

## **HOW DO EARNINGS MANAGEMENT PRACTICES DISTRACT INTERNATIONAL ENVIRONMENTAL FUNDS? EMPIRICAL EVIDENCE OF EUROPEAN DEVELOPMENT FUNDS IN ITALY**

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### *Abstract*

This study offers empirical evidence showing that Italian private firms manipulate their financial reporting process in order to benefit from capital subsidies. This attitude appears more emphasized for firms located in the Southern areas of Italy and intensifies as the amount of contribution increases. These findings are robust to alternative tests and support the arguments we elaborated to identify our hypotheses. Our first working hypothesis is that large companies discourage investment projects from smaller companies. Instead our second hypothesis is that companies in southern Italy have a higher pressure to distract Regional Development Funds than companies in northern Italy. In both hypotheses, the phenomenon of obscure accounting of European Development Fund is relevant. In recent years, both aspects of this phenomenon have been studied as a shadow in European Affairs not only by the European authorities but also by the Bank of Italy. They may be interpreted as the effects of several changes in the EU aid policy: the central role that assessing financial performance has assumed to select beneficiary firms, the EU radical trim of the total pie devoted to assisted areas coupled with a downsized role of the Italian central authorities to ensure regional cohesion has brought to light the tricky result that firms located in the poor South enjoy an even lower stake of resources as compared both to the North and the past.

*Keywords:* Accountability Methodology, Capital Subsidies Scheme, Earnings Management, Earnings Quality, European Development Fund, Distraction Model of Public Grants

### **1. Introduction earnings management practices in International Environment Funds**

Capital subsidies supporting the entrepreneurial system of disadvantaged European Regions drastically dropped during the 2007-2013 European Union (EU) programming period due to the combined effect of several changes: the EU 2004 enlargement, stricter criteria to identify the beneficiary regions and areas, lower percentage of investment subsidies and a new method of aid's computation. At the same time, the EU commission imposed to beneficiary firms the requirement of

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additionality: that is firms are expected to undertake investments that would not otherwise be made in the assisted areas. These relevant changes in the EU membership and rules have implied for beneficiary firms a greater effort both to compete for a lower share of public resources and to integrate the residual unsubsidized stake of their investments either through their own internal resources or by external financing. The EU guidelines on regional aid (2007-2013 programming period) neatly express the need of “ensuring viable and sound investments with a real and sustained contribution to regional development”. This EU general provision binds granting authorities of member States to define a set of criteria in order to channel public resources towards firms that are able to achieve high investment returns, as predictable by analyzing their ex – ante performance. Thus evaluating firms profitability and financial solidity becomes central for granting authorities in order to select beneficiary firms. The informativeness of firms financial accounts and the credibility of investment budgets and forecasts play an essential role to accomplish this task, as actual and future earnings, net assets and cash flows are fundamental statistics to predict firms performance. Firms, in turn, may be plausibly tempted to manipulate their accounting figures to reassure and convince granting authorities on their ability to realize fruitful investments as well as to collect and pay back integrative financial resources. The extant literature (Mura and Mulas, 2017) on public subsidies has largely analyzed their impact on firms performance, though the results are not uniform. At the same time, a large body of literature that originally focused on earnings management practices in public firms has now extended its interest also to privately held firms (Kosi and Valentincic, 2013). While recent studies on earnings management in public and private firms find that European publicly held firms exhibit lower levels of earnings management due to a monitoring effect by market forces, accounting discretion in private firms is less likely to be influenced by management contractual motives or market pressure. Conversely, financial reporting in private firms appears to be affected by other conflicting reporting objectives that include loss avoidance, tax minimization, earnings smoothing, leverage (Szczeny and Valentincic, 2012) and employee relations. In this respect, several studies (De Nichilo, 2020a) show that financial and tax incentives trigger a major conflicting behavior on earnings management in private firms, with tax incentives inducing them to moderate their taxable income to minimize the tax burden while financial incentives push them to manage earnings upwards in order to influence the perceptions of lenders about their financial performance. For the purpose of this study, showing a solid financial performance may represent a fundamental objective to take into account in the reporting process in order to increase the likelihood of benefitting from both capital grants and integrative external financial resources, as the stake of subsidized investments significantly dropped during the 2007-2013 programming period. Yet very few studies analyse earnings management practices finalized to gain capital grants and they all relate to either non - profit organizations or public firms (Verbruggen, 2012; Jegers, 2012). The immense world of for-profit private firms is still unexplored in this respect. Thus, this research aims to narrow this gap. Specifically, the purpose is to investigate whether Italian private firms manipulate their financial accounts in order to benefit from governmental subsidies after the European Union (EU) introduced a new regional aid policy for the 2007 – 2013 programming period. The endemic historical dualism between the rich North and the poor South of Italy – whose solution has always been a priority for policy makers – is another important feature of this setting. This offers the chance of observing

private firms under different incentives that may influence their financial reporting process as they operate under very different economic and cultural conditions within the same country. These studies reach the common conclusion that beneficiary firms show a higher profitability and size (Bernini and Pellegrini, 2011; Bondonio et al., 2012). Nevertheless, these studies often present analyses that overlook the accrual basis accounting rules behind the data along with an omitted neutralization of capital grant mechanical effects on operating revenues and costs (Mura et al., 2012). These limits cast some doubts about the real profitability and financial solidity of beneficiary firms as the results in these studies might also be expression of a potential commitment to earnings management aimed at receiving capital grants. In addition, the extant literature (De Nichilo, 2020b) on capital subsidies normally focuses either on a specific program or a specific geographical area at a time and rarely the analysis is simultaneously extended to both the entire territory of a country and multiple programs; when this happens generalizability and validity of the findings become an issue as the analyzed samples are small and qualitative information at firm's level poor (Mura et al., 2012). The results of our analysis strongly support our predictions showing that Italian private firms manage earnings upward and exercise accounting discretion on specific revenues and expenses in order to receive capital grants. This phenomenon is even more emphasized in the South of Italy, where firms compete for a lower stake of capital subsidies, showing an increasing manipulative behavior as the level of subsidization grows. More dramatically, beneficiary firms appear to significantly outperform their not beneficiary counterparts in terms of profitability after grant's receipt.

The structure of the paper is as follows: the introduction is an Italian literature review of earnings management practices in European Affairs, the section two gives a evidence of European conceptual framework and performance management with the main control activities. Then follows the sections on research design, results of economic modeling and conclusions.

## **2. EU Guidelines on National Regional Aid and capital grants recognition**

Italy and private firms have been chosen as the institutional setting of our analysis for several reasons. First of all, Italy ranks as the fourth-largest economy in the EU and the eight-largest in the world (International Monetary Fund (IMF), World Economic Outlook Database, 2015) with unlisted small-medium sized enterprises (SMEs) representing the vast majority of the Italian entrepreneurial system as it happens in the main European countries (Italy 99.99%, Germany 99.98%, France 99.97% and UK 99.89%; World Bank, Eurostat Business Demography Statistics, 2014). These firms operate in a codified legal environment and heavily depend on banks and other financial intermediaries for funding their investments (Mura, Emmanuel and Vallascas, 2013). A high level of corporate taxation and a high alignment between accounting and taxation provide strong incentives to minimize the tax burden. Secondly, within the 2007 - 2013 EU programming period, Italian SMEs benefitted from about 74% of the overall investment subsidies (National Report on Governmental grants, Italian Ministry of Economic Development, 2014). In this respect, private firms turn out to be a more representative setting than public firms to evaluate whether entities engage in earnings management practices to get capital grants. Moreover, the endemic historical dualism between the rich North and the poor South of Italy –

determining a different applicable regime under the EU regional aid policy – offers the chance of observing whether private firms operating under very different conditions within the same country reply differently to a same reporting incentive. To investigate the existence of earnings management practices aimed at benefitting from capital grants under the new EU regional aid policy for the 2007 – 2013 programming period, we first describe the EU general discipline with its related aid regimes and we then focus on its application to the Italian setting in accordance with our research objective.

The Guidelines establish the permissible aid intensity, recognizing higher subsidization ceilings for regions with relevant development shortfalls and in favors of small and medium-sized enterprises (SMEs). In fact, for the 2007 - 2013 EU programming period, the Guidelines (along with the related Regulation no. 1628/2006 on the application of Articles 87 and 88 of the Treaty to national regional investment aid) set different levels of aid intensity in relation to the specific derogatory regime and to firm size (large, small and medium enterprises).

Specifically, regions and areas fulfil derogation under Article 87(3)(a) (sub 1) with a per capita gross domestic product (GDP) below 75% of the EU–25 average, including outermost and statistical effects regions. Within this group, the maximum investment aid intensity must not exceed the following thresholds:

- regions with a per capita GDP below 75% of the EU–25 average, outermost and statistical effects regions: 30%, 40% and 50% respectively for large, medium and small - sized enterprises;
- regions with less than 60% of average EU-25 per capita GDP: 40%, 50% and 60% respectively for large, medium and small – sized enterprises;
- regions with less than 45% of average EU-25 per capita GDP: 50%, 60% and 70% respectively for large, medium and small – sized enterprises.

Comparing the discipline for the 2007 – 2013 period with the previous programming period (2000 – 2006), it clearly emerges a significant change in the generosity of investment subsidization due to two combined aid features:

- 1) reduction in the level of aid intensity for both derogation regimes;
- 2) shift from Net Grant Equivalent (NGE) to Gross Grant Equivalent (GGE) in the aid intensity calculation.

The GGE (Gross grant equivalent) and NGE (Net grant equivalent) represent the amount of a capital grant as a percentage of the subsidized investment, respectively before and after the related corporate taxes.

Under the same aid intensity, GGE percentage leads to a reduced level of subsidization due to the impact of company taxes charged on the grant. Along with the lower ceilings, the reduction in the aid intensity thresholds is significantly due to the shift from NGE to GGE determination of investment subsidies. In fact, NGE represents the

residual amount of a subsidy that a beneficiary firm enjoys after paying on it the related corporate taxes, and this configuration was adopted by the EU in the aid intensity calculation for the 2000 – 2006 period in order to take into account the different taxation regimes among member States. Technically, the NGE percentage is calculated as the difference between the nominal amount of a capital grant and the company taxes charged on the benefit, divided by the assisted investment. For the subsequent programming period, the EU has opted for a nominal determination of the aid ceilings (GGE), regardless of any consideration about corporate taxation, thus leading to a less favorable subsidization. Indeed, GGE represents the nominal amount of a capital grant as a percentage of the subsidized investment, before paying on it the related company taxes, with the effect that, *ceteris paribus*, a firm enjoys a smaller subsidy if the ceiling is expressed in terms of GGE instead of NGE. Following the Guidelines, each EU member State must draw up a Regional Aid Map to be approved with an EU Commission decision, delimiting the regions and areas in which the investment grants are subject to a specific aid intensity. Taking into account the EU 2004 enlargement, which has decreased the main benchmark for aid intensity determination (average per capita GDP among the EU member States), reports the effects of the 2007 – 2013 EU general provision on subsidization ceilings for the Italian regions, comparing them to the previous programming period.

The Italian Southern regions (Abruzzo, Apulia, Basilicata, Calabria, Campania, Molise, Sardinia and Sicily) historically belong to the “disadvantaged areas” group in which the whole regional territory (Apulia, Basilicata, Calabria, Campania, Sardinia and Sicily) or its vast majority (Abruzzo and Molise) enjoys the derogation regimes under the art. 87(3)(a) and (c) due to their endemic economic and social shortfalls. In line with the objective of regional cohesion as prescribed by the EU aid policy, firms located in this macro area have always received more generous aid intensities than the rest of Italy (i.e. Centre – Northern regions).

In contrast the Northern and Central areas did benefit from a slight increase in the aid intensity under both the derogation and non – derogation regimes. Indeed, the marked drop in the aid intensities for the Italian Southern regions between the two periods is due to the cumulative impact of two effects. The first effect relates to a change in the aid’s calculation: that is shifting from the Net Grant Equivalent (NGE) to the Gross Grant Equivalent (GGE). More specifically, according to the NGE the various ceilings of allowable aid are expressed as a percentage of the subsidized investment after excluding any corporate tax that may have to be paid on the aid grant by the beneficiary firms, while according to GGE the amount of grant is expressed as a percentage of the subsidized investment, before the related corporate tax is deducted. In a high-tax country such as Italy this implies, *ceteris paribus*, a corresponding reduction of the aid intensity in effective terms. The second effect is associated with the calculation of the average European Union’s GDP and unemployment rate relating to 25 member States (after the 2004 enlargement). As the ranking position of the Italian Southern regions in terms of GDP and unemployment rate – as a percentage of the EU-25 average – has improved due to the entry into the UE of more underdeveloped countries, that has resulted in a fall in the two benchmark criteria for aid ceilings determination. These relevant changes in the EU rules have implied for beneficiary firms a greater effort to compete for a lower share of public resources as well as to integrate capital subsidies

in order to cover the residual unsubsidized stake, either through their own internal resources or by external financing. Comparing again the Guidelines related to the two programming periods, the 2007 – 2013 rules state an additionality requirement in order “to undertake investments which would not otherwise be made in the assisted areas” (art. 38) with the related need of “ensuring that the investment makes a real and sustained contribution to regional development” (art. 40). These two relevant requirements for aid entitlement place greater emphasis on evaluating firms profitability and financial solidity in order to recognize the subsidies. In other words, the EU general provision binds member States’ granting authorities to define a set of criteria in order to channel public resources towards firms capable of achieving higher investment returns, as predictable by analyzing their ex – ante performance along with their future profitability prospects. As regards the granting procedure, this analysis is mainly focused on a consistent regional source of investment grants, namely those financed under the European Regional Development Fund (ERDF), which accounted for about 54% of the total resources for capital grants related to the 2007 – 2013 period (19,045 million of Euros, [Opencoesione.gov.it](http://Opencoesione.gov.it)).

As regards the institutional setting of our analysis, only Apulia, Calabria, Campania and Sicily fall within the Convergence scheme – with Basilicata in a transitory regime (i.e. phasing out) – while the other Italian regions are included in the Competitiveness and Employment objective. Following the Community Strategic Guidelines (CSG) and the National Strategic Reference Framework (NSRF), as a high – level strategy indication, each region is required to issue an Operational Program (OP), setting out the specific priorities of regional aid (“priority axes”), the single actions to achieve a sub - level objective in an axis with some indicators to assess the policy results.

Given the overriding discipline on regional aid assistance, notably the requirement that “the investment makes a real and sustained contribution to regional development” and the additionality effect, from a deeper analysis of selection criteria and the requirements for applying for a capital grant call (documents to attach and duration of projects’ appraisal, among the others) relating to a single operative objective for each Italian region it clearly emerges that ex – ante evaluation of financial performance – along with future profitability prospects - represents an important feature of the granting procedure. Indeed, as regards historical accounting information, the vast majority of public calls for capital grants in the Italian regions requires to attach the financial statements related to the last approved operating year - or the last two in some cases. In addition, applicant firms have to finance the residual unsubsidized stake of an investment either through their own internal resources or by external financing – in a form free of any public support - in accordance with the EU regional aid regulation (art. 39 of the Guidelines). In this respect, several calls for capital grant in the Italian regions include as mandatory documents for the eligibility of an application either a copy of a loan contract demonstrating the financing of the residual stake of the assisted investment or a statement to declare the recourse to external or internal funding. With respect to the granting procedure, financial statements and successful external funding provide useful information on the ability of an applicant firm to financially sustain a new investment (financial viability) by anticipating the necessary liquidity to implement it before its related future revenues are realized, while the capacity of an investment to generate fruitful returns is generally assessed by requiring an investment

budget. Moreover, past performance (profitability and financial solidity) helps lenders assess a firm's capacity of paying back integrative financial resources and improves granting authorities' evaluation of beneficiaries' reliability.

As it will be widely discussed in the hypotheses development section, as the informativeness of firms financial accounts plays an essential role in the external evaluation of performance, firms in turn may be plausibly tempted to manipulate their accounting figures to reassure and convince the granting authorities on their ability to realize fruitful investments as well as to collect integrative financial resources (De Nichilo, 2019a). In addition, this behavior may be potentially encouraged by a more intense competition for public resources due to a reduced level of investment grants. Indeed, due to worsening economic conditions, the overall amount of national and regional subsidies dropped dramatically in 2007 – 2013 compared to the previous period. Given the dramatic drop in the total level of subsidization between the two periods, it is evident that the Italian Southern regions have borne the weight of the reduction in public aid resources compared to the Centre – Northern areas. This regional reallocation of public resources in favors of the Italian Centre – Northern regions stems from a downsized role of the central authorities in adopting incisive regional cohesion policies in order to narrow down the economic gap between the wealthy North and the poor South of Italy (Mura and Emmanuel, 2010). In fact, the overall level of investment grants in 2007 – 2013 lowered substantially in the national component of public aid measures to the detriment of the Southern regions, while the regionally - financed aids slightly counterweighted for this reduction trend, in spite of the consolidated capacity of Centre – Northern regions to channel more local resources to investment aids. All these institutional features related to investment grants will support our hypotheses development in the attempt to disentangle diverging earnings management behaviors at a macro – regional level.

### **3. Research Design**

The analysis will focus on a vast sample of Italian private firms that comprises a group of subsidized firms during the programming period 2007 – 2013 and a control group of non – subsidized firms. As regards beneficiary firms, our research is mainly focused on a consistent regional source of investment grants which accounted for about 54% of the total granting amount during the 2007 – 2013 period (19,045 million of Euros, [Opencoesione.gov.it](http://Opencoesione.gov.it)). Previous studies often analyze either specific region and multiple programs, or a specific program relating to a large territory. As we needed to ensure rich and detailed information at firm-level (on the nature of the subsidy, the granting program, localization, financial data, etc.) relating to a large number of firms located in the entire Italian territory, our final sample reflects various selection criteria and is the result of a patient and accurate procedure. First, the group of subsidized firms is drawn from the list of SMEs benefitting from the EU Regional Development Fund that each Region has to publish on its website in accordance with the EU Commission Regulation no. 1828/2006, specifying the nature of the activities, the recognition year and the amount of public funding allocated to them. Second, from each regional Operational Program Funds we have thus managed to distinguish capital grant beneficiaries from other types of beneficiaries according to the identification code that matches single activities in a priority axis with investment subsidies. Third, after excluding beneficiary firms that are not in the form of limited - liability

companies (as they are not required to publish their financial accounts in Italy), for each beneficiary firm we have incorporated in our database information on the purpose of the investment subsidy (Innovation, Development, Research), the type of assets financed (Material, Immaterial or mixed) and the beginning year of the related project. This further information has been collected from other databases publicly available under the open data system. At this stage, we have then incorporated financial accounting data from year 2005 to 2014 as extracted from the database AIDA (Bureau Van Dijk), including some additional qualitative information about the geographical location (according to the registered and operating office), industry, ownership, year of incorporation and auditing information. To avoid the inclusion of homonyms in the process of financial statement collection, each beneficiary firm has been precisely identified with its own registration number as provided in various websites (Opencoesione.gov.it, Kompass.com and Infoimprese.it). From AIDA database we have finally gathered the financial statements of non – subsidized firms, identified among those with no amount of operating grants during the period 2008 – 2014, as separately reported in item A-5 of the Income Statement (art. 2425 Civil Code). All these steps have led to an initial sample composition of about 8,000 beneficiary firms and 31,200 non-beneficiary firms, subject to a subsequent shortening due to specific variable requirement and outlier eliminations as adopted in the empirical analysis.

The aim of our empirical analysis is to investigate whether Italian private firms manipulate their financial accounts in periods prior to the application for capital grants as a way to increase the probability of having their request accepted. The analysis of public calls for capital grants in each Italian region revealed a short duration of the period for requests' assessment – from 2 to 10 months after deadline for applications – with a tightened period for requests submissions. This leads us to infer that applicant firms may engage in earnings management practices in the financial statements related to the financial year prior to the submission of a capital grant application for two main reasons:

- 1) the vast majority of public calls for capital grants requires to attach the last approved financial statements at the very least;
- 2) the terms for submitting the application may still be open after the approval of financial statements (within the end of April), giving potential room for opportunistic accounting manipulations before the participation to a specific public call.

As regards the choice of the multivariate model, we adopt a Probit specification (probability model) in order to determine the likelihood of receiving a capital grant conditioned on several explanatory variables capturing the presence of earnings management and its intensity at regional level – as main variables of our interest – and the effect of size, leverage and profitability as suggested in prior research. Indeed, previous studies related to the impact of capital grant on firm's performance in the Italian setting indicates profitability, firm's financial solidity, size and sector as factors influencing the probability of being subsidized. Hence, our Probit model is as follows:

$$\Pr(\text{BEN}_{i,t} = 1) = \beta_0 + \beta_1 \Delta IA_{i,t-1}/TA_{t-1} + \beta_2 \Delta IA_{i,t-2}/TA_{t-2} + \beta_3 \Delta IA_{i,t-1}/TA_{t-1} * \text{South}_i + \beta_4 \Delta IA_{i,t-2}/TA_{t-2} * \text{South}_i + \beta_5 \text{EBITDA}_{i,t-1}/TA_{t-1} + \beta_6 \text{QuickRatio}_{i,t-1} + \beta_7 \text{LEV}_{i,t-1} + \beta_8$$



$SIZE_{i,t-1} + \beta_9 \Delta Debits_{i,t-1}/Debits_{t-2} + \beta_{10} \Delta Equity_{i,t-1}/Equity_{t-2} + \beta_{11} IntangibleAssets_{i,t-1}/TA_{t-1} + \beta_{12} AGE_{i,t-1} + \beta_{13} FullFinancialStatement_{i,t-1} + \beta_{14} AUDITOR_{i.} + \varepsilon_{it}$   
 where:

BEN <sub>i,t</sub> = Dummy variable taking on the value of 1 if firm i benefits from a capital grant in year t (recognition year) and 0 for non-beneficiaries, with a missing value for beneficiaries in the periods other than the recognition year;
$\Delta IA_{i,t-1}/TA_{t-1}$ = Change in income accruals on total assets for firm i in year t-1;
$\Delta IA_{i,t-2}/TA_{t-2}$ = Change in income accruals on total assets for firm i in year t-2;
$\Delta IA_{i,t-1}/TA_{t-1} * South_i$ = Interaction term between change in income accruals on total assets for firm i in year t-1 and a dummy variable taking on the value of 1 if firm i is located in the South of Italy (Islands included) or 0 otherwise;
$\Delta IA_{i,t-2}/TA_{t-2} * South_i$ = Interaction term between change in income accruals on total assets for firm i in year t-2 and a dummy variable taking on the value of 1 if firm i is located in the South of Italy (Islands included) or 0 otherwise;
$EBITDA_{i,t-1}/TA_{t-1}$ = Earnings before interests, taxes, depreciation and amortization (EBITDA), calculated as operating income plus amortization, provisions and bad debt expense, on total assets for firm i in year t-1;
QuickRatio <sub>i,t-1</sub> = Current assets (except inventory) on current liabilities for firm i in year t-1;
LEV <sub>i,t-1</sub> = Total debts on total assets for firm i in year t-1;
SIZE <sub>i,t-1</sub> = Natural logarithm of total assets for firm i in year t-1;
$\Delta Debits_{i,t-1}/Debits_{t-2}$ = Percentage change in long – term debts for firm i in year t-1;
$\Delta Equity_{i,t-1}/Equity_{t-2}$ = Percentage change in equity for firm i in year t-1;
$IntangibleAssets_{i,t-1}/TA_{t-1}$ = Net intangible assets on total assets for firm i in year t-1;
AGE <sub>i,t-1</sub> = Natural logarithm of firm i's number of years in period t-1;
FullFinancialStatement <sub>i,t-1</sub> = Dummy variable taking on the value of 1 if firm i files a non – abridged financial statement in year t-1 or 0 otherwise;
AUDITOR <sub>i.</sub> = Dummy variable taking on the value of 1 if firm i is subject to auditing or 0 otherwise;

Table 1: Descriptions variables. Source: Our elaborations.

The dependent variable BEN<sub>i,t</sub> for the beneficiary group takes on the value only for the year corresponding to the recognition of a capital grant while the remaining years report a missing value given that our analysis aims to investigate whether beneficiary firms have manipulated their financial accounts in the years close to the recognition year – i.e. one and two years prior to it - by including in our set of covariates the lagged variables of the change in income accruals for one and two years.

H <sub>1</sub>	A positive sign of the coefficient of $\Delta IA_{i,t-1}/TA_{t-1}$ and $\Delta IA_{i,t-2}/TA_{t-2}$ indicates that firms reporting – from one period to another - higher positive differences in the values of income accruals components (by overstating the valuation of inventories or reducing the other expenses subject to accounting discretion) are more likely to benefit from capital grants influencing the probability of having their application accepted. In line with our hypothesis H <sub>1</sub> , we expect a positive sign of the coefficient related to this variable,
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	resulting in an intertemporal upward earnings management behavior of beneficiary firms aimed at receiving capital subsidies (De Nichilo, 2020a). Our first working hypothesis is that large companies discourage investment projects from smaller companies.
H <sub>2</sub>	The interaction term $\Delta IA_{i,t-1}/TA_{t-1} * South_i$ and $\Delta IA_{i,t-2}/TA_{t-2} * South_i$ determines whether firms located in the South of Italy engage more in earnings management practices than those located in the other areas in the near periods prior to their application for capital grants. In line with our hypothesis H <sub>2</sub> , we expect a positive sign of the coefficient of this variable (De Nichilo, 2020b). Instead our second hypothesis is that companies in southern Italy have a higher pressure to distract Regional Development Funds than companies in northern Italy.

Table 2: Hypotheses. Source: Our elaborations.

The variable  $EBITDA_{i,t-1}/TA_{t-1}$  should capture the importance of profitability as a requirement to benefit from capital grants in light of the EU and national provision as discussed in the institutional framework section. Hence, we expect a positive sign for the coefficient associated with  $EBITDA_{i,t-1}/TA_{t-1}$ , resulting in a higher probability of receiving capital subsidies for firms more profitable. The variable  $QuickRatio_{i,t-1}$  indicates whether firms that show stronger liquidity conditions increase the likelihood of getting capital grants.

This is also in line with the firms objective to persuade lenders to cover the unsubsidized stake of the assisted investments with external financing. In line with prior research on capital subsidies in the Italian institutional setting (Bernini and Pellegrini, 2011), we expect a positive sign for the coefficients of variables  $LEV_{i,t-1}$  and  $SIZE_{i,t-1}$ , indicating that more indebted and bigger firms are more likely to benefit from capital grants.

The variable  $IntangibleAssets_{i,t-1}/TA_{t-1}$  proxies for the attitude of a firm towards innovation and allows to control for the innovative propensity of beneficiary firms and their assisted investments as a requirement particularly appreciated in most capital grant schemes related to R&D and innovation technologies.

Table 3 A and B shows descriptive statistics for the set of variables used in our model, respectively for beneficiary and non – beneficiary firms.

Variable	N. Obs	Mean	Median	Std	Min	Max
<b>Ben<sub>i,t</sub></b>	7,187	1	1	0	1	1
<b><math>\Delta IA_{t-1}/TA_{t-1}</math></b>	7,187	0.0080	0	0.0664	-0.5746	0.5413
<b><math>\Delta IA_{t-2}/TA_{t-2}</math></b>	7,187	0.0116	0	0.0738	-0.5341	0.6001
<b><math>\Delta IA_{t-1}/TA_{t-1}</math> South</b>	7,187	0.0038	0	0.0371	-0.3614	0.5413
<b><math>\Delta IA_{t-2}/TA_{t-2}</math> South</b>	7,187	0.0052	0	0.04489	-0.3893	0.6001
<b><math>EBITDA_{t-1}/TA_{t-1}</math></b>	7,187	0.0946	0.0825	0.0854	-0.3923	0.5049
<b>QuickRatio<sub>t-1</sub></b>	7,187	0.5847	0.5794	0.2482	0.0007	3.2830
<b>LEV<sub>t-1</sub></b>	7,187	0.6386	0.6703	0.2084	0.0117	1.9579
<b>SIZE<sub>t-1</sub></b>	7,187	14.8574	14.9292	1.4096	9.6881	17.7641

$\Delta\text{Debts}_{t-1} / \text{Debts}_{t-2}$	7,187	0.0268	0	0.1756	-0.8063	1.6332
$\Delta\text{Equit}_{t-1} / \text{Equity}_{t-2}$	7,187	0.1696	0.0444	0.6795	-3.8326	7.7657
$\text{IntangAssets}_{t-1} / \text{TA}_{t-1}$	7,187	0.0495	0.0124	0.0894	0	0.5966
$\text{AGE}_{t-1}$	7,187	2.686	2.7726	0.8069	0	4.6540
$\text{FullFinStat}_{t-1}$	7,187	0.3156	0	0.4647	0	1
<b>AUDITOR</b>	7,187	0.3334	0	0.4715	0	1
$\text{Subs}_t / \text{TA}_t$	7,187	0.0156	0.0104	0.0148	0.0001	0.0550

Table 3A: Beneficiary. Source: Our elaborations.

Variable	N. Obs	Mean	Median	Std	Min	Max
<b>Ben</b>	156,740	0	0	0	0	0
$\Delta\text{IA}_{t-1} / \text{TA}_{t-1}$	156,740	0.0004	0	0.0794	-0.6379	0.4242
$\Delta\text{IA}_{t-2} / \text{TA}_{t-2}$	156,740	0.0018	0	0.0868	-0.6389	0.4242
$\Delta\text{IA}_{t-1} / \text{TA}_{t-1}$ South	156,740	0.0005	0	0.0384	-0.6347	0.4237
$\Delta\text{IA}_{t-2} / \text{TA}_{t-2}$ South	156,740	0.0007	0	0.0417	-0.6348	0.4239
$\text{EBITDA}_{t-1} / \text{TA}_{t-1}$	156,740	0.0507	0.0322	0.1054	-0.4699	0.5167
<b>QuickRatio</b> <sub>t-1</sub>	156,740	0.5195	0.4427	0.4687	0.0001	3.7200
<b>LEV</b> <sub>t-1</sub>	156,740	0.5917	0.6535	0.3234	0.0001	2.0813
<b>SIZE</b> <sub>t-1</sub>	156,740	13.0709	13.0496	1.4636	9.0852	17.7695
$\Delta\text{Debts}_{t-1} / \text{Debts}_{t-2}$	156,740	0.0138	0	0.2100	-0.8415	1.6990
$\Delta\text{Equit}_{t-1} / \text{Equity}_{t-2}$	156,740	0.0779	0.0133	0.7019	-3.8524	7.8849
$\text{IntangAssets}_{t-1} / \text{TA}_{t-1}$	156,740	0.0237	0	0.0717	0	0.5976
$\text{AGE}_{t-1}$	156,740	2.6408	2.5649	0.6338	0.6931	5.3706
$\text{FullFinStat}_{t-1}$	156,740	0.0611	0	0.2394	0	1
<b>AUDITOR</b>	156,740	0.0498	0	0.2175	0	1
$\text{Subs}_t / \text{TA}_t$	156,740	0	0	0	0	0

Table 3B: Non-beneficiary. Source: Our elaborations.

#### 4. Results

This section discusses the results of our Probit regression model by determining the probability of getting capital subsidies conditionally on a set of covariates including the change in income accruals, the regional location and several firm's characteristics (profitability, leverage, size and governance). Our primary concern is to gain insights on how changes in income accruals are associated with the likelihood of receiving a capital grant in order to verify the prediction of hypothesis H<sub>1</sub>. Our second concern is to focus on the Southern area of Italy in line with our hypothesis H<sub>2</sub>, in order to determine the existence of a more emphasized upward earning management practice in the pre – granting period (De Nichilo, 2019b).

We now move into a multivariate setting to verify hypothesis.

<b>Explanatory Variables</b>	<b>Coefficients<sup>1</sup></b>	<b>Robust Standard Error</b>
<b>Constant</b>	-8.039***	0.1148
$\Delta IA_{t-1}/TA_{t-1}$	0.5007***	0.1094
$\Delta IA_{t-2}/TA_{t-2}$	0.3464***	0.1052
$\Delta IA_{t-1}/TA_{t-1}$ <b>South</b>	0.5489***	0.2125
$\Delta IA_{t-2}/TA_{t-2}$ <b>South</b>	0.6677***	0.2005
<b>EBITDA<sub>t-1</sub>/ TA<sub>t-1</sub></b>	2.6358***	0.0869
<b>QuickRatio<sub>t-1</sub></b>	0.1762***	0.0139
<b>LEV<sub>t-1</sub></b>	0.4210***	0.0277
<b>SIZE<sub>t-1</sub></b>	0.4625***	0.0070
$\Delta Debts_{t-1} / Debts_{t-2}$	0.0664**	0.0336
$\Delta Equity_{t-1} / Equity_{t-2}$	0.0005	0.0096
<b>IntangAssets<sub>t-1</sub> /TA<sub>t-1</sub></b>	1.8263***	0.0782
<b>AGE<sub>t-1</sub></b>	-0.2343***	0.0142
<b>FullFinStat<sub>t-1</sub></b>	0.2491***	0.0214
<b>AUDITOR</b>	0.3109***	0.0253
<b>N. Obs</b>	163,927	
<b>R<sup>2</sup></b>	0.4084	

Table 4: Probit regression for the likelihood of getting a capital grant Probit Regression. Source: Our elaborations.

As expected according to hypothesis H<sub>1</sub>, our accrual variables show a statistically significant positive coefficient, indicating that firms with an increasing positive change in income accruals in the periods prior to the recognition of a capital grant have a higher probability of benefitting from it. In other words, firms tend to overstate revenues in the valuation of inventories and/or reduce the amount of bad debt expense, provisions or deferred taxes from one period to the other with the aim of improving the representation of their financial performance in the pre – granting period. In line with our hypothesis H<sub>2</sub>, this intertemporal upward earnings management turns out to be more significant for firms located in the Southern part of Italy, revealing the existence of a stronger incentive to engage in accounting manipulations in an area heavily affected by the relevant changes in the EU regional aid policy and in the distribution of national subsidization funds over the 2007 – 2013 period. As discussed in the institutional framework section, the relevance of financial performance as a requirement to benefit from capital subsidies is captured with the highly significant signs of variables measuring profitability (EBITDA<sub>t-1</sub>/TA<sub>t-1</sub>) and financial solidity (QuickRatio<sub>t-1</sub>), showing that more profitable firms and with a sound financial structure have a higher probability of receiving a capital grant. In line with prior research on capital subsidies, regression results confirm that beneficiary firms show higher levels of leverage and size in the period prior to the recognition of a capital grant, as it has emerged in the descriptive analysis. This may be interpreted as a financial signal of a past creditworthiness reputation in collecting external complementary funds for the unsubsidized stake of investments.

<sup>1</sup> \* Significance at 10%;

\*\* Significance at 5%;

\*\*\* Significance at 1%.

## 5. Overall Conclusion

In line with our expectations, this study offers empirical evidence showing that Italian private firms manipulate their financial reporting process in order to benefit from capital subsidies. This attitude appears more emphasized for firms located in the Southern areas of Italy and intensifies as the amount of contribution increases. These findings are robust to alternative tests and support the arguments we elaborated to identify our hypotheses. They may be interpreted as the effects of several changes in the EU aid policy: the central role that assessing financial performance has assumed to select beneficiary firms, the EU radical trim of the total pie devoted to assisted areas coupled with a downsized role of the Italian central authorities to ensure regional cohesion has brought to light the tricky result that firms located in the poor South enjoy an even lower stake of resources as compared both to the North and the past. In addition, as business plans and investment budgets represent further documents for selecting beneficiary firms, results on firms' profitability after grant's receipt show that beneficiary firms significantly outperform their non-subsidized counterparts, confirming that capital grants do not trigger efficient investments capable of enhancing existing financial performance. These findings shed new light on the productivity of governmental subsidies in contrast with the results of prior research on capital grants impact in the Italian setting by taking into account the manipulations on some components of firm's profitability and the mechanical effects of its related accounting treatment. In accounting terms, this evidence suggests that financial reporting quality in private firms presents another potential deviation from reporting true firm performance as the incentive to manipulate earnings to get capital subsidies appears to be prevailing with respect to other conflicting financial reporting objectives under a tax-non tax costs/benefits evaluation of adopting an income-increasing choice (De Nichilo and Pedone, 2009). This in turn generates two relevant implications: on one hand, this finding potentially explains the reason of so many conflicting results in the capital subsidy literature that analyses the effect of capital subsidy on firm's performance. After all, firms performance is based on hard accounting data that our analysis shows that may be influenced by an opportunistic exercise of accounting discretion aimed at getting governmental subsidies not previously investigated in the literature relating to private firms. On the other hand, users of private firms financial statements – notably granting authorities and lenders - should carefully rely on this set of reporting to infer information on firms financial performance. Nonetheless, in terms of implications of the new EU aid policy, it still remains central the need to improve the selection process of the beneficiary firms in order to channel public resources in favors of firms that are really capable of realizing fruitful investments. Some efforts should be addressed to mitigating the adverse impact of the 2007 – 2013 EU Regional aid policy at the expense of the Italian Southern regions with a countervailing role of central authorities in the distribution of public resources among macro-areas coupled with a stricter ex-post assessment of the assisted investments in terms of congruous returns to society. In this respect, further analyses on the distribution of beneficiaries value added among the various stakeholders (workers, lenders and owners) may represent a useful room for future research. As regards limitations, this study has focused exclusively on a specific European country as Italy that presents some uniqueness in its institutional framework thus complicating the extension and generalizability of our results to other settings (De Nichilo and Regogliosi, 2011). In addition, as the contents of investment budgets are not publicly available the analysis

has not allowed to univocally determine the reasons of the drop in profitability of beneficiary firms after grant's receipt.

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