise.

4. The evidence

We try to shed some light on the effectiveness of aid in stimulating investment by directly questioning entrepreneurs.⁹ To do so we use the 2005 Survey of Industrial and Service Firms described in Appendix B.¹⁰ The survey is conducted by the Bank of Italy at the beginning of each year on a representative sample of about 4,400 industrial and service¹¹ firms to collect detailed information on investment and employment decisions. The survey also records some characteristics of the firms, such as branch of industry and geographical location. Note that the respondent is either the owner of the firm or a member of senior management, except in the case of very large firms. This ensures that the subjective evaluation reflects the perception of a person with direct responsibility for the firm's decisions.

The reliability of the data we collect should be judged on two grounds: the firm's *ability* to provide a counterfactual evaluation and its *willingness* to tell the truth. Regarding the first issue, recipient firms seemed to be well-prepared for such an assessment; investment and its financing are recurrent business activities, for which enterprises have put accurate planning and budgeting procedures in place.¹² This contrasts with other counterfactual evaluations, such as of a training programme, something that usually happens only once in a lifetime so that the trainee finds it hard to predict what he or she would have done otherwise. As Iarossi (2006) has pointed out, hypothetical questions should only be asked to those who have experienced the phenomenon in the past. As to the willingness of recipient firms to share their assessments with the Bank of Italy, there is a long-standing tradition of collaboration between Italian industrial firms and the Bank for data collection. Firms are confident that data are collected for the purpose of economic analysis only and that confidentiality is guaranteed. Moreover, economists from the Bank of Italy have always been

⁸ Minimum-scale-of-activity (or big push) arguments provide additional rationale for subsidising inefficient investments.

⁹ For survey-based assessments of State aid see EIM (2004) and Pellegrini (2005).

¹⁰ See also Bank of Italy (2005).

¹¹ Service firms were not considered in the analysis below as most of Italian State aid goes to the industrial sector.

¹² Because a substantial amount of money is paid out in the form of investment incentives, firms spend a lot of time gathering information on the economic feasibility of the subsidised project and on the paperwork involved.

viewed as public-minded officials.¹³ The possibility of strategic answers is a major consideration when assessing willingness to provide a reliable assessment, as firms may fear that by declaring subsidies to be useless they could put future financing at risk.¹⁴ Moreover, since firms are requested to report on the use of public money, social desirability may also be an issue (see Bertrand and Mullainathan 2001) if respondents want to avoid looking bad in the interview. However, as we show below, neither strategic answers nor social desirability are problems for our results as we find the effect of the subsidies to be marginal.

A unique feature of the 2005 questionnaire is the section on the role of public subsidies in investment decisions (see Appendix C for the data collection form). Among 3,020 manufacturing firms, 750 obtained investment subsidies in 2005. This is assessed from answers to the question “Did your firm benefit during 2005 from public aid or incentives for investment from the State or other public bodies in such forms as tax credit, subsidised credit, sunk contributions, etc.)?”¹⁵

Firms declaring they received aid constitute the reference sample for the counterfactual experiment. Table A.1 presents the main descriptive statistics for subsidised firms and compares them with those of unsubsidised firms. We find that 35 per cent of subsidised firms are located in backward southern areas¹⁶ (38 per cent of non-subsidised firms) and 35 per cent are small (42 per cent of non-subsidised firms). Regarding sector of activity, the subsidised sample is slightly tilted towards non-traditional activities, namely sectors other than textiles, clothing, food and furniture.

Table A.2 compares average investment of subsidised firms in 2005 with that of their non-subsidised counterparts, finding that the former invest 60 per cent more than the latter. Even comparing subsidised and non-subsidised firms of the same size or within the same location or industry, we still find that average investment is consistently larger for subsidised firms.¹⁷

¹³ Firms are compensated for taking part in the survey by receiving Bank of Italy business cycle reports on geographical and sectoral trends.

¹⁴ As recognised in EIM (2004), the issue of social desirability is magnified when the evaluation is conducted by the same agency that provides the financing. This is not our case, as the Bank of Italy is not involved in allocating incentives to firms (see also Iarossi 2006).

¹⁵ Our sample of 3,020 firms excludes those that did not answer this question (3 per cent of those interviewed). According to our checks, non-response was random according to the variables included in the survey design (size class, sector of activity and geographical location).

¹⁶ The location is that of the firm’s head office. Many firms with head offices in the North and Centre have production units located in the South. Most of the state aid granted to those firms finances industrial projects in the *Mezzogiorno*. In 2005, for manufacturing firms with head offices in the North and Centre, the quotas of employees (5.4 per cent) and investment (12.3 per cent) located in the South of subsidised firms were between two and three times as large as the corresponding quotas of non subsidised firms.

¹⁷ Larger firms with 50 employees or more were asked to report the value of subsidised investment (the amount of aid received was instead reported by both large and small firms). For these firms we are able calculate the percentage of subsidised investment over aid. The ratio turns out to be slightly over 200 per cent: that is, on average €100 of investment benefited from €50 of subsidies. Note that providers of aid usually take the ratio of subsidised investment to aid to be an indicator of effectiveness. As we argue in this paper, however, this indicator is misleading as it does not account for investment that would have been made even without aid.

What share of investment would have been undertaken had the firm not been financed? As the first step in assessing additionality subsidised firms were requested to answer *counterfactual question no. 1*:

“Without aid or incentives, in 2005 your firm would have made:

- 1) the same amount of investments in the same projects
- 2) the same amount of investments in projects at least partly different
- 3) a smaller amount of investments
- 4) no investment at all.”

The answers to this question provide us with a measure of the investment that would have been made without aid; however, this could still include investment driven purely by time substitution or projects not profitable without aid. To be sure, the presence of the incentives might also affect the decisions of a firm that would invest the same amount of money without aid. For instance, a firm that would carry out a given project may instead decide to undertake a different project, provided that it is adequately financed by the State. In this case, it is reasonable to think that without subsidies the different, non-subsidised project would have a higher rate of return. As for the assessment of additionality, however, an agnostic stance is needed here because we do not know the relative merits of displacement, factor inefficiency and local diseconomies (see Section 3 and the discussion below). To capture this possibility, firms that would have invested the same amount of money even without subsidies were requested to specify whether the money would have been invested in the *same* project (answer no. 1) or in projects *at least partially different* (answer no. 2). Finally, firms that would have carried out less investment were asked to indicate the amount of the hypothetical investment expenditure (answers nos. 3 and 4).¹⁸

Table A.3 shows the percentage responses to hypothetical question no. 1. We find that aid triggered some extra investment for only 22.5 per cent of the subsidised firms, while without aid only 3.7 per cent of the firms would have made no investment at all. Crucially, 67.7 per cent of the sample would have invested the same amount of money in the same projects even without the subsidies.¹⁹ Firms that would have invested the same amount, but in at least partly different projects, amount to 6.1 per cent. We also find that without subsidies firms located in the South of

¹⁸ Firms that ticked answer no. 3 were then requested to indicate how much they would have invested without subsidies, as a percentage of the amount of their investment in 2005. This allows us to make a rough calculation of the amount of additional investment (see below).

¹⁹ In this case, the subsidy is essentially equivalent to a donation. Cash rich firms can then use this donation in a number of ways. For instance, they can take the money out of the firm and distribute extra-dividends or keep it within the firm and substitute for more costly sources of financing. See Albareto et al. (2006).

Italy would have invested much less than their counterparts in the Centre and North of the country. Finally, aid seems to be more effective for small firms than for large ones, while the sector of activity does not seem to matter.

The finding that 26.2 (22.5 + 3.7) per cent of the subsidised firms would have invested less without aid does not amount to saying that aid was effective in all these cases. These firms might have invested less only because without the incentives investments could not have been brought forward or the project would not have been profitable. To discover whether this was indeed the case, we asked the firms that ticked either answer no. 3 or answer no. 4 above to explain their choice by answering *counterfactual question no. 2*:

“What reasons would have led you to reduce or eliminate investments in 2005 if no aid or incentives had been available?

- 1) there would have been no return on the investment without the incentives;
- 2) without incentives it would have been better to postpone at least part of the firm’s investments;
- 3) the investments would have been profitable in any case, but institutional financiers (banks and other financial intermediaries, capital markets) would not have been willing to provide finance;
- 4) other (please, specify).”

Answer no. 1 allows for displacement, factor inefficiency, and local external diseconomies, as in all these cases without the subsidies the revenues from the project would have been lower than the costs.²⁰

Answer no. 2 aims to capture time substitution effects, whereas answer no. 3 is directed at firms that use subsidies to finance fully profitable projects. In such a case, the lack of external funds prevents efficient investment from being carried out and therefore it is the case in which it appears safe to say that aid stimulates additional investment.

Finally, answer no. 4 seeks to capture any additional motives that we might have failed to account for.

Response frequencies to hypothetical question no. 2 are reported in Table A.4.²¹ We find that time substitution is relevant:²² 64.2 per cent of the firms that would have invested less without subsidies declared that they would have postponed the investment (they represent 17 per cent of the

²⁰ We are unable to distinguish among the three factors. However, as will be evident below, this is not particularly important since only 7 per cent of the recipient firms declare that lack of profitability is the reason behind their decision to invest less if not subsidised.

²¹ Two positive responses were allowed: multiple positive answers were suitably re-weighted to get frequencies totalling 100 across all choices.

²² Note that while it is hard to evaluate positively investment driven by time substitution on the grounds of efficiency, business-cycle smoothing may provide a reason why it could satisfy a policy-maker.

full sample of subsidised firms). We also discover that in 26.6 per cent of cases (7 per cent of the full sample) the project was deemed not profitable without aid. Finally, the results show that only for 8.5 per cent of firms that would have invested less if not subsidised (2 per cent of the full sample) was the lack of external funds the major hurdle to investing in profitable projects.²³ We also find that time substitution is more widespread among businesses located in the Centre and the North of the country, while lack of profitability and lack of external resources have more effect on southern companies. Finally, our results suggest that time substitution is more important for firms in traditional sectors, while the opposite holds true for lack of profitability.

Table A.5 presents some rough calculations. For each possible definition of additionality we derive the corresponding shares of additional investment²⁴ over subsidies (and total firm investment). We start by regarding as additional all investment by firms that did not answer that they would have made exactly “the same amount of investment in the same projects”. This type of additional investment includes: i) all the investment made by firms that would have invested the same amount if not subsidised, but in different projects; ii) investment by firms that would have invested less if not subsidised, preferring to postpone at least part of the investment; iii) investment by firms that would have invested less if not subsidised because there would have been no return without the incentives; and iv) investment by firms that would have invested less if not subsidised because they were financially constrained. This is the broadest notion of additional investment in our framework, but it nonetheless amounts (Table A.5, line 1) to a small fraction of the subsidies received (14.6 per cent) and investment made (6.5 per cent). We also find that this type of additional investment is larger in southern Italy (30.8 per cent of the subsidies, representing 20.4 per cent of total investment expenditure). Finally, larger firms made more efficient use of subsidies than their smaller counterparts (28.2 versus 6.3 per cent).

We then purge from the above notion of additional investment the share of firms that would have made the same amount of investment without incentives, but in different projects (line 2). This leaves the additional investment equal to 10.7 per cent of the subsidies (or 4.7 per cent of investment expenditure).

Subsequently, we consider non-additional the investment brought forward because of the existence of incentives. This leaves us with 1.3 per cent of the subsidies (or 2 per cent of the investment).

²³ The fact that the lack of external resources is not a major impediment to investment is confirmed by the responses to the survey question on credit constraints (see Bank of Italy 2005). Only 3.2 per cent of manufacturing firms declared that lenders were not willing to increase the volume of loans to them. This share rises to barely 4 per cent for subsidised firms and equals 3 per cent for unsubsidised firms.

²⁴ Additional investment is set equal to: (i) zero, for firms that would have invested the same amount without subsidies; (ii) total investment, for firms that would not have invested at all without subsidies; (iii) $(1-x/100) * \text{total investment}$, for firms that would have invested x per cent of their actual total investments without subsidies.

Finally, we take the most conservative notion of additionality and consider only investment by firms that would have invested less if not subsidised, because the banks or capital markets would not have been willing to finance even profitable projects. This amounts to 0.2 per cent of subsidies (0.2 per cent of total investment). The finding that aid seems to be comparatively more effective in the South and for larger firms remains largely confirmed.

5. Concluding remarks

Investment subsidies may distort competition and place a burden on public finance. However, to the extent that they stimulate additional investment there could be a trade-off against desirable consequences. At the end of the day, it could be that less competition and an extra fiscal burden is an acceptable price to pay for spurring economic growth.

The problem with this is that assessing the effectiveness of subsidies to stimulate additional investment is a daunting task. When evaluating the effects of government-sponsored projects one has to answer the hypothetical question of what would have happened without the aid. A number of difficulties arise at this point. First, it could be that recipient firms would have invested the same amount of money even without aid. Second, the availability of public money could have provided an incentive to bring forward projects originally planned for the future or to undertake relatively inefficient projects. By collecting data explicitly designed to take these difficulties into account, we try to shed some light on the scale of the investment activity that the recipient firm would have undertaken had it not been financed.

Our results suggest that investment subsidies have limited effectiveness. Without them, three-quarters of the firms financed would have made the same amount of investment; while the remaining quarter would have made the same amount in the future. Our calculations leave little room for optimism: the additional investment triggered by aid is barely 15 per cent of amount of the subsidies allocated to firms. Moreover, if more restrictive but reasonable definitions of what constitutes additional investment are adopted, that additional investment basically drops to zero.

A certain amount of caution is required when generalising our results as the data are limited to a single year and are collected by asking a hypothetical question. Nonetheless, the findings indicate that envisaging a more effective way to use public money should be high on the agenda of policy-makers as millions of euros' worth of financial resources support investment subsidies. They also suggest that leaving these resources with the private sector by means of lower taxation is an option that should not be overlooked.

Appendix A. Statistical tables

Table A.1

Number of subsidised and unsubsidised firms, by location, size and industry

		Location ^(a)		Size ^(b)		Industry ^(c)	
		Centre & North	South	Small	Large	Traditional	Other
Overall							
Subsidised	750	487	263	262	488	246	504
Unsubsidised	2,270	1,396	874	963	1,307	840	1,430
<i>Total</i>	3,020	1,883	1,137	1,225	1,795	1,086	1,934

Notes. (a) Location of the firm's head office. - (b) "Small" denotes firms with 20-49 employees and "Large" denotes firms with 50 employees or more. - (c) "Traditional" includes the following industries: textiles, clothing, leather, shoes, food, furniture, and paper; "Other" includes other manufacturing firms.

Table A.2

Average investment of subsidised and unsubsidised firms, by location, size and industry (€ thousand)

		Location ^(a)			Size ^(b)			Industry ^(c)		
		Centre & North	South	^(d)	Small	Large	^(d)	Traditional	Other	^(d)
Overall										
Subsidised	990	1,020	820	***	330	2,280	***	700	1,200	***
Unsubsidised	600	650	360	***	240	1,450	***	510	680	***
<i>Total</i>	700	740	450	***	260	1,670	***	550	810	***

Notes. Weighted winsorised sample estimates. (a) Location of the firm's head office. - (b) "Small" denotes firms with 20-49 employees and "Large" denotes firms with 50 employees or more. - (c) "Traditional" includes the following industries: textiles, clothing, leather, shoes, food, furniture, and paper; "Other" includes other manufacturing firms. - (d) Significance of the difference between the two means (* = p-value between 0.05 and 0.10; ** = p-value between 0.01 and 0.05; *** = p-value lower than 0.01).

Table A.3

Hypothetical decisions without subsidies, by location, size and industry
(% of subsidised firms)

	Overall	Location ^(a)			Size ^(b)			Industry ^(c)	
		Centre & North	South	^(d)	Small	Large	^(d)	Traditional	Other ^(d)
Same amount invested, same projects	67.7	70.9	43.8	***	64.3	74.2	**	64.3	69.1
Same amount invested, different projects	6.1	6.0	7.2		6.6	5.1		9.3	4.8
Less investment	22.5	20.5	36.9	***	24.6	18.4		24.5	21.6
No investment	3.7	2.6	12.1	***	4.5	2.3		1.8	4.5 *

Notes. Weighted winsorised sample estimates. (a) Location of the firm's head office. - (b) "Small" denotes firms with 20-49 employees and "Large" denotes firms with 50 employees or more. - (c) "Traditional" includes the following industries: textiles, clothing, leather, shoes, food, furniture, and paper; "Other" includes other manufacturing firms. - (d) Significance of the difference between the two means (* = p-value between 0.05 and 0.10; ** = p-value between 0.01 and 0.05; *** = p-value lower than 0.01).

Table A.4

Reasons for investing less or not investing at all without subsidies, by location, size and industry
(% of subsidised firms investing less without subsidies)

	Overall	Location ^(a)			Size ^(b)			Industry ^(c)	
		Centre & North	South	^(d)	Small	Large	^(d)	Traditional	Other ^(d)
Investments postponed without subsidies	64.2	68.8	49.3	***	65.9	60.8		78.2	58.8 ***
Unsubsidised investment not profitable	26.6	24.2	34.5	*	28.2	23.2		14.6	31.3 **
Projects profitable, funds unavailable	8.5	6.3	15.4	**	5.8	13.8	*	6.9	9.1
Other reasons	0.7	0.7	0.8		0.0	2.2		0.3	0.8

Notes. Weighted winsorised sample estimates. (a) Location of the firm's head office. - (b) "Small" denotes firms with 20-49 employees and "Large" denotes firms with 50 employees or more. - (c) "Traditional" includes the following industries: textiles, clothing, leather, shoes, food, furniture, and paper; "Other" includes other manufacturing firms. - (d) Significance of the difference between the two means (* = p-value between 0.05 and 0.10; ** = p-value between 0.01 and 0.05; *** = p-value lower than 0.01).

Table A.5

Additional investment

(%)

Overall		Location ^(a)			Size ^(b)			Industry ^(c)		
		Centre & North	South	^(d)	Small	Large	^(d)	Traditional	Other	^(d)
Ratio of additional investment to subsidies	(1)	14.6	11.9	30.8	6.3	28.2	**	77.2	11.7	***
	(2)	10.7	8.0	27.4	4.7	20.7	**	54.1	8.8	***
	(3)	1.3	0.5	6.4	0.8	2.1		5.9	1.1	**
	(4)	0.2	0.1	0.6	0.0	0.4		0.7	0.2	**
Ratio of additional investment to total investment	(1)	6.5	4.8	20.4	9.9	5.2	*	9.6	5.4	*
	(2)	4.7	2.9	19.6	7.4	3.7		8.0	3.6	*
	(3)	2.0	0.4	14.8	4.9	0.9	*	4.2	1.2	
	(4)	0.2	0.2	0.9	0.3	0.2		0.2	0.3	

Notes. Weighted winsorised sample estimates. (a) Location of the firm's head office. - (b) "Small" denotes firms with 20-49 employees and "Large" denotes firms with 50 employees or more. - (c) "Traditional" includes the following industries: textiles, clothing, leather, shoes, food, furniture, and paper; "Other" includes other manufacturing firms. - (d) Significance of the difference between the two means (* = p-value between 0.05 and 0.10; ** = p-value between 0.01 and 0.05; *** = p-value lower than 0.01).

(1) This form of additional investment includes: i) all investment by firms that would have invested the same amount if not subsidised, but in different projects; ii) investment by firms that would have invested less if not subsidised, preferring to postpone at least a part of the investment, iii) investment by firms that would have invested less if not subsidised because there would have been no return without the incentives; iv) investment by firms that would have invested less if not subsidised because they were financially unable to undertake profitable projects. - (2) This form of additional investment includes: ii), iii) and iv) above. - (3) This form of additional investment includes: iii) and iv) above. - (4) This form of additional investment includes: iv) above.

Appendix B. The Bank of Italy's Survey of industrial and service firms

The survey is run every year: interviews are made in the early months of the year to collect data on the previous year. The sampling design is stratified with a single stage (Särndal 1992). Strata are formed by the combination of economic activity, size class (in terms of number of employees) and region where the firm's head office is located. The sample size is determined by Neyman's optimum allocation to strata criterion in order to minimise the variance of the means of the main variables of interest (investments, revenues and number of employees) within the size classes. The second phase allocates the sample units proportionally among the Italian regions and economic activities. The sample units were originally chosen at random and are always re-contacted, provided that they still belong to the target population. Refusals and firms no longer in the target population are routinely replaced with similar units. The weighting process is done in two phases: in the first every firm in the sample receives a weight given by the ratio between the total number of firms and the actual sample size in the stratum. Strata are formed by the combination of size class and economic sector. The post-stratification adjustment to the geographical dimension produces only slight changes in the weights. In order to limit the amount of the post-stratification adjustment, the geographical variable used is formed by four aggregations of the twenty Italian regions (North-West, North-East, Centre, South and Islands). Much care is devoted to data quality checks: the panel survey structure allows data consistency across time within the same firm to be monitored (see Duncan et al. 1989). Outliers are spotted through selective editing techniques (Kott et al. 1995), in order to limit the respondent burden in the data checking phase. For further details regarding the survey see Bank of Italy (2005).

Appendix C. Data collection form

Effect of public subsidies on investment decisions and demand for finance

Did your firm benefit during 2005 from public aid or incentives for investment from the State or other public bodies in such forms as tax credit, subsidised credit, sunk contributions, etc.)?

yes no

If yes:

a) Amount of funds received in 2005 (€ thousands)		<input type="text"/>	
- investment in 2005 in projects eligible for public aid or incentives (€ thousands)		<input type="text"/>	
b) Without aid or incentives in 2005 your firm would have made (<i>answer 'yes' once only</i>):			
1) the same amount of investments in the same projects.....	<input type="checkbox"/> no	<input type="checkbox"/> yes	→
2) the same amount of investments, but in projects that were at least partly different	<input type="checkbox"/> no	<input type="checkbox"/> yes	→
3) a different amount of investments if yes: go to c) then d)	<input type="checkbox"/> no	<input type="checkbox"/> yes	
4) no investment at all if yes: go to d).....	<input type="checkbox"/> no	<input type="checkbox"/> yes	
c) As a percentage of total investments in 2005, how much would you have spent without aid or incentives?	<input type="text"/>	<input type="text"/>	%
d) What reasons would have led you to reduce or eliminate investments in 2005 if no aid or incentives had been available? (<i>only two answers possible</i>)			
1) there would have been no return on the investment without the incentives.....	<input type="checkbox"/> no	<input type="checkbox"/> yes	
2) without incentives it would have been better to postpone at least part of the firm's investments	<input type="checkbox"/> no	<input type="checkbox"/> yes	
3) the investments would have been worthwhile in any case, but institutional financiers (banks and other financial intermediaries, capital markets) would not have been willing to provide finance	<input type="checkbox"/> no	<input type="checkbox"/> yes	
4) other (<i>please specify</i>) ☞ _____	<input type="checkbox"/> no	<input type="checkbox"/> yes	

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