Università degli Studi di Bergamo

Allocation, effects and effectiveness of public incentive programmes to firms' outward internationalisation

PhD Thesis in
Economics and Management of Technology

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Contents

Acknowledgements

Introduction

This dissertation has as its central theme the evaluation of public incentives to outward foreign direct investments (FDI) implemented in Italy since early '90s.

Measures and incentives to internationalisation of firms have been traditionally investigated mainly from the host country perspective. Indeed, almost all developed and developing countries believe that inward FDI is beneficial for their local economy and, as a consequence, they offer a wide variety of incentives (Carlsson and Mudambi, 2003; UNCTAD, 2003).

Though policy makers are increasingly concerned with their implementation, effects and effectiveness, specific rigorous analyses are still lacking, and most of the empirical studies have focused exclusively on the attraction of inward FDI (Guisinger, 1992; Brewer and Young, 1997; Oxelheim and Ghauri, 2004). No evidence has been so far provided on the role and the effects of financial incentives for outward FDI.

The dissertation aims at filling this gap and advances the understanding of the business incentive from three different point of view: process, effects and effectiveness. In particular the dissertation is composed of three studies.

Based on an analysis of the behaviour of firms applying for outward FDI incentives, the first paper explores firm participation process in policy programmes. This study identifies and empirically tests the determinants of self-selection as firms apply for outward FDI incentives while controlling for the guidelines followed by the agencies that allocate incentives. Using firm-level data, this paper shows that the opportunity costs of applying, the financial constraints and the riskiness of FDI projects significantly affect firm behaviour in applying for public incentives, thereby suggesting the existence of self-selection mechanisms among eligible firms.

This is the first study that explicitly addresses the participation process in public incentives with regards to outward internationalisation and yields substantial in-

sights on program equity and on the design of non-experimental program evaluation.

The second paper provides an empirical analysis on the effects of financial public incentives to firm's domestic growth. Specifically, the analysis is conducted on 237 Italian firms that received an incentive in the period 1991-2007 vs. a counterfactual sample of firms that internationalised their activity in the same period without any incentive. The econometric results, stemming from a two step treatment effect model, reveal that incentives to firms' internationalisation cause domestic growth especially when targeted towards smaller companies.

Although some previous empirical studies (e.g. Lerner 1999) already had found that firms that obtained government financial support did actually perform better, causality could not be taken into account due to the absence of a proper counterfactual sample. Therefore, companies that obtained the incentive would have done just as well even without government financial assistance. On the contrary, taking into account the selection and self-selection issue, we can detect the net positive effects of the public incentive.

At the best of our knowledge this paper is the first systematic evaluation of public incentives addressing firms' outward internationalisation.

The third paper tests the effectiveness of different public policy tools on outward internationalisation using panel data and estimates the effects of public incentives on the intensity of outward internationalisation at the regional level. Empirical evidence is provided by analysing Italian investments over the period 2000-2006. The data show a statistically significant and positive impact of public financial incentives on outward FDIs, suggesting that public policy measures can be effective in overcoming the limits that affect firms along their internationalisation path.

The first and second empirical work in this dissertation are based on an original longitudinal dataset consisting of four matched sources:

(a)   the database Reprint, which provides a census of outward and inward FDIs in Italy since 1986. Reprint is updated yearly and it is sponsored by the Italian Institute for Foreign Trade;

(b)   Simest's[1] balance sheets, which provide information about the financial incentives granted by Simest under Law 100/1990 between 1992 and 2006;

(c)   Finest's[2] balance sheets, which provide information about the financial incentives granted by Finest under Law 19/1991 between 1994 and 2007;

(d)   the database AIDA, developed by Bureau van Djick, which provides structural and financial data for Italian public limited companies.

The dataset obtained by integrating of the above sources includes information on 568 firms that received public incentives and 991 internationalised firms that did not receive any public financial support from Simest or Finest; the sampled firms represent 98 percent of funded firms and 10 percent of the eligible population constituting the control group.

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[1] Simest is the largest institution for Italian businesses abroad, and it administers various forms of public support for the internationalisation of the Italian economy. Simest was set up as a limited company in 1990 (Law 100/1990). It is a public-private partnership controlled by the Ministry of International Trade and Commerce (76%), while private shareholders include banks and industrial business organisations. The primary objective of Simest is to promote the competitiveness of the Italian industry and the service sector by providing funding and advice to business outward investments.

[2] Finest was founded in 1992 pursuant to Italian National Law 19/1991 as an investment company that promotes economic co-operation with Eastern European countries. The main shareholders of Finest are the Regional Governments of Friuli Venezia Giulia and Veneto, the Autonomous Province of Trento (local public administrations of North East of Italy) and Simest. Finest provides its assistance to all companies whose headquarters are located in north eastern Italy (i.e., Friuli Venezia Giulia, Veneto and Trentino Alto Adige regions). Finest collaborates with companies to create or expand their businesses in foreign countries or to set up industrial and commercial relations with firms in target areas.

Also the third paper is based on an original dataset that combines several sources of information. Data on internationalisation via FDI and characterisation of Italian regions came from:

(a) Reprint, which provides a census of outward and inward FDI in Italy since 1986. It is updated yearly, and it is sponsored by the Italian Institute for Foreign Trade.

(b) Four Overseas Trade Ministry annual reports and annual publications, which collect information on Italian industrial policy between 2000 and 2006.

(c) Simest and Finest public agencies' balance sheets, which provide information about the assignment of financial incentives (i.e., equity participation and venture capital funds) to Italian firms throughout the period from 1991-2007.

(d) Istat census data, which report structural characteristics of the Italian regions in 2001, and annual Istat publications, which provide data on Italian export activities between 2000 and 2006.

(e) The EP-CESPRI database, developed by Cespri Università Bocconi, provides information on patents applied for at the European Patent Office (EPO) since 1978. The EP-CESPRI database is based upon applications published on a regular basis by the Espacenet Bulletin and is updated yearly.

Given 20 Italian regions and 7 years (2000-2006), the data set provides us with a total of 140 observations.

The three papers can be read independently; however there are obvious links among them since they examine the same topic from different perspective. One can thus interpret the first study as feed to the second and third study.

The presentation of the research methods themselves is important. In fact the issue is challenging also from a methodological perspective, as there is an increasingly perceived need for improving and developing adequate methodologies for public policy evaluation (see, for example the Special Issue of the International Review of Applied Economics, 2007).

In conclusion, the study of outward FDI promotion is still an underdeveloped area of research in international business. Nevertheless, the increasing role played by national governments in relation to MNE investment promotion entails that more study in this area is necessary.

The determinants of firm participation
in public incentive programmes for outward internationalisation

Abstract: Based on an analysis of the behaviour of firms applying for outward FDI (foreign direct investment) incentives, this study explores firm participation processes in policy programmes. This paper identifies and empirically tests the determinants of self-selection as firms apply for outward FDI incentives while controlling for the guidelines followed by the agencies that allocate incentives. Using firm-level data, this paper shows that the opportunity costs of applying, the financial constraints and the riskiness of FDI projects significantly affect firm behaviour in applying for public incentives, thereby suggesting the existence of self-selection mechanisms among eligible firms.

Key words: public policy, process evaluation, outward FDI.

1. Introduction

The outward internationalisation of firms is an increasingly important object of public intervention in most OECD countries (UNCTAD, 1993, 2003) since internationalisation is acknowledged as a determinant of national economic growth (Wright *et al.*, 2007). Since the 1990s, governments have encouraged this process by promoting measures such as financial support, investment insurance, fiscal incentives, databases on foreign markets and technical assistance (UNCTAD, 1998). The implementation of measures to support outward FDIs is usually carried out by public agencies working under guidelines issued by central governments or local public administrations (UNCTAD, 1996b).

Given the rising importance of such policy tools (UNCTAD, 1997; 2003), we know surprisingly little about either their effects or their allocation processes. On the one hand, incentives and policy measures have often been criticised as ineffective (Farrel, 1985; UNCTAD, 1998; Lim, 2005; Markusen and Nesse, 2006), yet systematic and rigorous analyses are still lacking. On the other hand, no evidence exists on the processes that drive the allocation of public incentives to outward FDIs. There is a general push for collecting evidence about the effectiveness of different policy tools, but the focus on the outcome of those tools has somehow diverted attention away from the problems surrounding incentive allocation. However, the understanding of the participation processes that drive incentive allocation represent a compulsory promise in order to collect reliable evidence of both direct effects, indirect effects and overall effectiveness of a policy tool (Heckman and Smith, 2004).

Few studies analyse participation processes at the firm level as the outcome of agency selection processes (for a review, see Blanes and Busom, 2004), and even less attention is paid to the application behaviour of firms. We know surprisingly little about how potential applicants decide whether or not to apply. To the author's knowledge, the only paper that studies the application process for a public industrial incentive is Blanes and Busom (2004), who estimate reduced-form models of joint applications and granting decisions for R&D subsidies.

Consequently, the main aim of this paper is to analyse firm behaviour in applying for public incentives by identifying the determinants of self-selection and controlling for eligibility, acceptance and enrolment. This paper represents one of the first attempts to provide a theoretical interpretation and a rigorous evaluation of public incentive allocations as concerns outward internationalisation programmes. The proposed methodological approach draws on the extensive treatment effects and labour supply literature (for a survey, see Blank and Rugless, 1996; Heckman *et al.*, 1999; Blundell and Costa Dias, 2002; Blundell and MaCurdy, 1999).

The empirical analysis in this paper is based on data on internationalised Italian firms that received at least one financial incentive for international growth outside the European Union during the period 1992-2007 and on a sample of potential applicants that have not obtained such an incentive.

The paper is structured as follows. The next section surveys the existing literature and formulates the hypotheses that drive the empirical analysis. The following sections present the data and the methodology. The fifth section describes the variables used in the empirical analysis. Section six illustrates the results of the econometric estimates, while final comments are reported in section seven.

2. Literature background and research hypotheses

Public policy evaluation includes process (or implementation) evaluation and outcome (or impact) evaluation (Freeman *et al.*, 2004). In the present paper, we will not discuss the impact of public financial incentives to outward internationalisation (Bannò and Piscitello, 2008), but we will take a closer look at the public incentives application process, which represents a significant part of the implementation of a policy tool.

Process evaluation, a particular form of *ex post* or *in medias res* public policy evaluation, is a procedure that verifies whether or not a support program is delivered as intended to the target subjects (Scheirer, 1994). Unfortunately, implementation processes are often unforeseeable and difficult for governments to monitor.

However, thanks to repeated measures over time, program process monitoring can assess whether public intervention is operating as intended and according to appropriate standards.

It is worth noting that early literature framed implementation processes simply as administrative routines that would occur of and by themselves once policy measures were brought into effect by legislation and agencies mandated with administrative authority (Corbett and Lennon, 2002; Vedung, 1997). However, this view has been undermined, as a graving body of literature, also known as implementation research, has focused on comparing policy implementation with the original intentions of policy makers and on identifying the obstacles to successful policy execution (Wallman, 2007; Holcomb and Nightingale, 1999).

Implementation is not simply an administrative problem (Corbett and Lennon, 2002). On the contrary, it is a complex process involving distinct actors, namely, governmental bodies, public agencies and firms. Policy implementation is in fact inevitably the result of the interaction among multiple players with contrasting goals due to their different objectives, power and capabilities.

Understanding the role of each participant in the development of a public policy is a key factor in implementing incentive structures that will achieve the policy maker's objectives in the most efficient way (Schilder, 2000; Mudambi, 1999). Heckman and Smith (2004) assert that understanding the process of participation in public programmes is important for at least three reasons. First, it allows to identify the sources of inequality in the allocation of public services. Overall, differences in participation may result in very different distributions of the wealth function. In particular, studying the determinants of participation can reveal the existence of unexpected barriers to participation itself (Blanes and Busom, 2004). Second, participation patterns can reveal useful information about the functioning of support programmes by separating the roles of the agencies in charge of incentive allocation from the participation initiated by firms. Third, information on participation processes strong affects program evaluation strategies only when observing counterfactual conditions. Public policy evaluators can un-

derstand whether the observed outcomes are effectively caused by a particular public policy (Marschak, 1956). The two major sources of problems, also known as threats to validity (Bartik and Bingham, 1997), are represented by omitted variable bias and selection bias[3]. As it is impossible to determine exactly what would happen in absence of incentive, we need a methodology that allows to identify the causal relationship between the incentive and the outcome while controlling for other possible determinants of the outcome itself (Bartik and Bingham, 1997). Additionally, one must account for possible selection biases, there may be systematic differences between benefiting and non-benefiting firms that may affect the impact of the incentive but do not depend on the access to the incentive itself. In particular, selection bias may occur due either to firm self-selection or agency selection. In the first case, firms that apply for the incentive may not be representative of the total population of eligible firms, while in the second case the agency may accept only the applications that meet specific selection criteria.

Several methods have been proposed in the literature to address selection bias, including, for example, propensity score matching methods, instrumental variables, and control function methods. In any case, these methods always require the clear specification of the reference group and different types of identification strategies (Heckman and Robb, 1985; Heckman and Navarro-Lozano, 2004). Nevertheless, the literature on matching provides no guideline on the choice of the conditional variables that generate selection (Heckman and Navarro, 2004), even if various analyses stress the importance of selection bias (Heckman et al., 1998).

Within the context of public incentives for outward internationalisation, the allocative problem can be decomposed into five steps, each one involving different actors. These steps are: eligibility, awareness, application, acceptance and enrolment (Heckman and Smith, 2004). Three main actors are involved in the participation process, namely, policy makers, firms and public agencies. Policy makers set the criteria of eligibility, which will be interpreted by the agencies in charge of

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[3] Heckman (2001) provides an extensive treatment of selection bias

incentive programme management. Based on their awareness (i.e., the extent to which a firm is informed about the existence of a public incentive), firms decide whether to apply or not. Thus, firms self-select to participate in the allocation process. Finally, public agencies make granting decisions by choosing which applications will be accepted and which companies will be enrolled in the incentive programme.

An important part of the participation process consists of two decisions made by two different subjects: self-selection behaviour by firms (i.e., awareness and application) and grant allocation by public agencies (i.e., acceptance and enrolment). With the first decision, firms choose if and when they will apply for a public incentive, while in the second case public agencies decide which applicant firms will be granted. Literature has paid little attention to these last two steps (i.e., acceptance and enrolment) and virtually no attention to firm self-selection processes.

Studies investigating participation in public programmes often indicate that many subjects eligible to participate on the basis of the selection criteria proposed by policy makers do not in fact participate (Blank and Ruggles, 1996). Assuming that firms are aware of the existence of an incentive and that eligibility rules are not too restrictive, several reasons may drive a firm to not apply. The decision depends on the expected benefits of participation compared to monetary and non-monetary costs. In particular, we identify application costs, financial constraints and the riskiness of the eligible projects as significant drivers of the application decision.

Even if the eligibility conditions set by policy makers are not particularly restrictive *ex ante*, an application still involves significant costs. Information gathering, reporting and other non-monetary costs are important obstacles to actual program participation (Ashenfelter, 1983). Consequently, we expect that experience and managerial capability reduce the costs of applying and increase the likelihood of self-selection in applying. Consequently, the first hypothesis tested by our empirical analysis can be detailed as follows.

HP 1: Managerial skills, experience and informational barriers induce self-selection by affecting the cost of applying.

The second hypothesis concerns the relationship between firms' financial constraints and the decision to apply for a public incentive. The actual cost of going abroad may vary across firms as a result of differences in the availability and cost of existing financial resources (Maseneire and Clayes, 2006; Bellone *et al.*, 2008; Desai *et al.*, 2006). As discussed in recent literature on SMEs, the market for FDI financial support is subject to considerable imperfections, which often result in financial constraints (De Maeseneire and Clayes, 2006). For these reasons, financial market imperfections can curb outward investment projects and can limit a firm's capability to engage in FDIs. Consequently, we expect a positive relationship between the financial constraints perceived by a firm and the probability of self-selection to apply for public funds (Hyytinen and Toivanen, 2005).

HP 2: Financial constraints affect self-selection by reducing the cost of the project.

Besides firm-specific characteristics, project characteristics are also expected to affect the decision to self-select. As for incentives specifically addressed to (inward and outward) FDIs, some papers have demonstrated that different kinds of inward incentives do not equally appeal to all types of investors. On the contrary, the characteristics of the foreign project determine which incentives are preferred by firms (Rolfe *et al.*, 1993; Mudambi, 1999). In fact the granting agency takes risks to the full extent of the loan in case of project failure, while in case of project success, the MNE's returns are lower, as it must repay the loan. Thus, we expect that firms submit the most risky projects to public agencies and finance the least risky ones internally or through the private capital market.

HP 3: The riskiness of an FDI project affects the propensity to apply for a public incentive by increasing the benefit of participation.

3. The Data

3.1 Italian Agencies: Simest and Finest

Most of the OECD countries have promoted outward FDIs since the early 1990s by providing public venture capital, public grants and public insurance at preferential rates. These incentives are generally managedby national development financial institutions, which are increasingly involved in supporting outward foreign direct investments (UNCTAD, 1993, 1996a; Gergely, 2003).

In 2007, Italy invested about 3 percent of total industrial policy expenditures in promoting exports and inward and outward internationalisation. Italian firms investing abroad are supported by two public agencies: Simest and Finest.

Business Needs	Tools provided by Simest
Investment in a foreign company	• SIMEST participation in the equity of foreign companies • Reduced interest rates • Venture capital fund • Venture capital fund for start-up firms (Law 100/90; Law Decree 143/98; Law 35/40; Law 19/91)
Scouting of business opportunities	• Business scouting and matchmaking (Law 100/90)
Advisory services and funding support	• Consultancy and support services in setting up investment initiatives (Law 100/90)
Analyses of foreign market	• Financial support to feasibility studies and technical support (Law Decree 143/98; Law 35/05; Ministerial Decree 136/00)
Market penetration in non-EU countries	• Financial support to the establishment of long-term initiative (Law 394/81)
Participation in international tenders	• Financial support to the tender process (Law 304/90)
Export of capital goods	• Interest rate stabilization on export credits (Law 143/98)

Table 1: Tools provided by SIMEST (Source: www.simest.it)

Simest, the largest institution supporting Italian businesses abroad, was set up as a limited company in 1990 (Law 100/1990). It is a public-private partnership controlled by the Ministry of International Trade and Commerce (76%), while private shareholders include banks and industrial business firms. The primary objective of Simest is to promote the competitiveness of the Italian industry and service sector by providing funding and advice to outward investors. In order to achieve these goals, Simest provides Italian companies with several tools to support foreign business in all phases of development (Table 1).

The other Italian agency in charge of distributing public incentives to outward FDIs is Finest. The agency was founded in 1992 pursuant to Italian National Law 19/1991 as an investment company that promotes economic cooperation with Eastern European countries. The main shareholders of Finest are the Regional Governments of Friuli Venezia Giulia and Veneto, the Autonomous Province of Trento[4] and Simest. Finest provides assistance to all companies located in the North East of Italy (i.e., the Friuli Venezia Giulia, Veneto and Trentino Alto Adige regions). Finest collaborates with companies to create or expand their business in foreign countries or to set up industrial and commercial relations with firms in target areas. In particular, Finest acquires shares in foreign companies and provides assistance to entrepreneurs.

This paper focuses on Law 100/1990, executed by Simest, and Law 19/1991, executed by Finest, which provide examples of public financial incentives that encourage outward internationalisation. The examined business incentives consist of capital loans at interest rates below the market rates. Moreover, in case of failure of the foreign project, loans need not be paid back (Law 394/1981).

According to Law 100/1990, Simest can directly invest up to 25% of the equity of the foreign venture, for a maximum of 8 years. Since 2005, the public agency can acquire up to 49% for a longer period. Simest can evaluate investment proposals presented by firms, partners of cooperative agreements, cooperatives,

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[4] All these institutions are local public administrations of North Eastern Italy.

consortia and business associations. Moreover, according to Law 100/1990, priority should be given to initiatives by Italian SMEs investing in Eastern Europe. Projects in the same sector of their parent company are encouraged; however, no sector is excluded. Projects that entail the divestment of R&D, sales or production activities in Italy are excluded (Law 80/2005). Applications have to detail the objectives and the business plan of the foreign investment. Every year Simest receives between 100 and 200 applications. The accepted applications rose from 35 in 1994 to about 100 in 2006 (Figure 1).
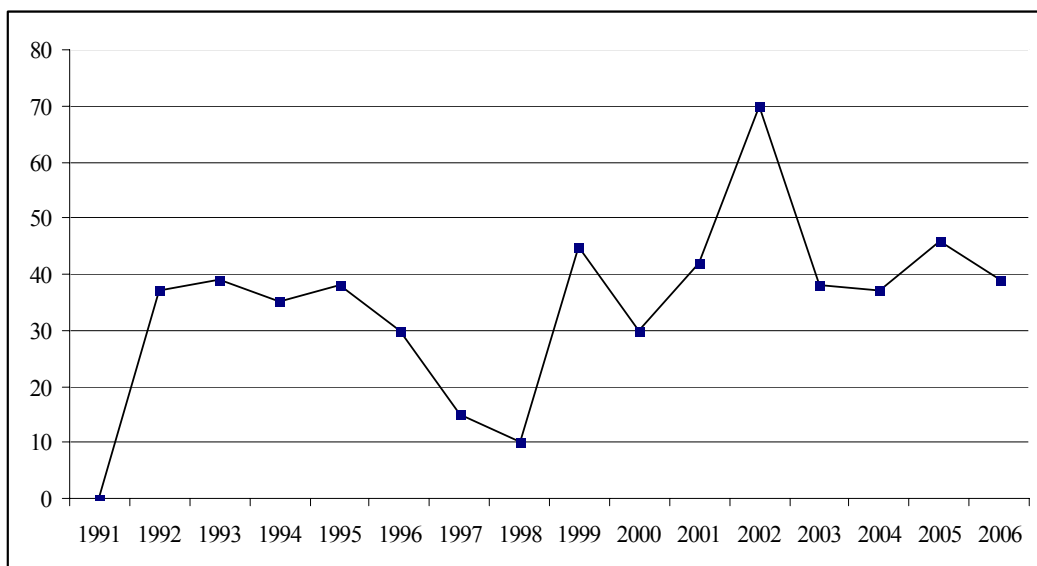
Figure 1: Approved, financed and abandoned projects from 1991 to 2006

Between 1992 and 2006, Simest supported 863 investment projects outside the European Union and acquired shareholdings in 469 Italian foreign affiliates for a total amount of 7.543 million euros and 189.560 employees. Minority shareholding accounts for about 10% of total investment. In the same period Simest also subscribed 150 equity increases for a total of 412 millions of euro and sold 253

shareholdings for a total of 193,4 millions of euro. In 2006 minority stakes and dividends generated 12,6 million euros of return with a return on equity of 5.2%.

Like Simest, Finest co-invests as a minority shareholder in foreign partners of companies located in North East Italy[5].

3.2 The Dataset

The dataset used in the empirical analysis combines four different sources of data:

    (f)   the database Reprint, which provides a census of outward and inward FDIs in Italy since 1986. Reprint is updated yearly and it is sponsored by the Italian Institute for Foreign Trade;

    (g)   Simest's balance sheets, which provide information about the financial incentives granted by Simest under Law 100/1990 between 1992 and 2006;

    (h)   Finest's balance sheets, which provide information about the financial incentives granted by Finest under Law 19/1991 between 1994 and 2007;

    (i)   the database AIDA, developed by Bureau van Djick, which provides structural and financial data for Italian public limited companies.

The dataset obtained by integrating of the above sources includes information on 568 firms that received public incentives and 991 internationalised firms that did not receive any public financial support from Simest or Finest.

The sampled firms represent 98 percent of funded firms and 10 percent of the control group. As the eligibility condition for funding is an FDI destination outside the European Union, any firm based in Italy can apply for the public incentives examined in this study.

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[5] Finest can directly invest in foreign ventures up to 25% for a maximum of 8 years. Since 2005 it is entitled to acquire up to 49% of foreign equity for a longer period.

4. Methodology

Depending on the type of program under evaluation and the specific objectives of the process analysis, several methods can be used. Qualitative analyses are the most frequently used methods, including reviews of existing documents, management information systems, interviews, focus groups, surveys typically conducted through structured questionnaires, and participant and non-participant observations (Potuček *et al.*, 2003). Nevertheless, the rising demand for quantitative methods in public policy evaluation reflects the desire of elected officials to define better polices, to assess performance, to evaluate the implementation process and to ascertain impacts (Mosselman and Prince, 2004; Lenihan *et al.*, 2007; Yang, 2007). The designers of policy tools look at econometric analysis with increasing expectations; see, for example, the 2008 Special Issue of the *Journal of Econometrics* on the use of econometrics in informing public policy makers. Typical econometric studies focus on the average impact of the public tool under evaluation. However, the empirical analysis of the implementation process and, in particular, the allocation process are attracting growing interest.

The allocation process is particularly difficult to analyse, because researchers can seldom separately observe application behaviours by firms and grant allocation decision by public agencies. (Blanes and Busom, 2004). The most frequent limitation faced by researchers is the impossibility of identifying unsuccessful applications and the characteristics of rejected projects. Consequently, it is often impossible to identify the impact of the agency selection criteria from other factors driving firm behaviour, such as self-selection.

In order to solve the above problem, previous studies focused on a single step, e.g. the allocation process (Feldman and Kelley, 2006), or jointly considered the application and allocation processes (Blanes and Busom, 2004).

Also the present empirical analysis had to cope with missing information on rejected applications. Data do not consequently allow for separate estimates of the effects of application decisions by firms and granting decisions by the public agency. As in most studies, data limitations forced us to combine application and

allocation processes into a single step. However, we try to relax this limitation by including determinants of self-selection as well as variables accounting for the allocation of funds by agencies as control variables.

The empirical analysis is based on a probit regression of the determinants of firm application and agency acceptance processes. Combining these two stages in the participation process means that the patterns reflect the joint influence of a firm's decision to apply for an incentive and an agency's decision to accept or reject an application.

The dependent variable, D_Incentive, is a dummy variable equal to 1 if a firm has launched an FDI project with the support of a public financial incentive and zero otherwise.

It must be noted that if a firm correctly anticipates the selection criteria as stated by the act that institutes the public incentive, the determinants of the application process overlap with those of the granting decision, and no identification problem exists (Busom, 2000). For these reasons, we identify two sets of independent variables: firm behaviour variables and control variables that explain the agency selection criterion.

The model is:

$$\text{D\_Incentive}_i = \alpha \ \text{Firm\_behaviuor}_i + \beta \ \text{Control\_variables}_i + \varepsilon_i$$

5. The empirical variables

Hypothesis 1 argues that managerial skills and other related factors affect the propensity to self-selection. The proxies employed to assess managerial skills include firm size (Buckley, 1989; Blanes and Busom, 2004) and age (Merito *et al.*, 2007). We expect that larger and older firms and firms belonging to a group will be more likely to apply for an incentive, as their higher managerial competences reduce application costs.

Because of the existence of asymmetric information between the agency and the firms, the cost of revealing information about the project should be lower for firms located close to an agency.

With reference to the second hypothesis, which focuses on the relationship between a firm's financial constraints and the choice to apply for a public incentive, we proxy a firm's financial constraints by its solvency ratio. As financial market imperfections can limit a firm's chance to engage in FDIs, we expect a positive relationship between the existence of financial constraints and the probability of going abroad thanks to a public incentive (Hyytinen and Toivanen, 2005).

An outward FDI often involves fixed, non-recoverable set-up costs (Bellone *et al.*, 2008). A minimum volume of revenues is consequently necessary to move abroad with commercial and, above all, productive FDIs. In fact, manufacturing investments often require much larger investments in fixed assets, such as land and equipment, than service operations (Rolfe *et al.*,1993). For this reason, we expect that foreign initiative in the service industry will be less likely to apply for a public financial incentive.

Investors acquiring existing operations may be more interested in incentives that depend upon the generation of profit rather than in reducing their initial investment (Rolfe *et al.*, 1993). We consequently expect that firms investing in greenfield projects have a higher propensity to apply for financial incentives than firms investing in expansion or acquisition projects (Rolfe *et al.*, 1993; Mudambi, 1999).

The third hypothesis suggests a positive relationship between a firm's decision to apply and the riskiness of the FDI project. Past experience in international markets, proxied by the number of previous FDIs, makes a firm more diversified in term of risk and thus less bounded by risk diversification. Moreover, past experience in countries characterised by high political hazard reduces a firm's sensitiveness to this type of risk in subsequent entry decisions (Henisz, 2004), consequently reducing the propensity to apply for a public incentive.

The mode of entry in foreign markets is likely to differ on key dimensions, such as the amount of committed resources, the extent of a project's risk and the potential return. Modes of entry involving higher levels of commitment, higher transaction costs and higher investment costs (i.e., a foreign majority stake) positively influence a firm's decision to apply for public financial incentives.

Institutional differences between domestic country and host country amplify the difficulties in gathering, organising and interpreting the information necessary for successful entry. Investors are consequently more likely to enter countries characterised by a stable policy system, similar culture and similar institutional structures (Henisz, 2004). Where the above conditions are not met, public aid is perceived as a means to lower systematic, country-level risk. Moreover, firms sensitive to contracting and political hazard[6] will take mitigating actions (Henisz, 2000, 2004) and partner with home country institutions endowed with a comparative advantage in interacting with the host country institutions. In summary, we expect investments in developing countries to be more likely to ask for public aid.

As previously mentioned, Simest and Finest allocate incentives according to a selective funding practice that follows specified criteria. According to policy objectives, agencies should favour SMEs, investments in Eastern Europe and projects that generate larger spillovers. According to the institutional guidelines, firms operating in the same sector as the parent company should be favoured. Intertemporal effects caused by different availability of public funding should also be taken into account. For this reason, we include a cohort dummy that captures the growing availability of public found from 2002 onwards. We also include industry dummies as control variables[7].

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[6] Henisz (2004) defines political hazard as the probability that a policy change by the host country government will either directly (seizure of assets) or indirectly (adverse changes in taxes, regulations or other agreements) diminish the expected return on assets of FDIs.

[7] Ten industry dummies have been considered: services, wood products, raw materials, chemical and pharmaceutical, building and construction, electronics, industrial machinery, automotive, food tobacco and beverages, textile and the baseline plastic and rubber

Variable	Description	Source
Dependent Variable		
D_Incentive	Dummy variable taking the value of 1 if the firm launched an FDI project backed by an incentive in t_0, and zero otherwise	SIMEST and FINEST balance sheets
Independent Variables		
Experience	Age of the firm (years) in t_{0-1}	AIDA
International_experience	Number of outward FDIs held in t_{0-1}	REPRINT
Location	Dummy variable taking the value of 1 when the firm is located in the same province of the agency and zero otherwise	SIMEST and FINEST balance sheets, REPRINT
Solvency_ratio	Ratio between equity and total assets in t_{0-1}	AIDA
Services	Dummy variable taking the value of 1 when the firm is active in the service industry, and zero otherwise	REPRINT
Greenfield	Dummy variable taking the value of 1 if the foreign affiliate is a greenfield, and zero otherwise	REPRINT
Majority	Dummy variable taking the value of 1 if the foreign affiliate is majority-owned by the parent company in t_{0-1}, and zero otherwise	REPRINT
Developing_countries	Dummy variable taking the value of 1 for FDI targeting developing countries, and zero otherwise	REPRINT
SME	Dummy variable taking the value of 1 when the firm has less than 250 employees in t_{0-1}	AIDA
Group	Dummy variable taking value 1 if firm belongs to a group	AIDA
East_Europe	Dummy variable taking the value of 1 when the FDI destination country is Eastern Europe, and zero otherwise	REPRINT
Diff_industry	Dummy variable taking the value of 1 when the foreign firm is not active in the same sector as the parent company	REPRINT, AIDA
Cohort_2002_2006	Dummy variable taking the value of 1 when the FDI is realised between 2002 and 2006, and zero otherwise	SIMEST and FINEST balance sheets, REPRINT
Industry dummies	Dummy variable taking the value of 1 when the firm is active in the specific industry, and zero otherwise	REPRINT

Table 2: Descriptions of the variables and sources of data

All independent variables, whether related to structural, financial or project characteristics, refer to the year before the FDI start-up in order to appreciate the impact of these variables on the probability of going abroad with the support of an incentive supplied by Simest or Finest.

The explanatory and dependent variables are summarised in Table 2. Table 3 displays the descriptive statistics of the explanatory variables for the entire sample, while Table 4 provides preliminary test of the difference between firm-specific and project-specific features of companies which internationalise with and without public financial support.

The high significance of differences between the two groups provides preliminary evidence of the opportunity to investigate the likeliness of obtaining an incentive based on firm-specific and project-specific variables.

The correlation matrix, reported in Table 5, reveals the correlation indices between the examined variables.

	Minimum	Maximum	Mean	Std. Deviation
Experience (years)	1	400	27.40	39.63
International_experience (FDIs)	1	515	37.95	74.17
Solvency_ratio (%)	-25.08	99.78	32.51	18.89

	Minimum	Maximum	%
D_Incentive	0	1	36.96
Location	0	1	18.00
Services	0	1	41.22
Greenfield	0	1	47.77
Majority	0	1	87.17
Developing_countries	0	1	72.14
SME	0	1	40.20
Group	0	1	48.40
East_Europe	0	1	38.93
Diff_industry	0	1	43.76
Cohort_2002_2006	0	1	42.36

Table 3: Descriptive statistics

	Benefiting Firms (568)	Non-Benefiting Firms (991)	Sign.
Firm characteristics			
Experience[a]	30	26	**
International_experience[a]	10	54	***
Location[c]	30%	11%	***
Solvency_ratio[b]	26.31%	36.15%	***
Services[c]	25%	51%	***
SME[c]	46%	27%	***
Group[c]	40%	53%	
Project characteristics			
Greenfield[c]	57%	42%	***
Majority[c]	91%	85%	***
Developing_countries[c]	87%	63%	***
East_Europe[c]	64%	24%	***
Diff_industry[c]	29%	53%	***

a t-Test between the two categories; (mean)
b Mann-Witney Test between the two categories; (mean) (%)
c Proportion Test between the two categories; (median) (%)

Table 4: Comparison between benefiting firms and non-benefiting firms

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	Experience	1												
2	International_experience	0.073	1											
3	Location	-0.052	-0.048	1										
4	Solvency_ratio	0.045	0.210	-0.077	1									
5	Services	0.103	0.139	-0.026	0.077	1								
6	Greenfield	0.106	-0.067	0.093	-0.135	-0.095	1							
7	Majority	-0.009	-0.045	-0.001	-0.073	0.054	-0.059	1						
8	Developing_countries	0.060	-0.118	0.044	-0.072	-0.318	0.214	-0.048	1					
9	SME	-0.133	-0.344	0.055	-0.297	-0.128	0.126	0.012	0.154	1				
10	Group	0.074	0.277	-0.040	0.334	0.172	-0.115	-0.007	-0.176	-0.794	1			
11	East_Europe	0.081	-0.178	0.118	-0.141	-0.200	0.082	0.080	0.357	0.242	-0.199	1		
12	Diff_industry	-0.094	0.107	0.004	0.145	0.371	-0.116	0.041	-0.247	-0.221	0.254	-0.244	1	
13	Cohort_02_06	0.032	-0.020	0.185	-0.034	0.153	0.111	0.061	-0.024	-0.026	0.038	0.036	0.105	1

Table 5: Correlation matrix

6. Results of the empirical analysis

Estimated results of the probit regression are shown in Table 6 which reports two distinct specifications (respectively, Model 1 and Model 2). The columns of coefficients show the estimates obtained for a model that includes 568 firms that received incentives and a control group constituted by 991 firms.

First of all, we note that the eligibility rules had a substantial effect on access to public incentive (i.e., no benefiting FDIs are present in European Union), while the proxies for application costs, financial constraints and project riskiness support the existence of self-selection.

According to the first hypothesis, overall experience increases the probability of receiving an incentive: the coefficient of variable Experience is positive and significant at $p < 0.05$ in Model 1 and at $p < 0.01$ in Model 2. Moreover if a firms belong to a group increases the probability of receiving an incentive: the coefficient of variable Group in Model 2 is positive and significant at $p < 0.05$. This evidence supports the intuition that when application costs are not negligible, managerial capabilities are needed to overcome them.

The proximity to the premises of an agency in charge of allocating public funds increases the probability of receiving an incentive, since the coefficient of variable Location is positive and significant at $p < 0.01$ in both models. This findings supports the hypothesis that information barriers are a significant determinant of participation status.

Firms with high financial constraints are more likely to participate, in accordance with hypothesis two. *Prima facie*, the higher the total amount of debts, the higher the likelihood to apply for and obtain a public incentive (Solvency_ratio is negative and significant at $p < 0.01$ in both Model 1 and 2).

The regression confirms the existence of significant industry-specific effects, as manufacturing firms have a higher probability of receiving a financial incentive (Services is negative and significant at $p < 0.05$ in both Model 1 and 2). This confirms that the level of financial commitment in foreign projects positively influ-

ences a firm's self-selection as well as the willingness to invest in greenfield projects (Greenfield is positive and significant at p < 0.01 in both Model 1 and 2).

Probit Regression

Dependent Variable: D_Incentive

	Model 1			Model 2		
	Coeff.	**Std. Err.**	e^{β}	**Coeff.**	**Std. Err.**	e^{β}
Cons	-0.071	0.439	0.931	-0.070	0.440	0.931
Firms' self selection variables						
Experience	0.002**	0.001	1.002	0.002***	0.001	1.002
International_experience	-0.658***	0.123	0.518	-0.631***	0.126	0.532
Location	0.624***	0.100	1.866	0.615***	0.101	1.850
Solvency_ratio	-0.292***	0.060	0.747	-0.015***	0.002	0.985
Services	-0.851**	0.386	0.427	-0.828**	0.395	0.437
Greenfield	0.299***	0.101	1.349	0.309***	0.101	1.362
Majority	0.2327***	0.116	1.262	0.295**	0.117	1.343
Developing_countries	0.261***	0.099	1.298	0.322***	0.100	1.380
Control variables						
SME	0.075	0.083	1.078			
Group				0.232***	0.084	1.261
East_Europe	0.736***	0.082	2.088	0.784***	0.082	
Diff_industry	-0.291***	0.085	0.748	-0.311***	0.088	0.733
Cohort_02_06	0.517***	0.080	1.677	0.512***	0.080	1.669
Industry_dummies	Yes			Yes		
	Number of obs = 1572			Number of obs = 1572		
	LR chi^2 (22) = 587.72			LR chi^2 (22) = 608.27		
	Prob > chi2 = 0.000			Prob > chi2 = 0.000		
	Pseudo R2 = 0.284			Pseudo R2 = 0.294		

* Significance at the 10% level

** Significance at the 5% level

*** Significance at the 1% level

Table 6: Probit model, participation in National public incentives

In accordance with the third hypothesis, a firm's international experience reduces the odds of receiving an incentive (at $p < 0.01$ in both Model 1 and 2); firms with past FDIs are less bounded by risk diversification and consequently less interested in asking for public aid. As the coefficient of International_experience is negative and significant in both models, the incentive is not used against the intentions of policy makers to support further internationalisation by already-experienced firms.

The mode of entry also positively influences the probability of obtaining a public incentive. A higher capital appropriation (Majority is significant at $p < 0.01$ in Model 1 and at $p < 0.05$ in Model 2) is linked to requesting incentives, revealing that the higher is the commitment, the higher is the phenomenon of firm self-selection.

Firms investing in developing countries are more likely to enjoy financial incentives (Developing_countries is significant at $p < 0.01$ in both Model 1 and 2), confirming that the riskiness of FDI projects significantly affects firm behaviour in applying insofar as public aid is perceived as a means to lower systematic, country-level risk.

Interestingly and contrary to expectations, as the selection guidelines favour initiatives by small firms, the coefficient of the dummy SME is not significantly different from zero. Moreover, size might also signal a need to ask for public incentives, because small firms may be more credit constrained (Buckley, 1989). Thus, public agencies may be willing to favour them. In both cases, the expected net effect may again be the result of a variable affecting both types of decisions in the same direction.

Consistent with the guidelines stated by the laws that instituted the incentives here under consideration, the regression in both two models shows a significant coefficient for initiatives in Eastern Europe (East_Europe is positive and significant at $p < 0.01$) and in the same business sector as the parent company (Diff_industry is negative and significant at $p < 0.01$).

The cohort dummy shifts intertemporal effects caused by different availability of public funding, indicating that firms had a higher probability of receiving incentives after 2002 (Cohort_02_06 is positive and significant at $p < 0.01$ in both Model 1 and 2)[8].

7. Conclusions

This article provides new evidence regarding the process evaluation of participation in public incentives. This is the first paper that explicitly addresses the participation process in public incentives with regards to outward internationalisation and yields substantial insights on program equity and on the design of non-experimental program evaluation.

The evidence on the incentives allocated by the public Italian agencies Simest and Finest has been used to analyse the determinants of firm participation processes and reveals their complex nature. In particular, based on a probit model, our study suggests that after controlling for agency selection criteria, differences in participation status caused by firm self-selection are due also to differences in application costs, financial constraints and riskiness of FDI projects.

First of all, the results presented here suggest that improperly structured incentives may generate unsatisfactory responses by firms that self-select in applying, generating adverse selection.

One the one hand, firm size is a barrier for some firms, and thus incentives do not succeed in attracting smaller firms. Hence, public incentives are only partially attracting projects and firms with greater potential for growth and spillovers (Bannò and Piscitello, 2008). On the other hand, considerations about risk-shifting suggest that if the government absorbs too much risk, the investing firm may be tempted to further increase the risk of the foreign project, and so careful consid-

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[8] The only industry dummy with significant coefficient are automotive and electronics (both negative and significant at $p < 0.10$)

eration regarding incentive assignments is necessary to reduce the incentive for more risk (Giebe *et al.*, 2006).

Westhead *et al.* (2007) suggest the need for more balanced policy support towards the outward internationalisation of private SMEs. We add that policy towards outward internationalisation must appreciate firm heterogeneity. The spectrum of firms ranges from those that do not and cannot internationalise to those that have internationalised from their inception. Policy measures should differentiate according to the characteristics of specific target groups.

The analysis also denies that the idea that merely increasing the amount of funds promoting outward internationalisation will inevitably lead to greater program benefits. Increased benefits may only partially affect self-selection mechanisms in the eligible population.

In summary, we believe that additional efforts in the *ex ante* assessment of both firm and project characteristics may provide agencies in charge of incentive assignment with better operative tools. We suggest that incentives should be project specific, since the source of positive spillovers is likely to differ across FDIs. Ideally, incentives should induce firms to growth internationally by undertaking projects that they would not realise on their own. At this stage, we cannot conclude that firms are not substituting government funds for projects that they intended to pursue anyway (i.e., additionality). However, the positive and significant effects generated by financial constraints in firm self-selection suggest that the incentive is moving in the right direction of additionality, and public tools should limit any crowding-out effects (Busom, 2000). Moreover, incentives seem to be more effective for self-selecting firms that never went abroad, as they seem to induce a change of behaviour in non-internationalised firms.

Of course, better data would allow to improve the proposed analysis. First of all, observations on the same firms across all stages characterising the participation process (Heckman and Smith, 2004) would permit a better analysis of the self-selection process. It would also be helpful to have more variables related to project risk.

The analysis also suggests a rich agenda for further research. The study of outward FDI promotion is still an underdeveloped area of research in international business. Nevertheless, the increasing role played by national governments in relation to MNE investment promotion entails that more study in this area is necessary.

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The effects of incentives to firms' outward internationalisation on their domestic growth and competitiveness

Abstract: While few studies have analysed public incentives to attract inward foreign direct investment (FDI), almost no evidence has been so far provided on public incentives to firms' internationalisation. The present paper aims at filling this gap, by providing an empirical analysis on their effects on the firm's growth. Specifically, the analysis is conducted on 237 Italian firms that received an incentive in the period 1991-2007 vs. a counterfactual sample of firms that internationalised their activity in the same period without any incentive. The econometric results, stemming from a two step treatment effect model, reveal that selection for getting the incentive tended to be not a random event, and that incentives to firms' internationalisation cause domestic growth especially when targeted towards smaller companies.

1. Introduction

Measures and incentives to internationalisation of firms have been traditionally investigated mainly from the host country perspective. Indeed, almost all developed and developing countries believe that inward FDI is beneficial for their local economy and, as a consequence, they offer a wide variety of incentives (Carlsson and Mudambi, 2003; UNCTAD, 2003). However, as most of the OECD countries has started to promote also outward FDI from the early 1990s (UNCTAD, 1993; 1998; 2003), policy makers are increasingly concerned with their role and effectiveness. Incentives and measures have been often criticised for being uneffective (Farrel 1985; UNCTAD 1998; Lim 2005; Markusen and Nesse, 2006), but specific rigorous analyses are still lacking, and most of the empirical analyses have focused exclusively on the effectiveness of the attraction of inward FDI (Guisinger, 1992; Brewer and Young, 1997; Oxelheim and Ghauri, 2004), while no evidence has been so far provided on the role and the effects of financial incentives for outward FDI (at least to the Authors' knowledge).

Our conceptual framework relies on the institutionalist approach (North, 1990, 1994, 2005), which suggests that outward internationalisation crucially depends not only on the home country's economic characteristics, but also on its institutional environment (Henisz, 2004). Specifically, we claim that home country's institutions, and particularly their enforcement mechanisms (Dunning and Lundan, 2008; Sethi *et al.*, 2002), are important ingredients of national and international competitiveness of firms. Accordingly, public incentives are designed to allow firms to reduce the uncertainty related to the foreign markets and to the "liability of foreignness" (Zaheer, 1995). Hence, they have been directed mainly to three crucial dimensions of the firm's internationalisation process: information on the foreign markets and technical assistance, investment insurance, fiscal incentives and financial support, and they should positively impact on the firm's national and international growth.

The issue is challenging also from a methodological perspective, as there is an increasingly perceived need for improving and developing adequate methodolo-

gies for public policy evaluation (see, for example the Special Issue of the International Review of Applied Economics, 2007). In fact, only rarely existing empirical studies[9] do apply methodologies which address the effects of selection bias and incorporate appropriate counterfactual scenarios (Lenihan *et al.*, 2007). We develop an empirical analysis using information on the population of Italian firms that received (at least) an incentive for international growth in the period 1991-2007. Data come from Simest, the Italian development finance institution[10], and refer to financial incentives addressed to promote Italian companies' FDI outside the European Union. Then, comparing firms that received the incentive with "similar" firms that never received it (our counterfactual sample), we find that the former do actually perform better.

Therefore, the paper offers both a conceptual and an empirical contribution. On the conceptual side, we relate the effects of public incentives to firms' outward FDI to the home country's institutional context, while on the empirical side, we construct an original longitudinal dataset on incentives granted by Simest to Italian companies. Specifically, this is (one of) the first attempts to develop a rigorous evaluation of a policy for the firms' outward internationalisation exploiting the availability of detailed information on the functioning of the program.

The paper is structured as follows. The second Section illustrates our conceptual framework and puts forward the research question that drives the empirical analysis. The third Section presents the methodology, while the fourth one describes the data set and the variables employed in the econometric model, it illustrates the model and the estimated results. Concluding comments are reported in Section Five.

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[9] However, it is worth noting that empirical exercises concerning the evaluation of public policies have mainly concerned fields like training programs, R&D, marketing programs, support for exporting (DeLeon and Vogenbeck, 2007).

[10] http://www.simest.it

2. The conceptual framework

According to North (1990; 1994), institutions are defined as a set of rules, compliance procedure, and moral and ethical behavioural norms designed to constrain the behaviour of individuals in the interest of maximizing the wealth or utility of principals. Additionally, they are made up of formal constraints (e.g. rules, laws, constitutions), informal constraints (e.g. norms of behaviour, conventions, self-imposed codes or conduct) and their enforcement characteristics.

Within this context, Dunning and Lundan (2008) classify incentives as formal enforcement mechanisms and define them as measurable economic advantages offered to specific enterprises or categories of enterprises by or at the direction of a government, in order to encourage them to act in a definite way (Brewer and Youg, 1997; UNCTAD, 1998; Sheti *et al.*, 2002). Government intervention is justified by reasons related to market failures, imposition of social values and distribution of income and wealth (Lipsey, 1997; Blomstrom and Kokko, 2003; Lim, 2005).

Accordingly, home governments must provide institutional preconditions in order to promote outward FDI because the institutional content and form might affect the cognition, behaviour and motivation of firms in their decision on whether or how to go abroad. The principal elements are a stable economic environment and the rule of the law and regulations; nevertheless, incentives, penalties, agencies, projects, self regulation, fear, retaliation, blackballing, specific instruments negotiated directly with firms or other measures can aid in promoting outward FDI. Specifically, financial incentives to outward FDI aim at overcoming firm's financial constraints and at compensating the firm for uncertainty and risk related to the foreign unfamiliar context and to the firms' "liability of foreigness" (Zaheer, 1995).

There are two main motivations that make public policy evaluation necessary (Wollman, 2007). First of all it is necessary to report about the exploitation of the incentive and the efficiency and effects of public intervention because information

asymmetries take place among subjects involved in the exploitation of public aid. Indeed, the successful government intervention implies that the attended social benefits will exceed the financial and administrative costs, stemming from potential economic distortions. Second, public incentive evaluation permits to understand if they should be modified, preserved, enlarged or removed.

As far as incentives specifically addressed to (inward and outward) FDI, some works examined the effects of inward investment incentives (Guisinger, 1992), other investigated the role of host country policy and non policy determinants (Loree and Guisinger, 1995; Olibe and Crumbley, 1997) and many others analyzed the role played by investment agencies in attracting foreign investors and initiatives. On the contrary, notwithstanding the range of incentives to outward FDI and the number of countries that offer these incentives have increased considerably in the past decade, no studies have analyzed the equivalent role of incentives in promoting outward FDI.

The impact of incentives to firm's international growth may be associated to both direct and indirect effects. The former relate to the explicit and declared intent of the government, while the latter refer to the possible spillovers generated by the firm's internationalisation on the other firms and their local context. Specifically, we aim at testing the direct impact of public incentives upon the firms' growth (i.e., we focus on the ex post stage). Previous empirical works find mixed evidence on the impact of public financial support upon firms' growth (see for example Lerner, 1999, Wallsten, 2000; Merito *et al.*, 2007).
Although we agree on the largely acknowledged issue that outward incentives normally play a less crucial role in determining FDI than the fundamental determinants do (for a survey, see Barba Navaretti and Venables, 2004), our hypothesis is that they generally benefit granted firms. Indeed, incentives help internationalising firms to overcome their financial constraints and to gather the needed information to reduce uncertainty and risks related to foreign markets.

3. The methodology

The demand for quantitative methods in public policy evaluation reflects the desire of elected officials to define better polices, to understand how they have performed and to ascertain what impacts they have generated (Mosselman and Prince, 2004; Lenihan *et al.*, 2007; Yang, 2007). During last years public aid evaluation was influenced by the methodological development of other disciplines, above others econometrics in economics (Heckman, 2001) and, more recently, qualitative projective techniques already widely used in psychology and consumer studies (Ramsey and Bond, 2007).

The fundamental need for all public policy evaluation is to observe the counterfactual conditions, in order to answer the causal question as to whether the observed outcomes are effectively caused by the public policy and not by other determinants (Marschak, 1956). Because it is impossible to determine exactly what would happen in absence of incentive, as a firm cannot be observed among participants and non participants at the same time, we need a methodology that allows us to compute an average effect of incentive comparing data on participants and non-participant firms, and to identify the causal relationship between the incentive and the outcome, controlling for other possible determinants of the outcome itself (Bartik and Bingham, 1997). Additionally, one has to account for the possible selection bias, for the fact that besides the effect of the incentive there may be systematic differences between benefiting firms and not benefiting firms that may affect the impact of the incentive. A selection bias may occur as a result of two different causes: firm self-selection and agency selection. In the first case, firms that apply for the incentive may not be representative of the total population of eligible firms, whilst in the second one, the agency accepts only the applications of projects that meet selection criteria. Therefore, the selection bias could positively prejudice the effect of the incentive because firms applying for public aid are often firms that are aggressively seeking to expand and they would have grown more rapidly even without the incentive. However, selection bias may be also negatively related to the public aid's effects when, as for some development

programs, stimulating firms located in depressed areas through incentives is particularly difficult (Bartik and Bingham, 1997).

Hence, to overcome threats of validity, omitted variables and selection bias, it is necessary to imputate an appropriate counterfactual outcome for the sample of benefiting firms is (Moffit, 1991). A variety of different methods have been proposed for estimating the counterfactual; all methods compare a group of benefiting firms, often called treatment group, with a group of not benefiting firms, called control group. Discussion about pros and cons of different evaluation methods is focused on the extent to which the control group is a truly mirror of the benefiting firms. The only design where this hypothesis of correspondence between the treated group and the control group is guaranteed is the experimental design. In this case both the first and the second group are constituted exclusively by firms that have been randomly assigned to either the two groups. Nevertheless in most case, we are in a quasi experimental design, where the benefiting firms are not randomly assigned, but follow a criterion of selection and self selection.

Several methods have been proposed in literature to take into account both selection bias and causality, but the most utilised are: matching methods, difference in difference and treatment effect models (Blundell and Costa Dias, 2000; Heckman, 2001). In matching methods eligible firms are divided in two groups, i.e., benefiting and not benefiting firms, where the second group of firms is the "control group". The rationale is that the not benefiting firms are "identical" to their matched benefiting firms in all relevant aspects, with the only difference that the latter have obtained the public incentive. In the difference in difference approach, the two groups of firms are compared before and after the incentive. Therefore, the change experienced by the benefiting group vs. the control group can be associated to the public aid[11].

The treatment effect model is a two-stage econometric model where the first step aims to account for the selection and self selection bias, while the second step

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[11] The implicit hypothesis that the change for the two groups would be the same without the incentive is often strengthened by selecting the control group through a matching method.

evaluate the impact of the incentive on the firm's growth. Namely, two regressions are estimated simultaneously (Myoung Jae, 2005): the first one is a probit regression predicting the probability of receiving the incentive; the second one is a linear regression for the outcome (i.e., firm's growth) as a function of the treatment variable (i.e., the incentive), controlling for other observable explanatory variables. Theoretically the solution is to propose and estimate a model of the selection and self-selection decision, that is to define an incentive assignment equation where x_i is the set of exogenous covariates that affect the incentive assignment and that could explain different attitudes between benefiting and not benefiting firms. In particular the treatment effect model assumes that D^*_i is a linear function of the observed covariates x_i and the random component ε_i. Specifically we assume that the incentive assignment is determined by:

$$D^*_i = x_i \beta + \varepsilon_i \quad \text{(Selection equation)}$$

And the endogenous binary variable D_i is modelled as the outcome of the unobservable latent variable D^*_i and the observed decision is:

$$D_i = 1, \text{ if } D^*_i > 0$$
$$D_i = 0, \text{ if } D^*_i \leq 0$$

The second step is made of a linear regression for the outcome of the treatment variable (i.e., firm growth), were w_i is the set of exogenous control variables, different from the unobservable latent variable D_i, which can influence the response:

$$y_i = \delta w_i + \gamma Di + u_i \quad \text{(Valuation equation)}$$

where w_i and x_i may include common variable.

Hence we use the treatment effects method to estimate the incentive assignment equation and the evaluation equation together. In the first step we use a probit estimation, while in the second step we evaluate the net impact of the incentive (D_i) and the estimated sign of γ can be used to assess the effectiveness of the public aid. Specifically, when $\gamma > 0$ the public incentive stimulate the benefiting firm's growth.

4. The empirical analysis

4.1. Data

Outward public policy measures include a panoplia of financial supports, going from government grants to cover part of capital, to production or marketing investment costs; subsidised loans; loan guarantees; public founded venture capital participation and government insurance at preferential rates (UNCTAD, 1996; Gergely, 2003). In the Italian case, almost the whole set of incentives are provided (see Table 1 for a detailed description).

OBJECTIVES \ INSTRUMENTS	Law Decree 143/98	Law 227/97 Law Decree 143/98 Law 24/03 Law 35/03	Law 394/81	Law 100/90 Law Decree 143/98 Law 35/05 Law 19/91	Law Decree 143/98 Law 35/05 Ministerial Decree 136/00	Law 304/90	Venture Capital Funds
Export and commercial FDI	▓						
Feasibility studies, technical assistance					▓		
Export Guarantees		▓					
Trading FDI outside the EU			▓				
Productive FDI in EU							
Productive FDI outside the EU				▓			
Productive FDI in DCs				▓			▓
Productive FDI Guarantees							
Tenders outside the UE						▓	

Table 1: Italian public instruments aimed at promoting outward FDI

In order to provide additional support to investment by Italian enterprises in especially important non-EU markets, Simest operates the venture capital funds set up by the Government to support investments in areas such as the Far East, Eastern Europe, the Balkans, Africa, the Middle East and Central and South America. For direct investment abroad, Simest also assists Italian firms in the following areas: scouting for partners and investment opportunities; technical and financial assistance and advice in the preparation and implementation of projects.

However, in this paper we focus on the Law 100/1990, according to which Simest can invest directly in foreign ventures and acquire up to the 25% of the Italian foreign affiliate's equity. Although Simest can, in principle, evaluate investment proposals from companies, partnerships, cooperatives, consortiums and business associations, its priority concerns initiatives by SMEs to Eastern Europe. Simest prefers to acquire interests in foreign firms which are active in the same business sector as the home firm proposing the project; no sector is excluded. The duration of equity shares is in principle up to a maximum of 8 years, within which the pre-agreed reacquisition of Simest shares with partner firms is established. Simest examines proposed investments after having acquired information on the investment project and its partners. From the beginning of the activity up to the end of 2006, Simest acquired shareholdings in 469 Italian foreign affiliates[12].

Our empirical analysis, aiming at evaluating the effects of Simest's participation on the firm's growth relies on two groups of firms:

(i)   the benefiting firms (i.e., those that have received the incentive to grow internationally); and

(ii)   the control group (i.e., firms that internationalised their activities in the same period, in the same foreign countries, but without participation by Simest).

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[12] It may be interesting to add that in the same period, Simest subscribed also 150 capital increases for a total of 412 millions of euro and sold 253 shareholdings for a total of 193.4 millions of euro.

Therefore, the dataset employed for the empirical analysis combines three different sources of data:

(j)   Simest's balance sheets, which provide the information about assignments of incentives to Italian firms, throughout the period 1991-2007;

(k)   the database Reprint, which provides a census of outward and inward FDI in Italy, since 1986. It is yearly updated, and it is sponsored by the Italian Institute for Foreign Trade.

(l)   AIDA (Bureau van Djick), which provides balance sheet data for Italian firms.

In summary, our sample includes two groups of multinational firms: those which set up their foreign initiative utilising the public incentive, and those which instead did not utilise any public incentive to go abroad. Complete information are available for 237 benefiting firms and for 307 not benefiting firms (our control group).

4.2. The model and the variables

Our evaluation model aims at assessing the effects of the incentive, i.e., Simest's participation, once it has been completed. Therefore, it refers to a classical ex-post evaluation (Wollmann, 2007), where the dependent variable has to do with one of the goal attainment. Although public policies tend to have multiple, tacit and conflicting objectives, in this case the declared policy maker's intent is to promote SMEs growth. However, this is also in line with most of the empirical literature that recognizes growth at the firm level as a good proxy for the effects of industrial policy measures (e.g. Fisher and Reuber, 2003).

As far as the model, we adopted a traditional treatment effect model (Myoung Jae, 2005), which allows us to assess whether the public support affects the growth of benefiting firms vs. not benefiting ones. In particular, as previously il-

lustrated, in order to evaluate the impact of public intervention, it is necessary to take into account self selection and selection biases, and then causality.

Therefore, our dependent variables are the followings:

(1) D_Incentive is a dummy variable that equals 1 if the firm has received the incentive, and zero otherwise. This is the dependent variable used in the first stage (i.e., the probit model);

(2) Firm_growth is measured by the rate of growth of the turnover of the Italian parent company between $(t_0 - 1)$ and $(t_0 + 2)$, where t_0 is the year of the foreign initiative.

As far as the first stage (i.e., the likelihood of obtaining the incentive), explanatory variables include firm's structural characteristics, firm's financial constraints and project's features related to the country of destination (Simest should favours investments toward Eastern European countries) and project's size which can affect policy outcome.

Therefore, our selection model (i.e., the selection equation) is:

$$\text{D\_Incentive}_j = \text{Strucural\_characteristics}_j + \text{Financial\_constraints}_j + {} + \text{Project\_characteristics}_j + \varepsilon_j$$

Specifically, as far as explanatory variables are concerned, the proxy employed (for a detailed description of the variables and the data source, see Table 2) refer to size (Blanes and Busom, 2004) and age (Merito *et al.*, 2007), which have been traditionally considered as a proxy for managerial skills, thus affecting the firm's ability to obtain external resources. Therefore, we expect bigger and older firms to be more likely to obtain the incentive. Previous experience in international markets may also increase the likelihood to both apply and obtain the incentive. Additionally, as the effective cost of going abroad may vary across firms as the result

of differences in the availability and cost of financial resources (Desai, 2004; Maseneire and Clayes, 2006; Bellone *et al.*, 2007), we proxied the firms' financial constraints by the ratio between their banks debt and turnover. Specifically, as financial markets imperfections can limit the firm's strength of engaging in FDI, we expect a positive relationship between variables proxying the existence of firm's financial constraints and the probability of going abroad thanks to the public incentive (Hyytinen and Toivanen, 2005). As in the process of project selection, Simest evaluates Italian firm's success, we also included a firm's profitability index.

The second stage of the analysis, i.e., the causality between the endogenous binary treatment and the firm's growth, estimates the effect of the incentive on a continuous, fully observed variable which identify the effects ($Firm\_growth_j$), conditional on the firm's structural variables, firm's financial constraints and specific features of the initiative. Therefore, the linear regression function (i.e., the valuation equation) is:

$$Firm\_growth_j = D\_Incentive_j + Structural\_characteristics_j + \\ + Financial\_constraints_j + Project\_characteristics_j + u_j$$

Variables considered refer again to firm's structural characteristics, financial constraints and other specific features of the initiative undertaken abroad by the Italian firm, namely the entry mode. Therefore, we included dummies allowing for its nature (greenfield vs. acquisition), the share held by the Italian parent company in the foreign affiliate (majority vs. minority), and the size of the foreign affiliate in terms of employees[13] (Empl_affiliate).

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[13] We also tried sales of the foreign affiliate. However, as it is highly correlated with employemnt (the correlation being 0.859), we decided to keep only the former, as it comes out more significant in the econometric estimates.

Variable	Description	Source
Dependent variable		
Firm_growth	Turnover of the Italian firm between t_0-1 and t_0+2	AIDA
D_incentive	Dummy variable taking the value of 1 if the firms obtained the incentive in t_0, and zero otherwise	Simest
Independent Variables		
Firm's structural variable and firm's financial constraint		
Log_Sales	Logarithm of annual turnover (thousands €) in t_{0-1}	AIDA
Empl	Number of employees in t_{0-1}	
Firm_Age	Age of the firm (years) in t_{0-1}	REPRINT
Int_experience	Number of previous outward FDI in t_{0-1}	REPRINT
ROI	Return on Investment (%) in t_{0-1}	AIDA
North	Dummy variable taking value of 1 when the firm is in North Italy, and zero otherwise	REPRINT
BanksD_Sales	Ratio between Banks debt and turnover in t_{0-1}	AIDA
Project characteristics		
East_Europe	Dummy variable taking value of 1 when the FDI destination country is Eastern Europe, and zero otherwise	REPRINT
North_America	Dummy variable taking value of 1 when the FDI destination country is North America, and zero otherwise	REPRINT
Greenfield	Dummy variable taking the value of 1 if the foreign affiliate is Greenfield, and zero otherwise	REPRINT
Majority	Dummy variable taking the value of 1 if the foreign affiliate is majority-owned in t_{0-1}, and zero otherwise	REPRINT
Empl_affiliate	Number of employees of the foreign affiliate, in t_{0-1}	REPRINT
Sales_affiliate	Turnover of the foreign affiliate, in t_{0-1}	REPRINT

Table 2: Description of the variables and sources of data

Finally, to control for possible differences in opportunities in different areas and sectors, we inserted dummies for the firm localisation by Italian regional area (North, Centre, South) and for the industry of the parent company[14].

The dependent and the explanatory variables are described in Table 2, while their statistical characteristics and the correlation matrix are reported respectively in Table 3 and 4. Table 5 reports instead the average values of the variables considered, and the significant differences, for the two groups of firms considered, i.e., benefiting and not benefiting firms, respectively.

	Minimum	Maximum	Mean	Std. Deviation
Dependent variables				
Firm_growth (%)	-1.12	198.28	1.71	13.92
Firm's structural characteristics				
Log_sales (thousands €)	4	9	7,22	0,69
Firm_age (years)	-1	101	22.15	15.12
Int_experience (.)	1	70	4.37	9.18
ROI (%)	-27	30	8.28	8.19
Firm's financial constraints				
BanksD_Sales (%)	0	90	22.84	22.10
Project's characteristics				
Empl_affiliate (employees)	5	5000	83.03	248.88
Sales_affiliate (thousands €)	0.5	320	7.13	17.16

Table 3: Descriptive statistics

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[14] Ten industry dummies have been considered: services, wood products, raw materials, plastic and rubber, chemical and pharmaceutical, building and construction, electronics, industrial machinery, automotive, food and tobacco and beverages, textile.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Log_sales	1														
2	Empl	0.077	1													
3	Firm_age	0.251**	0.059	1												
4	Int_experience	0.362**	0.028	0.148**	1											
5	ROI	0.076	0.004	0.016	-0.096**	1										
6	North	0.016	0.030	0.074	-0.014	-0.018	1									
7	BanksD_Sales	0.130**	0.040	0.115**	0.022	-0.200**	0.034	1								
8	East_Europe	-0.196**	-0.075	-0.140**	-0.112**	-0.017	0.052	-0.029	1							
9	North_America	0.113**	-0.026	-0.015	0.057	-0.011	0.068	0.038	-0.312**	1						
10	Greenfield	0.168**	0.040	0.024	0.199**	0.110*	0.031	-0.063	0.020	0.025	1					
11	Majority	-0.035	-0.085	0.012	0.037	0.000	0.033	0.045	0.077	0.115**	0.000	1				
12	Empl_affilite	0.019	0.026	0.033	0.235**	0.027	-0.067	-0.024	0.081	-0.050	0.154**	0.038	1			
13	Sales_affiliate	0.067	0.054	0.064	0.271**	0.016	-0.078	0.006	0.004	0.046	0.189**	0.024	0.859**	1		
14	D_incentive	0.329**	-0.001	0.150**	0.361**	-0.076	-0.029	0.182**	0.095*	-0.027	0.072	-0.028	0.134**	0.147**	1	
15	Firm_growth	-0.199**	0.048	0.033	0.222**	-0.024	-0.083	-0.062	-0.070	0.078	0.089*	0.001	0.365**	0.382**	0.75	1

Legenda: ** significant at p< .01; * significant at p< .05

Table 4: Correlation matrix

	Benefiting Firms (237)	Not Benefiting Firms (307)	Sign.
Dependent variable			
Firm_Growth [b]	2.9	0.8	**
Firm's structural variable and firm's financial constraint			
Sales [a]	90.6	33.4	***
Empl [a]	406	138	***
Firm_Age [a]	33	33	n.s.
Int_Experience [a]	9	2	***
ROI [b]	7.53	8.82	*
North [c]	74%	76%	n.s.
BanksD_Sales [b]	27.44	19.32	***
FDI characteristics			
East_Europe [c]	46%	55%	**
North_America [c]	7%	9%	n.s.
Greenfield [c]	73%	67%	n.s.
Majority [c]	91%	84%	**
Sales_affiliate [a]	10.01	4.92	***
Empl_affiliate [a]	121.10	53.77	***

a t-Test between the two categories; (mean)

b Mann-Withney Test between the two categories; (mean) (%)

c Proportion-Test between the two categories; (median) (%)

Table 5: Comparison between benefiting firms and
not benefiting firms (control group)

4.3. Econometric findings

The results of the empirical estimates for the treatment model are reported in Table 6. First of all, it is worth observing that, as the correlation between the error terms of the two equations (i.e., the coefficient rho[15]) is significantly different from zero (at $p < 0.01$), and so it confirms that both the firm and the project characteristics affect incentive assignment and the latent outcome, therefore in estimating the effects of the incentive a selection bias arises.

As far as the selection model is concerned, results confirm that both the parent company's characteristics and the FDI features explain the likelihood of receiving the incentive. Namely, as already revealed by the descriptive statistics of the two samples (see Table 5), bigger firms with previous international experience are more likely to get the incentive (both Log_Sales and Int_Experience are positive and significant at $p < 0.05$ and $p < 0.01$, respectively). Likewise, results support also the idea that market imperfections give rise to financial constraints and make firms more likely to apply for (and to get) public funding (BanksD_Sales is positive and significant at $p < 0.05$). Interestingly, notwithstanding the selection procedure should *a priori* favours initiatives to Eastern European countries, the relevant dummy (East_Europe) does not come out significantly different from zero, while the affiliate size does contribute positively to the incentive assignment (Sales_affiliate is significant at $p < 0.01$).

As far as the valuation equation, that is our second stage, results confirm the positive and highly significant effect (at $p < 0.01$) of the financial incentive on the firms' growth. However, smaller and less indebted companies grow more rapidly (Log_Sales and BanksD_sales are negative and significant respectively at $p < 0.01$ and $p < 0.10$) while all the other firm's specificities do not seem to impact on growth.

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[15] STATA provides an estimate of rho (the correlation between the error terms of the two equations), sigma (s, the standard error of the outcome regression if linear) and lambda (l = r*s). Namely, STATA automatically tests whether r=0 (or equivalently, whether l=0, since s>0).

Treatment effects model Two steps estimates		**Coeff.**	**Std. error**
Dependent variable: Firm_growth			
D_incentive		12.05***	3.03
Firm's structural variable and firm's financial constraint			
Log_Sales		-7.99***	1.05
Firm_age		-0.00	0.00
Int_experience		0.06	0.07
ROI		0.06	0.07
North		-1.77	1.26
BanksD_sales		-0.05*	0.03
Industry_dummies		Yes	
FDI characteristics			
East_Europe		-2.53**	1.23
North_America		4.78**	2.10
Greenfield		2.81	1.79
Majority		0.02	0.79
Empl_affiliate		0.02***	0.00
Cons		53.16***	7.48
Dependent variable: D_incentive			
Log_Sales		0.24**	0.11
Firm_age		-0.00	0.00
Int_experience		0.27***	0.04
ROI		-0.01	0.01
BanksD_Sales		0.01**	0.00
Sales_affiliate		0.02**	0.01
East_Europe		0.13	0.13
Cons		-2.92***	0.78
Hazard	lambda	-6.87***	1.94
* Significance at the 10% level	rho	-0.54	
** Significance at the 5%	sigma	12.78	
*** Significance at the 1% level			

Table 6: Treatment effect model

Heckman selection model – Two steps estimates Regression model with sample selection		Coeff.	Std. error
Dependent variable: Firm_growth			
Firm's structural variable and firm's financial constraint			
Log_Sales		-10.40***	1.95
Firm_age		-0.00	0.01
Int_experience		0.04	0.06
ROI		-0.18	0.18
North		-1.56	2.54
BanksD_sales		-0.13**	0.54
Industry_dummies		Yes	
FDI characteristics			
East_Europe		-0.73	2.38
North_America		10.33**	4.78
Greenfield		6.53*	3.97
Majority		1.04	1.96
Empl_affiliate		0.02***	0.00
Cons		83.07***	16.61
Dependent variable: D_incentive			
Log_Sales		0.21**	0.11
Firm_age		-0.00	0.00
Int_experience		0.27***	0.04
ROI		-0.00	0.01
BanksD_Sales		0.01*	0.00
Sales_affiliate		0.02***	0.01
East_Europe		0.15	0.13
Cons		-2.74***	0.78
	lambda	-9.03***	3.02
* Significance at the 10% level	rho	-0.54	
** Significance at the 5%	sigma	16.53	
*** Significance at the 1% level			

Table 7: Heckman selection model

On the contrary, the parent's growth crucially depends on the characteristics of the foreign initiative: indeed, the estimated coefficients confirm that FDI size contributes positively to the firm growth (Empl_affiliate is significant at $p < 0.01$), as well as the FDI's localisation in developed countries (North_America is positive and significant at $p < 0.05$).

It may be worth observing that the same results have been obtained from the estimation of an Heckman model (see Table 7), where the second stage is run only on the benefiting firms.

5. Conclusions

Summarising, our model confirms the positive effects of the financial incentive on the benefiting firm's growth as compared to the counterfactual sample of not benefiting firms. Although some previous empirical studies (e.g. Lerner 1999) already had found that firms that obtained government financial support did actually perform better, causality could not be taken into account due to the absence of a proper counterfactual sample. Therefore, companies that obtained the incentive would have done just as well even without government financial assistance. On the contrary, taking into account the selection and self-selection issue, we can detect the net positive effects of the public incentive. Specifically, our results show that financial incentive does help smaller companies to grow also on the home country, thus confirming that the FDI finance gap hinders SMEs in their internationalisation strategy and negatively affects their economic performance, as recently pointed out by De Maeseneire and Clayes (2006). Additionally, the government involvement in FDI may contribute to reduce the uncertainty and risk associated to the unfamiliar host country (Henisz and Zelner, 2003), which is obviously more critical for smaller companies that have less financial and management resources to spend for research and analysis prior to embarking into a foreign market (Wright *et al.*, 2007).

At the best of our knowledge this paper is the first systematic evaluation of public incentives addressing firms' outward internationalisation. However, the agenda for future research is quite rich. The specification of the model presented above should be improved by introducing more adequate measures of certain phenomena. First of all, a better understanding of the selection and self-selection process would benefit from the possibility of accessing data on firms' applications that were not selected for the incentive. Second, firms' internationalisation processes should be modelled taking into account motivations underlying each FDI initiative, although that would require additional data gathering based on surveys and questionnaires. Finally, the effects of public incentives may be also evaluated as far as their indirect impact (associated to externalities and spillovers) is concerned, for example on social welfare. Moreover, our results concern a single type of incentive addressing firms' internationalisation, while a comparative analysis of alternative mechanisms would certainly provide useful suggestions to policy makers for the design of appropriate tools and the improvement of the existing ones.

The findings of this paper seem to justify greater research efforts in the directions indicated.

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The impact of public incentives on firms' outward internationalisation: An analysis at the regional level

Abstract:

This paper tests the effectiveness of different public policy tools on outward internationalisation, in particular it estimates the effects of public incentives on the intensity of outward internationalisation at the regional level. Empirical evidence is provided by analysing Italian investments over the period 2000-2006. The data show a statistically significant and positive impact of public financial incentives on outward FDIs (foreign direct investment), suggesting that public policy measures can be effective in overcoming the limits that affect firms along their internationalisation path.

Key words: public policy, effectiveness, outward FDI, regions.

1. Introduction

Attracting FDIs has become a policy priority in many developed and developing countries since the end of the 1980s (UNCTAD, 2003). Recent trends in FDI incentives show that competition in attracting FDIs has been growing not only among central governments (Oxelheim and Ghauri, 2004), but also among local public administrations regionally and in cities (Gergely, 2003). While this trend is likely to continue, the promotion of outward investment has become more prominent only in recent years. This is a traditional domain of developed countries (UNCTAD, 1997), and OECD countries have only started to promote outward FDIs beginning in the early 1990s (UNCTAD, 1993, 1998, 2003).

All incentives to FDIs are motivated by two reasons. First, they can correct for market failures in financial markets, and second, they can compensate for social or regional disparities (Venetoklis, 2001). In particular, governments may provide incentives in the attempt to encourage investment activity and hence induce business growth and reduce local disparities (Haapanen et al., 2005). Nevertheless, public intervention can limit competition and give rise to market inefficiencies (Wollman, 2007). Moreover, when public incentives substitute for resources that can be traded on markets and support projects that would take place in any case, they generate a net transfer of resources from taxpayers to granted firms (the so-called deadweight effect; see Marglin, 1963 and Mosselman and Prince, 2004).

In the case of outward incentives, the question arises as to whether policy schemes stimulate outward internationalisation and produce positive externalities and spillovers. Some works examined the effects of inward investment incentives (Guisinger, 1992), others investigated the role of host country policy and non policy determinants (Loree and Guisinger, 1995; Olibe and Crumbley, 1997), while several others analysed the role played by investment agencies in attracting foreign investors and initiatives. On the contrary, no studies have analysed the equivalent role of incentives in promoting outward FDI.

Our conceptual framework relies on the institutionalist approach (North, 1990, 2005), which suggests that outward internationalisation crucially depends not only

on the home country's economic characteristics, but also on its institutional environment (Henisz, 2004). Specifically, we claim that a home country's institutions, and particularly their enforcement mechanisms, such as public incentives (Dunning and Lundan, 2008; Sethi et al., 2002), are important ingredients in the national and international competitiveness of firms. Accordingly, we argue that public incentives to outward FDI aim to overcome firms' financial constraints and compensate for uncertainty and risk related to the foreign context and to the firms' "liability of foreignness" (Zaheer, 1995).

Within this context, this study investigates the effectiveness of Italian incentives on outward investments by developing an empirical model that uses information on the population of Italian firms that received incentives from 2000-2006. Data, aggregated at the regional level, refer to all public financial tools addressed to promoting Italian companies' FDIs outside the European Union. The objective is to identify the effectiveness of investment support by measuring the impact of such public policies on regional levels of internationalisation.

The remainder of this paper is organised as follows. Section 2 provides the theoretical background and develops the research hypotheses, while Section 3 illustrates the model and variables. The data employed to empirically test the effectiveness of public policy tools are reported in Section 4. Section 5 illustrates the econometric findings, while the last section concludes with summary remarks, policy implications and suggestions for future research.

2. Theoretical background and research hypotheses

According to North (1990), institutions are defined as a set of rules, compliance procedures, and moral and ethical behavioural norms designed to constrain the behaviour of individuals in the interest of maximizing the wealth or utility of principals. Additionally, they are made up of formal constraints (e.g., rules, laws, constitutions), informal constraints (e.g., norms of behaviour, conventions, self-imposed codes or conduct) and their enforcement characteristics.

Within this context, Dunning and Lundan (2008) classify incentives as formal enforcement mechanisms and define them as measurable economic advantages offered to specific enterprises or categories of enterprises by or at the direction of a government, in order to encourage them to act in a definite way (Brewer and Youg, 1997; UNCTAD, 1998; Sheti et al., 2002).

Government intervention by enforcement mechanisms is justified by reasons related to market failures, imposition of social values and distribution of income and wealth (Lipsey, 1997; Blomstrom and Kokko, 2003; Lim, 2005). The assumption is that some projects beneficial for society may be rejected because they are not profitable for single firms. The rationale emerges on one side from public finance theory and on the other side from the literature on spillovers. Public finance theory asserts that incentives are an appropriate response in the case of activities that generate positive externalities (Gardner, 1978). Contextually, internationalisation is assumed to have external effects beneficial for society. An extensive literature (surveyed in Barba Navaretti and Venables, 2004) documents the presence of spillovers: over time, domestic MNEs create new jobs, raise the level of wages and carry out R&D activities.

The social wealth created by outward FDIs provides the rationale for the public effort in creating the institutional preconditions to outward FDIs, as the institutional content and form might affect the cognition, behaviour and motivation of firms in their decision on whether or how to go abroad. The basic elements of a proper institutional framework are a stable economic environment and the rule of the law and regulations; nevertheless, incentives, penalties, agencies, projects, self regulation, fear, retaliation, blackballing, specific instruments negotiated directly with firms or other measures can aid in promoting outward FDI (Henisz, 2004).

Outward incentives can be classified into two categories: (1) financial incentives, including grants to cover part of the capital and production or marketing investment costs, subsidised loans, loan guarantees, public funds, venture capital participation and government insurance at preferential rates (UNCTAD, 1996;

Gergely, 2003); and (2) non-financial incentives, including advisory services, information on foreign markets and technical assistance[16].

There is some evidence that capital subsidies stimulate investment because the incentives lower the costs of investment (see for example Faini and Schiantarelli, 1987; Lerner, 1999; Schalk and Untiedt, 2000; Wallsten, 2000). Nevertheless, mixed evidence is provided about inward incentives. The effectiveness of those public tools has been investigated in the 1990s and early 2000s, yet no agreement exists on their effects on MNEs' investment location decision (Farrel, 1985; Guisinger, 1992; Loree and Guisinger, 1995; Sethi et al., 2000). Theoretical and empirical research confirms that policy tools play only a limited role in firm decisions. Attraction policies can alter the location choice, but do not affect the decision of whether or not to carry out an FDI.

In addition, the net social welfare of these policy tools, often hard to measure, has been the subject of considerable controversy. It has been argued that incentives can only influence location choice but not the total amount of investments and that public incentives may reduce the costs borne by MNEs without benefits for the host countries as a whole (Guisinger, 1985), so that the only effect is a redistribution of such investments in recipient countries.

We agree with Barba Navaretti and Venables (2004) that inward incentives normally play a marginal role on the choice of whether or not to invest, yet we think that the same may be not true for outward incentives. Specifically, we think that public financial incentives to outward FDI can overcome the financial constraints perceived by firms (De Maeseneire and Clayes, 2006) and can compensate for uncertainty and risk related to the foreign context and to the firms' "liability of foreignness" (Zaheer, 1995).

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[16] Technical assistance consists of support for feasibility studies and also some start-up support, particularly for SMEs and less experienced investors. Start-up support can include legal assistance, support in adapting technology to foreign markets and training of managers and employees (UNCTAD, 1997).

Non-financial incentives are approached in much the same way: they seek to relax the limits due to bounded resources and capabilities in a company embarking on an internationalisation process, especially when a large geographical, cultural and institutional distance exists between the home and the host country. Focused information and technical assistance are expected to reduce contextualisation costs and consequently to increase the odds in favour of success (Duran and Ubeda, 2001).

In summary, this paper argues that policy incentives might impact both the decision to undertake a foreign investment as well as the decision regarding investment size.

Hp: Public incentives are key to promoting outward FDIs; they can generate an increase in the level of internationalisation as they help firms to overcome their financial constraints and compensate for uncertainty and risk related to the foreign context.

3. The model and the variables

The evaluation of public intervention has recently been the subject of an increasing number of studies. This is partly due to the European Union legislation that makes the evaluation of public intervention compulsory (1993).

The fundamental need for all public policy evaluations is to observe the counterfactual conditions, in order to answer the causal question as to whether the observed outcomes are actually caused by the examined public policy (Marschak, 1953). Because it is impossible to determine what would have happened in the absence of an incentive, we need a methodology that allows us to identify the causal relationship between the incentive and its outcome (i.e., the intensity of internationalisation of regions), controlling for other possible determinants of the outcome itself (Bartik and Bingham, 1995).

As our model aims at assessing the effectiveness of incentives, we followed a classical ex-post evaluation approach (Wollmann, 2007) in which the dependent variable measures the goal attainment. It is worth noting that the validity of the result of public policy evaluations depends to a great extent on the validity of the methods used to produce them. To this end, a variety of different techniques have been proposed[17] (Heckman, 2001).

Assuming the extent of the internationalisation process as a proxy of the incentive effectiveness at the regional level, the dependent variables have been identified in the degree of internationalisation. The internationalisation of each Italian region has been measured through the stock of FDIs at the regional level r and at time t. The regional level of internationalisation is measured both as the number of foreign investments (Model 1) and as their sales volume (Model 2). The uniqueness of our data in fact, allow us to measure the amount of FDIs; on the contrary, in the literature, the research question referred to how large the investment is, is usually driven by the absence of reliable information regarding the amount of investment.

Therefore, our dependent variables are:

(1) $Int\_number_{r,t}$ is the level of internationalisation, measured as the total number of FDIs on total number of firms, in regions r and year t (Model 1).

(2) $Int\_turnover_{r,t}$ is the level of internationalisation measured as the total FDI turnover on total amount of firms, in region r and year t (Model 2).

where the subscript r refers to the region (r = 1, … 20) and the subscript t to time (t = 2000, … 2006).

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[17] For a review, see Mosselman and Prince (2004).

The evaluation of public policy then requires a model that links the target variables to the policy tools and the other non-policy determinants[18] in a causal relationship (Duran and Ubeda, 2001). To this end, the present analysis classifies the factors affecting the outward FDI into two categories, namely policy and non-policy related variables.

By policy related variable, we mean any variable under the direct influence of public authorities or their agencies, including all financial incentives: financial support to feasibility studies, financial resources for the creation of permanent marketing structures abroad, equity and venture capital participation and regional incentives.

Among exogenous non-policy determinants and following Mariotti et al. (2008), we include both structural and behavioural variables. On the one hand, structural variables include the presence of large firms within the region that can develop production networks, implement multinational market-seeking strategies and may induce local firms to go abroad by imitation (the so-called leadership effect) (Rugman and Verbeke, 2003). Other variables include spillover effects, induced by the presence of foreign-owned multinational corporations that might provide a bridge to foreign markets thanks to the provision of skills, services and competitive stimuli (Baldwin et al., 2005). Domestic rivalry, which educates and trains firms in how they compete internationally, could also be a structural push towards international growth (Sakakibara and Porter, 2001). On the other hand, behavioural determinants include firm experience (both through export and FDIs), which reduces information costs and innovation capacity and facilitates major commitment and agreements with foreign companies (Johanson and Vahlne, 1993; Markusen, 1995) and innovation which give rise to proprietary advantages that enable firms to go abroad (Cooke and Morgan, 1998). To capture the effect of more developed regions on the determination of the level of internationalisation, the variable North is included.

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[18] For a thorough review of the literature concerning the determinants of FDI, see UNCTAD (1992), Dunning (1993) and Mariotti et al., 2008.

The role of timing in estimating impacts is very important (Venetoklis, 2001). A fundamental assumption that is implicitly accepted in all causality arguments is that public intervention precedes the dependent variable in occurrence. A time lag between the public intervention and the measurement of expected impacts assures that causal relationships have time to evolve. In many cases, it is not clear when the effects of an incentive begin to unfold (Venetoklis, 2001). For example, firms expecting to receive a subsidy could anticipate their investment plans before the incentive is disbursed. As in the observed incentive allocations, public intervention often overlaps with the investment implementation (e.g., equity participation and venture capital funds), we assume a null time lag between incentive allocation and investment.

The construction of both independent and dependent variables is provided in Table 1.

Moreover the rates of change of structural and behavioural variables are typically much slower those that of pure policy variables (e.g., the level of financial incentives versus the export rate of a region). Consequently, most non-policy variables (i.e., Leader, International_leader, Hefindhal, Export and Innovation) are based on the Firm Census carried out by the Italian national statistical service (ISTAT) in 2001.

	Description (Model 1)	Description (Model 2)
Dependent Variable	Int_number$_{r,t}$: Total number of FDIs on total number of firms	Int_turnover$_t$: Total FDI turnover on total amount of firms
Independent Variable: Policy variables		
Fin_incentive$_{r,t}$	Number of financial incentives (i.e. acquisition of equity interests in Italian firms' direct investment abroad)	Total amount (€) of financial incentives (i.e., acquisition of equity interests in Italian firms' direct investment abroad)
VK_fund$_{r,t}$	Number of venture capital funds set up by the Government to support investments in areas such as the Far East, Eastern Europe, the Balkans, Africa, the Middle East and Central and South America	Total amount (€) of venture capital funds set up by the Government to support investments in areas such as the Far East, Eastern Europe, the Balkans, Africa, the Middle East and Central and South America
Comm_incentive$_{r,t}$	Number of financial incentives for the creation of permanent marketing structures abroad	Total amount (€) of financial incentives for the creation of permanent marketing structures abroad
Feas_incentive$_{r,t}$	Number of advice in preparation and implementation of projects (i.e., feasibility studies, training programmes and technical assistance)	Total amount (€) of advice in preparation and implementation of projects (i.e., feasibility studies, training programmes and technical assistance)
Reg_incentive$_{r,t}$	Total amount (€) of regional incentive to internationalisation and export	Total amount (€) of regional incentive to internationalisation and export
Spec_index$_{r,t}$	Specialisation index	Specialisation index
Independent Variable: Structural and behavioral variables		
Leader$_{r,2001}$	Incidence of firms with more than 250 employees on the total number of firms in the region r in 2001	
Int_Leader$_{r,t}$	Ratio of the number of employees in foreign affiliates of firms with over 250 employees in region r in year t and the number of employees in the leader firms located in the same region in 2001	
Herfindhal$_{r,2001}$	The Herfindhal index is calculated utilizing the number of employees belonging to Istat classes for each region j $\sum_{i=1}^{7} Nr,i \left(\dfrac{Er,i / Nr,i}{\sum_{i=1}^{7} Er,i} \right)^2$ where Nr,i is the number of firms belonging to class i in region r and Er,i is the number of employees in class i and region r	
Export$_{r,t}$	Ratio of the amount of export in region r in year t and the total number of firms in region j in 2001	
Experience$_{r,t}$	Number of years elapsing from when region r reached 50% of the number of employees engaged in foreign activities in year t	
Innovation$_{r,t}$	Ratio of the number of patents in region r in year t and the total number of firms in 2001	
North$_r$	Dummy variable taking value 1 when the region r is located in Northern of Italy	

Table 1: Description of the dependent and independent variables

In summary, the regression for the outcome (i.e., intensity of internationalisation) as a function of the policy tools (i.e., the different incentives) controlling for the other observable explanatory variables (i.e., structural and behavioural variables) is:

$$(1) \ \text{Int\_number}_{r,t} = f(P_{r,t}, NP_{r,t}) \qquad \text{(Model 1)}$$
$$(2) \ \text{Int\_turnover}_{r,t} = f(P_{r,t}, NP_{r,t}) \qquad \text{(Model 2)}$$

where the subscript r refers to the region and the subscript t to time and where:

$P_{r,t}$ = Feas_incentive$_{r,t}$, Comm_incentive$_{r,t}$, Fin_incentive$_{r,t}$,

VK_fund$_{r,t}$, Reg_incentive$_{r,t}$, Spec_index$_{r,t}$

$NP_{r,t}$ = Export$_{r,t}$, Experience$_{r,t}$, Innovation$_{r,t}$, Leader$_{r,t}$,

Int_leader$_{r,t}$, Herfindhal$_{r,t}$, North$_{r,t}$

The estimates of the panel data are conducted using a fixed effects approach

4. Data

Italy has been traditionally active in promoting both outward and inward FDIs and started to invest earlier than other European Union countries (UNCTAD, 1998). Between 2000 and 2006, the Italian government spent more than 1,000 million euro to promote outward investment and export, with about three percent a year of public funds to be used for industrial policy (Table 2).

In particular, since the late 1990s, the major public instruments in support of outward internationalisation have been the acquisition of equity in direct investments abroad by Italian Firms (Law 100/90; Law Decree 143/98; Law 35/05; Law 19/91); financial support to feasibility studies; training programmes and technical assistance for exports and direct investment abroad (Law Decree 143/98; Law 35/05; Ministerial Decree 136/00); the provision of financial resources for the

creation of permanent marketing structures abroad (Law 394/81) and participation in international tenders (Law 304/90); the stabilisation of interest rates for export credits and for capital goods; interest rate support on bank financing of the Italian share of investments in foreign companies in which public agencies have a stake (Law Decree 143/98; Law 100/90). Two agencies (Simest[19] and Finest[20]) allocate and manage venture capital funds in order to provide additional support to the investments in strategic non-EU markets, scout for partners and investment opportunities, and give technical and financial assistance and advice in the preparation and implementation of projects.

The largest portion of financial incentives is granted by the central government; nevertheless, a fraction of the yearly budget is allocated by regional administrations. All of the laws we referred to have been in place for more than ten years, and most regional interventions were set up in the last few years.

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[19] Simest is the largest institution for Italian businesses abroad, and it administers various forms of public support for the internationalisation of the Italian economy. Simest was set up as a limited company in 1990 (Law 100/1990). It is a public-private partnership controlled by the Ministry of International Trade and Commerce (76%), while private shareholders include banks and industrial business organisations. The primary objective of Simest is to promote the competitiveness of the Italian industry and the service sector by providing funding and advice to business outward investments.

[20] Finest was founded in 1992 pursuant to Italian National Law 19/1991 as an investment company that promotes economic co-operation with Eastern European countries. The main shareholders of Finest are the Regional Governments of Friuli Venezia Giulia and Veneto, the Autonomous Province of Trento (local public administrations of North East of Italy) and Simest. Finest provides its assistance to all companies whose headquarters are located in north eastern Italy (i.e., Friuli Venezia Giulia, Veneto and Trentino Alto Adige regions). Finest collaborates with companies to create or expand their businesses in foreign countries or to set up industrial and commercial relations with firms in target areas.

OBJECTIVES / INSTRUMENTS	Law Decree 143/98	Law 227/97 Law Decree 143/98 Law 24/03 Law 35/03	Law 394/81	Law 100/90 Law Decree 143/98 Law 35/05 Law 19/91	Law Decree 143/98 Law 35/05 Ministerial Decree 136/00	Law 304/90	Venture Capital Funds
Export and commercial FDI	■						
Feasibility studies, technical assistance					■		
Export Guarantees		■					
Trading FDI outside the EU			■				
Productive FDI in EU							
Productive FDI outside the EU				■			
Productive FDI in DCs				■			■
Productive FDI Guarantees							
Tenders outside the UE						■	

Table 2: Italian public tools promoting outward FDIs

The regional distribution of the investment incentive rate (i.e., public incentives / FDIs) and the level of investment incentives in 2006 (i.e., in millions of euro per year) can be seen in Figure 1 and Table 3.

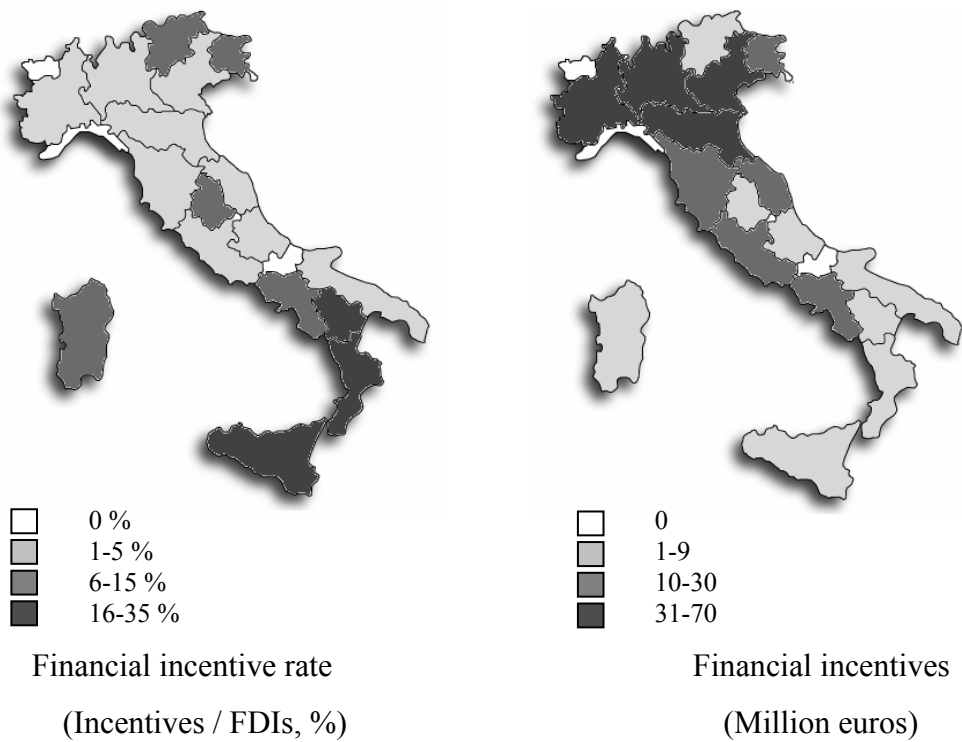|	
□ 0 %	□ 0
▢ 1-5 %	▢ 1-9
▨ 6-15 %	▨ 10-30
▮ 16-35 %	▮ 31-70
Financial incentive rate	Financial incentives
(Incentives / FDIs, %)	(Million euros)

Figure 1: Public incentive rate and
level of public incentive at the regional level, 2006

	Financial incentives		Venture Capital fund		Trade incentives		Feasibility studies		Regional incentives		Speciali-sation Index
Legislative source	Law 100/90 Law 19/91		Simest Law 100/90		Law 394/81		Law 143/98		Regional Law		
	Mln €	Inc /FDIs %	Mln €	Inc /FDIs %	Mln €	Inc /FDIs %	Mln €	Inc /FDIs %	Mln €	Inc /FDIs %	
Valle d'Aosta	0.0	0.0%	0.6	0.0%	0.7	0.0%	0.0	0.0%	0.00	0.0%	0.92
Piemonte	16.8	11.5%	5.8	4.0%	10.3	7.1%	0.9	0.6%	8.22	5.6%	1.22
Lombardia	11.6	3.0%	16.6	4.2%	21.8	5.5%	3.4	0.9%	4.62	1.2%	4.64
Liguria	0.0	0.0%	0.0	0.0%	0.2	0.0%	0.0	0.0%	0.30	0.0%	0.12
Veneto	14.9	1.7%	10.3	1.2%	17.3	2.0%	2.7	0.3%	2.34	0.3%	2.30
Trentino Alto Adige	1.5	1.8%	0.0	0.0%	1.9	2.3%	0.0	0.0%	0.46	0.5%	0.15
Friuli Ve-nezia Giulia	5.1	1.4%	1.3	0.4%	3.0	0.8%	0.3	0.1%	0.10	0.0%	17.99
Emilia Romagna	2.6	0.3%	13.0	1.5%	40.9	4.7%	2.1	0.2%	3.15	0.4%	2.78
Toscana	8.1	8.8%	5.7	6.2%	13.0	14.1%	1.9	2.1%	3.53	3.8%	0.92
Umbria	0.2	1.1%	3.6	20.0%	0.4	2.2%	0.8	4.4%	0.24	1.3%	0.41
Marche	3.5	2.2%	6.2	3.9%	2.7	1.7%	0.3	0.2%	0.51	0.3%	0.62
Lazio	4.2	4.5%	1.7	1.8%	4.8	5.1%	1.2	1.3%	1.86	2.0%	0.35
Abruzzo	0.6	3.3%	1.2	6.7%	0.0	0.0%	0.2	1.1%	0.30	1.7%	0.12
Molise	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.00	0.0%	0.00
Campania	3.4	5.8%	0.5	0.8%	1.0	1.7%	0.0	0.0%	0.41	0.7%	0.12
Puglia	2.0	10.0%	0.0	0.0%	1.3	6.5%	0.2	1.0%	0.21	1.1%	0.00
Basilicata	2.0	0.1%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.11	0.0%	0.03
Calabria	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.00	0.0%	0.00
Sicilia	5.0	1.3%	1.0	0.3%	0.0	0.0%	0.0	0.0%	0.07	0.0%	0.00
Sardegna	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.06	0.0%	0.00

Table 3: Incentives descriptive statistics, 2006

The public intervention is much more significant for firms in Northern and Central Italy than in Southern Italy, while the rate is highest in Southern Italy and lowest in Northern Italy. There are also significant regional differences in the

level of incentives. The level is highest in Lombardia and Emilia-Romagna (68.6 and 50.5 million euros per year, respectively). Notice also that the level is relatively small in Sicilia, Calabria and Basilicata (8.6, 1.0 and 8.4 million per year, respectively), even though its incentive rate is very high (15.3%, 33.3% and 22.2%, respectively).

All this regional differences justify the analysis at a local level.

	Leader	Int_Leader	Herfin-dhal	Export		Expe-rience	Innovation	
	(%)	(%)	(.)	(Mln €)	(Mln € /firm)	(years)	(pa-tents)	(pa-tents/ firm)
Valle d'Aosta	0.07%	2.29%	0.0026	589	0.053	7	101	0.009
Piemonte	0.11%	56.31%	0.0002	34,694	0.105	20	9,953	0.030
Lombardia	0.14%	29.31%	0.0001	93,020	0.124	16	24,305	0.032
Liguria	0.06%	4.44%	0.0003	4,176	0.033	17	1,866	0.015
Veneto	0.08%	32.06%	0.0001	43,824	0.116	8	7,519	0.020
Trentino Alto Adige	0.06%	20.09%	0.0003	5,669	0.074	7	854	0.011
Friuli Venezia Giulia	0.10%	14.64%	0.0004	10,982	0.127	9	2,422	0.028
Emilia Romagna	0.11%	35.21%	0.0001	41,262	0.115	13	10,244	0.028
Toscana	0.05%	22.42%	0.0001	24,447	0.078	15	3,869	0.012
Umbria	0.06%	5.80%	0.0003	3,214	0.050	19	620	0.010
Marche	0.04%	79.87%	0.0002	1,153	0.009	7	1,288	0.010
Lazio	0.10%	16.51%	0.0005	12,127	0.034	10	3,982	0.011
Abruzzo	0.06%	2.20%	0.0003	6,652	0.075	6	951	0.011
Molise	0.02%	67.75%	0.0005	612	0.031	6	58	0.003
Campania	0.04%	12.84%	0.0001	8,330	0.028	6	979	0.003
Puglia	0.04%	9.26%	0.0001	6,671	0.030	13	627	0.003
Basilicata	0.04%	4.53%	0.0012	1,707	0.052	2	1,107	0.033
Calabria	0.02%	0.00%	0.0002	326	0.003	5	180	0.002
Sicilia	0.03%	0.31%	0.0001	7,411	0.030	9	1,103	0.004
Sardegna	0.04%	10.25%	0.0002	4,339	0.045	6	247	0.003

Table 4: Descriptive statistics of behavioural and structural variables, 2006

Moreover Italian regions also differ greatly in their economic and structural characteristics, economic performance and degree of internationalisation. Tables 4 and 5 report the average values of the variables considered.

	Number of FDIs	Int_number	FDI turn-over	Int_turnover
Valle d'Aosta	1956	0.08	55	0.50
Piemonte	146	0.39	48964	14.84
Lombardia	393	0.56	44483	5.92
Liguria	1729	0.20	1431	1.15
Veneto	857	0.52	11571	3.08
Trentino Alto Adige	84	0.19	756	0.98
Friuli Venezia Giulia	353	0.45	1505	1.74
Emilia Romagna	869	0.48	11393	3.16
Toscana	92	0.27	2990	0.96
Umbria	18	0.13	282	0.44
Marche	160	0.29	2453	1.98
Lazio	94	0.24	49950	13.92
Abruzzo	18	0.10	316	0.35
Molise	6	0.09	66	0.34
Campania	59	0.05	628	0.21
Puglia	20	0.04	763	0.34
Basilicata	1956	0.05	31	0.09
Calabria	146	0.01	32	0.03
Sicilia	393	0.02	111	0.04
Sardegna	1729	0.02	64	0.07

Table 5: Internationalisation descriptive statistics, 2005

The dataset employed in the empirical analysis combines several sources of data (Table 6):

a. Reprint provides a census of outward and inward FDI in Italy since 1986. It is updated yearly, and it is sponsored by the Italian Institute for Foreign Trade.

b. Four Overseas Trade Ministry annual reports and annual publications collect information on Italian industrial policy between 2000 and 2006.

c. Simest and Finest public agencies' balance sheets provide information about the assignment of financial incentives (i.e., equity participation and venture capital funds) to Italian firms throughout the period from 1991-2007.

d. Istat census data report structural characteristics of the Italian regions in 2001, and annual Istat publications provide data on Italian export activities between 2000 and 2006.

e. The EP-CESPRI database, developed by Cespri Università Bocconi, provides information on patents applied for at the European Patent Office (EPO) since 1978. The EP-CESPRI database is based upon applications published on a regular basis by the Espacenet Bulletin and is updated yearly.

Given 20 Italian regions and 7 years (2000-2006), the data set provides us with a total of 140 observations.

	Source	Laws	Years
Dependent Variables			
Int_number	REPRINT Database		2000-2006
Int_turnover	REPRINT Database		2000-2006
Explanatory Variables			
Policy variables			
Fin_inc	SIMEST and FINEST balance sheets	Law 100/90 Law Decree 143/98 Law 35/05 Law 19/91	2000-2006
VK_fund	Elaborazioni Osservatorio Economico Ministero Commercio Internazionale su dati della Direzione Generale per le Politiche per l'Internazionalizzazione	Venture Capital Funds	2000-2006
Comm_inc	Elaborazioni Osservatorio Economico Ministero Commercio Internazionale su dati SIMEST	Law 394/81	2000-2006
Feas_inc	Elaborazioni Osservatorio Economico Ministero Commercio Internazionale su dati SIMEST	Law Decree 143/98 Law 35/05 Ministerial Decree 136/00	2000-2006
Reg_inc	Elaborazioni MET su dati Ministero delle Attività Produttive		2000-2006
Spec_index	Elaborazioni MET su dati Ministero delle Attività Produttive		2000-2006
Traditional variables			
Leader	ISTAT Census Data		2001
Int_Leader	REPRINT Database		2000-2006
Herfindhal	ISTAT Census Data		2001
Export	ISTAT		2000-2006
Experience	REPRINT Database		2000-2006
Innovation	EP-Cespri Database		2000-2006

Table 6: Sources of data for dependent and explanatory variables

5. Econometric findings

This section presents the estimates of the proposed models for the degree of internationalisation of Italian regions between 2000 and 2006 (Tables 7 and 8).

MODEL 1: Dependent variable: Int_number

	Coeff.	Std. Err.	[95% Conf. Interval]	
Policy variables				
Feas_incentive	-	-	-	-
Comm_incentive	0.198	0.921	-2.002	1.607
Fin_incentive	0.422	0.434	-0.429	1.272
VK_fund	2.298**	1.154	0.037	4.560
Reg_incentive	0.000***	0.000	0.000	0.000
Spec_index	0.000***	0.000	0.000	0.000
Traditional variables				
Leader	2.134***	0.390	1.369	2.899
Int_leader	0.001***	0.000	0.000	0.001
Herfindhal	-0.641***	0.157	-0.948	-0.333
Export	0.005***	0.002	0.002	0.009
Eperience	0.000***	0.000	0.000	0.000
Innovation	0.014**	0.006	0.003	0.025
North	0.001***	0.000	0.000	0.001
Const	0.000	0.000	-0.001	0.000

R-sq: Within = 0690   Number of observations =140

     Between = 0.883   Number of groups = 20

     Overall =0.880   P>chi2 = 0.

sigma_u= 0.0003

sigma_e = 0.0001

rho = 0.850

Table 7: Results of the random effects GLS regression, Model 1

MODEL 2: Dependent variable: Int_turnover

	Coeff.	Std. Err.	[95% Conf. Interval]	
Policy variables				
Feas_incentive	0.000	0.000	-0.001	0.001
Comm_incentive	-65.138	45.088	-153.508	23.232
Fin_incentive	88.367*	52.346	-14.229	190.964
VK_fund	-44.431	67.644	-177.011	88.148
Reg_incentive	0.000	0.000	0.000	0.000
Spec_index	0.000	0.000	-0.001	0.001
Traditional variables				
Leader	76.190***	17.226	42.427	109.952
Int_leader	0.013	0.012	-0.011	0.036
Herfindhal	-1.904	6.628	-14.895	11.088
Export	-0.035	0.094	-0.220	0.151
Experience	0.001***	0.000	0.001	0.002
Innovation	-0.001	0.396	-0.777	0.774
North	-0.017	0.011	-0.038	0.004
Const	-0.032	0.009	-0.049	-0.014

R-sq: Within = 0.152	Number of observations =140
Between = 0.609	Number of groups = 20
Overall =0.582	P>chi2 = 0.000
Sigma_u= 0.014	
Sigma_e = 0.008	
rho = 0.756	

Table 8: Results of the random effects GLS regression, Model 2

Among the different kinds of financial incentive, the equity participations and venture capital funds have proven to be the most effective in stimulating outward internationalisation. In particular, controlling for other confounders, our results

show that this kind of financial incentive helps companies go abroad (both the variables Fin_incentive and VK_fund show a coefficient that is positive and significantly different from zero at $p < 0.10$ in Model 2 and $p < 0.05$ in Model 1, respectively), thus confirming that financial gaps hinder firms in their internationalisation strategies (De Maeseneire and Clayes, 2006). Additionally, government involvement in FDI by equity participation (i.e., Fin_incentive) seems to reduce the uncertainty and risk associated with an unfamiliar host country (Henisz and Zelner, 2003).

Contrary to our expectations, financial support for feasibility studies and the provision of financial resources for the creation of permanent marketing structures abroad (Feas_incentive and Comm_incentive have a non significant coefficient in both Model 1 and 2) are not effective in stimulating investment[21] and regional incentives have a negative impact (Reg_incentive shows a coefficient that is negative and significant at $p < 0.05$ in Model 1).

As far as the structural variables are concerned, both the leadership and local rivalry effects interact in guaranteeing a sound international growth at the regional level. In Model 1 the variables Leader and Int_leadership show positive and significant coefficients (at $p < 0.01$), while the variable Herfindal has a negative and significant coefficient (at $p < 0.01$).

As far as the behavioural variables are concerned, experience significantly increases the level of regional internationalisation. The variables Export and Experience show in Model 1 positive coefficients that are significantly different from zero (at $p < 0.01$ in the first case and at $p < 0.01$ in the second one, respectively). Likewise, innovation seems to be effective in enabling firms to grow abroad and establish themselves in strategic markets (In Model 1 the variable Innovation shows a coefficient that is positive and significantly different from zero at $p < 0.05$).

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[21] We also estimated the two models with a time lag equal to one and two, and the results were the same.

6. Conclusion and policy implications

While few studies have analysed the effectiveness of public incentives in attracting inward FDIs, almost no evidence has been provided so far on public incentives for the outward internationalisation of firms. Moreover, no studies have used econometric modelling to test the effectiveness of different policy tools on firms' behaviour and on internationalisation at the regional level.

The novelty of our study is in the emphasis on the role played by public policy tools in determining the degree of internationalisation of a region. In particular, our study examines the effect of different types of financial incentives addressing firms' internationalisation and provides useful suggestions to policy makers for the design of appropriate incentives and the improvement of existing ones.

Despite the limited extension of the time frame in our sample, the empirical findings are in line with the theoretical hypotheses: public incentives are key for promoting outward investments, and they have to be seen in the broader context of the determinants of FDIs. The findings confirm that financial incentives like equity and venture capital funds can help firms overcome their financial constraints and can compensate for uncertainty and risk related to the foreign context. On the contrary, financial support for feasibility studies seem to be ineffective, as they do not generate an increase in the level of internationalisation.

Bearing in mind the novelty of the subject, the future agenda could expand the analysis on the effectiveness of outward public policies. First of all, the effectiveness of outward investment incentives can, and does, vary from industry to industry. We therefore suggest that future investigations should take into account inter-industry differences. Secondly, this paper demonstrates the effectiveness of outward investment incentives but does not compare social costs and benefits. The finding that outward policy tools are effective by no means implies that they raise the home country's social welfare. It is also important to note the importance of incorporating both intended effects such as additionality and unintentional effects such as displacement and indirect effects.

In conclusion, the findings of this paper seem to justify greater research efforts in the area of incentives for outward internationalisation.

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