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"Do private firms engage in earnings management practices to get capital grants? Some evidence from Italy"

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1 - INTRODUCTION

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 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 slide of public resources and to integrate the residual unsubsidised stake of their investments either through their own internal resources or by external financing.

The EU guidelines on regional aid (2007-2013 programming period, art. 40) 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 analysing 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 realise fruitful investments as well as to collect and pay back integrative financial resources.

The extant literature on public subsidies has largely analysed their impact on firms' performance, though the results are not uniform (Bergström, 2000; Roper and Hewitt-Dundas, 2001; Bronzini et al., 2006). At the same time, a large body of literature that originally focused on earnings management practices in public firms (Healy, 1985; DeAngelo, 1988; Jones, 1991; Dechow et al., 1995) has now extended its interest also to privately held firms (Ball and Shivakumar, 2005; Coppens and Peek, 2005; Burgstahler

et al., 2006; Kosi and Valentincic, 2013). While recent studies on earnings management in public and private firms (Burgstahler, Hail and Leuz 2006) 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 (Fields et al., 2001). Conversely, financial reporting in private firms appears to be affected by other conflicting reporting objectives (Beatty and Harris, 1998) that include loss avoidance (Coppens and Peek, 2005), tax minimisation (Sercu et al., 2002; Coppens and Peek, 2005; Garrod et al., 2008), earnings smoothing (Herrmann and Inoue, 1996), leverage (Szczesny and Valentincic, 2012) and employee relations (Kosi and Valentincic, 2013). In this respect, several studies (Danos et al., 1989; Coppens and Peek, 2005; Sercu et al., 2006) show that financial and tax incentives trigger a major conflicting behaviour on earnings management in private firms, with tax incentives inducing them to moderate their taxable income to minimise 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 subsidised investments significantly dropped during the 2007-2013 programming period.

Yet very few studies analyse earnings management practices finalised to gain capital grants and they all relate to either non - profit organisations or public firms (Verbruggen 2012; Jegers, 2012; Chen et al., 2008). 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.

Several features justify the choice of Italy as the institutional setting of this analysis. First of all, unlisted small-medium sized enterprises (SMEs) represent 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). European countries also share similar accounting disclosure rules due to the EU harmonisation process (Burghtshler et al., 2006, Gavana et al., 2013, Kosi and Valentincic, 2013). In addition, Italian SMEs enjoyed about 74% of the overall investment subsidies in Italy over the 2007 – 2013 period (National Report on Governmental grants, Italian Ministry of Economic Development, 2014). 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. Thus this setting appears an ideal framework to carry out this analysis and draw some general conclusions on how private firms shape their financial reporting process when they aim to get capital subsidies.

Indeed, the extant literature on capital subsidies in Italy has been focused on evaluating the impact on employment, investments and value added of the most recurring capital grant law (Law 488/92) aimed at disadvantaged areas. These studies reach the common conclusion that beneficiary firms show a higher profitability and size (Bronzini et al., 2006; 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 neutralisation 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 on capital subsidies normally focuses either on a specific programme 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 programmes; when this happens generalisability and validity of the findings become an issue as the analysed samples are small and qualitative information at firm's level poor (Mura et al., 2012).

For this reason, we have built an accurate and detailed database that results from combining several official sources (regional lists of beneficiary firms and financial accounts drawn from the database AIDA (Bureau Van Dijk, 2016)), so as to mirror the distribution of capital subsides in the Italian territory and to take into account differences

by region, sector, type of grant programme and investments. The final sample comprises around 8,000 beneficiary firms and a control group of about 31,200 non-beneficiary firms to empirically investigate whether the receipt of capital grants can represent an incentive for private firms to engage in earning management practices.

We rest on the cost/benefit conceptual framework postulating that private firms weigh tax and non-tax costs against tax and non-tax benefits to predict how they shape their financial reporting process to get capital subsidies (Cloyd, Pratt and Stock, 1996; Mills and Newberrys, 2001). Our central argument is that even in a country with high alignment between accounting and taxation such as Italy, there is still a great room for private firms to bend their accounting information towards objective other than minimising the tax burden. This is not only because private firms may consider winning capital subsidies as an unmissable non-tax benefit itself, but also because there are several accrual accounting options whose manipulation does not necessarily impact the tax burden of the firm or at least does not prevent firms from maintaining a net positive balance in favour of a non-tax benefit represented by the access to public subsidies and to integrative financial sources to finance their investments. Though in countries with high alignment between accounting and taxation fiscal authorities are claimed to take on the role of main user of private firms' financial accounts to verify the congruity of taxable income (Van Tendeloo and Vanstraelen, 2008), it is unlikely that they put their sights on these accounts, whether they imply higher taxable income or have no fiscal implication. Thus the potential risk and tax cost of a fiscal audit may remain low, leaving room for an unimpeded manipulation of accounting earnings toward the objective of getting capital subsidies and integrative financial resources.

To verify the validity of these hypotheses, we adopt several alternative tests both in a univariate and a multivariate scenario. A Probit model is run according to different specifications to determine whether the level of a firm's discretionary income components before grant's receipt influences the likelihood of benefitting from capital subsidies. These tests also investigate whether the level of earnings management hypothesised varies according to the grant's amount, the type of investment and firms' geographical location. In this last respect, we predict that firms located in the Southern area of Italy engage more in earnings management as this area was much more penalised

in comparison to the Northern regions both for the change in the EU aid policy and the distribution of national funds.

Credible business plans and investment budgets are also fundamental documents for selecting beneficiary firms in the granting process, but they are not in the public domain. Nonetheless, on the assumption that sound and viable investments are expected to be fruitful when their lives unfold, we have also monitored the profitability of beneficiary firms after grant's receipt to gain some insights on the impact of their subsidised investments.

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 emphasised in the South of Italy, where firms compete for a lower stake of capital subsidies, showing an increasing manipulative behaviour as the level of subsidisation grows. More dramatically, beneficiary firms appear to significantly outperform their non-beneficiary counterparts in terms of profitability after grant's receipt.

This study contributes to the literature relating to both earnings management practices in private firms and capital subsidies. On the one hand, the focus is on an incentive for earnings management not yet investigated in prior research within the institutional setting of private firms; on the other hand, the empirical evidence of this analysis may shed some light on the conflicting results that the extant literature offers on the impact of public subsidies on private firms' performance. This is because the earnings management practices that private firms pre-commit as a result of an incentive to get capital grants may influence the accounting results of the years when the subsidised investments are realised, thus confounding the measurement of their real financial performance.

The implications of our findings are twofold: in terms of policy-making, granting authorities need to reliably refine their selection mechanisms in order to channel public resources in favour of beneficiary firms that are really capable of realising fruitful investments. Critically, the real return to society of a huge amount of public money to support the entrepreneurial system is dubious. In pure accounting terms, our evidence suggests that the subtle manipulation of specific accruals to get capital subsidies

represents another important financial reporting objective that private firms like to target. This further undermines the quality of financial reporting in private firms, where the stimuli towards reporting true firm performance appear very weak.

2 - INSTITUTIONAL FRAMEWORK

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 (Burgstaler et al., 2006; Mura, Emmanuel and Vallascas, 2013). A high level of corporate taxation and a high alignment between accounting and taxation provide strong incentives to minimise the tax burden (Mura, Emmanuel and Vallascas, 2013; Gavana et al., 2013). 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.

Given the fundamental principle of the free movement of goods within the EU, "any aid granted by a Member State or through State resources in any form whatsoever which

distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall be incompatible with the common market" (Article 87 of the European Community Treaty).

However, with the aim of ensuring an effective regional cohesion, EU rules may consider compatible with the common market:

1) "aid to promote the economic development of areas where the standard of living is abnormally low or where there is serious underemployment" (Derogation under Article 87, (3), letter a);

2) "aid to facilitate the development of certain economic activities or of certain economic areas, where such aid does not adversely affect trading conditions to an extent contrary to the common interest" (Derogation under Article 87, (3), letter c).

These derogatory regimes aim to encourage investments and job creation in EU disadvantaged regions in order to reduce development disparities. Given the overriding role of EU rules among member States, the EU Commission (EC), for each programming period, is required to set the specific criteria in order to assess the compatibility of national regional aid with the common market under the Article 87 derogation regimes. The subsequent specifications (*Guidelines on national regional aid*) apply to investment aid[1] that firms benefit in every sector, except for fisheries, coal, steel and synthetic fibres industry[2], agricultural production, transport and shipbuilding, as these sectors are subject to specific rules[3].

The Guidelines establish the permissible aid intensity[4], recognising higher subsidisation ceilings for regions with relevant development shortfalls and in favour of

[1] The Guidelines adopt the term "investment aid" to refer to it as aid awarded for an initial investment project (setting – up, extension, product diversification and process innovation) related to material and immaterial assets.
[2] Specifically, EU rules prohibit regional investment aid in steel and synthetic sector.
[3] Other specific rules apply for the so-called "Horizontal State aid", indicating all the subsidisation aimed at promoting economic development in accordance with particular objectives, involving commonly all sectors and regions. Within this group, the EU Commission has issued single Regulations, setting out specific aid intensity (Research and Development and Innovation aid, Environmental aid, Employment aid, Training aid, SMEs aid)**.**
[4] The aid intensity is the discounted value of the aid expressed as a percentage of the discounted value of the eligible costs (art. 41 – Guidelines on National Regional Aid 2007 – 2013).

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[5].

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[6];

- 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.

As regards the alternative derogation regime, the Guidelines on national regional aid identify regions and areas among the following categories:

- the "economic development" regions[7];

[5] Outermost regions include the French overseas departments (Guadeloupe, French Guyana, Martinique and Réunion), the Spanish Autonomous Community of the Canary Islands and the Portuguese autonomous regions of the Azores and Madeira.
The term Statistical effects regions identify those regions whose GDP per capita has exceeded the 75% threshold solely because of the EU 2004 enlargement to the Eastern Europe countries, but not the limit calculated in relation to the EU – 15 average.
[6] According to the EU Commission Recommendation of 6 May 2003, a small enterprise is defined as an enterprise which employs fewer than 50 persons and whose annual turnover and/or annual balance sheet total does not exceed EUR 10 million, while medium – sized enterprises employ fewer than 250 persons and have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.
[7] The "economic development" regions are those whose per capita GDP fulfilled the 75% threshold of the EU-15 average in 1998, but not for the EU 2007 – 2013 programming period.

- low population density regions;
- regions with a population of more than 100 000 inhabitants and which have either a per capita GDP lower than the EU-25 average or an unemployment rate higher than 115 % of the national average;
- islands with fewer than 5 000 inhabitants;
- regions which are adjacent to a region that is eligible for support under Article 87(3)(a) or which share a border with a non - EU country;
- regions with a population of at least 50 000 inhabitants in serious relative decline or undergoing major structural change and smaller areas with a population of more than 20 000 inhabitants suffering from very localised regional disparities[8].

Within this group, the Guidelines on national regional aid set the investment aid ceilings as follows:

- as a rule: 15%, 25% and 35% respectively for large, medium and small – sized enterprises;
- statistical effects regions falling under the derogation under Article 87(3)(c) from 1 January 2011: 20%, 30% and 40% respectively for large, medium and small – sized enterprises;
- regions with both a per capita GDP more than 100 % of average EU-25 and an unemployment rate lower than the EU-25 average: 10%, 20% and 30% respectively for large, medium and small – sized enterprises.

Regions and areas not entitled to benefitting from the two derogation regimes are subject to the new SME investment and employment aid discipline (Commission Regulation (EC) No 800/2008 in replace of the former EC Regulation No 70/2001), setting an aid intensity of 20% and 10% respectively for small and medium 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 subsidisation due to two combined aid features:

1) reduction in the level of aid intensity for both derogation regimes;

[8] These latter represent only duly justified cases, requiring member States to demonstrate the necessity of a derogation by using recognised economic indicators and comparisons with the situation at the Community level.

2) shift from Net Grant Equivalent (NGE) to Gross Grant Equivalent (GGE) in the aid intensity calculation.

As regards the issue in 1), table 1 compares the aid intensities under the 2007 – 2013 and 2000 – 2006 EU programming periods.

Table 1 EC Guidelines on national regional aid

Derogation Regime	2007 – 2013 Period	2000 – 2006 Period
Art. 87(3)(a) (*Maximum ceilings*)	**50% GGE** (+20% and 10% GGE for SMEs)	**50% NGE** (+15% GGE for SMEs)
Art. 87(3)(a) (*GDP per capita higher than 60% EU average*)	**30% GGE** (+20% and 10% GGE for SMEs)	**40% NGE** (+15% GGE for SMEs)
Art. 87(3)(c) (*Maximum ceilings*)	**15% GGE** (+20% and 10% GGE for SMEs)	**20% NGE** (+15% GGE for SMEs)
Art. 87(3)(c) (*GDP per capita and unemployment rate higher and lower than EU average*)	**10% GGE** (+20% and 10% GGE for SMEs)	**10% NGE** (+15% GGE for SMEs)

Notes: GGE (Gross grant equivalent) and **NGE** (Net grant equivalent) represent the amount of a capital grant as a percentage of the subsidised investment, respectively before and after the related corporate taxes. Under the same aid intensity, GGE percentage leads to a reduced level of subsidisation 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 favourable subsidisation. Indeed, GGE represents the

nominal amount of a capital grant as a percentage of the subsidised 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[9], which has decreased the main benchmark for aid intensity determination (average per capita GDP among the EU member States), table 2 reports the effects of the 2007 – 2013 EU general provision on subsidisation ceilings for the Italian regions, comparing them to the previous programming period[10].

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).

Table 2 Aid intensity by Italian regions (2007 – 2013 and 2000 – 2006 periods)

Regions/Areas	Derogation Regime	2007 – 2013 Period	2000 – 2006 Period
Calabria	Art. 87(3)(a)	Until 2010: **40% GGE** (50% and 60% GGE for SMEs) From 2011: **30% GGE** (40% and 50% GGE for SMEs)	**75% GGE** (90% GGE for SMEs)

[9] On the 1st May 2004, the EU passed from 15 to 25 member States, after that several Eastern countries (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia) and Cyprus joined.

[10] The aid intensities for the 2000 – 2006 period have been converted into the GGE system to allow a more readable comparison between the two programming cycles, by applying a coefficient of 1.5 as corporate taxation impact (Italian Regional Aid Map, 2000; Servizio Studi, the Italian Chamber of Deputies).

Basilicata	Art. 87(3)(a) Art. 87(3)(c)	Until 2010: **30% GGE** (40% and 50% GGE for SMEs) From 2011: **20% GGE** (30% and 40% GGE for SMEs)	**52.5% GGE** (67.5% GGE for SMEs)
Campania	Art. 87(3)(a)	**30% GGE** (40% and 50% GGE for SMEs)	**52.5% GGE** (67.5% GGE for SMEs)
Apulia	Art. 87(3)(a)	**30% GGE** (40% and 50% GGE for SMEs)	**52.5% GGE** (67.5% GGE for SMEs)
Sardinia	Art. 87(3)(c)	Until 2010: **25% GGE** (35% and 45% GGE for SMEs) From 2011: **15% GGE** (25% and 35% GGE for SMEs)	**52.5% GGE** (67.5% GGE for SMEs)
Sicily	Art. 87(3)(a)	**30% GGE** (40% and 50% GGE for SMEs)	**52.5% GGE** (67.5% GGE for SMEs)
Abruzzo	Art. 87(3)(c) Non - Derogation areas	**15% GGE** (25% and 35% GGE for SMEs) **10% and 20% GGE** for SMEs	**30% GGE** (40% GGE for SMEs) **7.5% and 15% GGE** for SMEs
Molise	Art. 87(3)(c) Non – Derogation areas	**15% GGE** (25% and 35% GGE for SMEs) **10% and 20% GGE** for SMEs	**30% GGE** (40% GGE for SMEs) **7.5% and 15% GGE** for SMEs
Centre – North Regions	Art. 87(3)(c) Non – Derogation areas	**10-15% GGE** (20-25% and 30-35% for SMEs) **10% and 20% GGE** for SMEs	**12% GGE** (18% and 22% GGE for SMEs) **7.5% and 15% GGE** for SMEs

Notes: GGE (Gross grant equivalent) represents the amount of a capital grant as a percentage of the subsidised investment, before the related corporate taxes. All aid ceilings for the 2000 – 2006 period have been converted from NGE (Net grant equivalent) into GGE (Gross grant equivalent) by applying a coefficient of 1.5 as corporate taxation effect (Italian Regional Aid Map, 2000).

Table 2 clearly shows a significant reduction in the investment aid ceilings for the Italian Southern regions under the 2007 – 2013 programming period. 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 subsidised 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 subsidised 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 slide of public resources as well as to integrate capital subsidies in order to cover the residual unsubsidised 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 recognise 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 analysing 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).

Specifically, the ERDF "aims to reinforce economic and social cohesion by redressing the main regional imbalances through support for the development and structural adjustment of regional economies, [….] strengthening competitiveness and innovation, creating and safeguarding sustainable jobs, and ensuring sustainable development (Article 2, Council Regulation (EC) No 1080/2006 on the European Regional Development Fund).

For the 2007 – 2013 programming period, each region benefits from investment aids in specific strategic areas according to three cohesion objectives, with the first two as alternative regimes: 1) Convergence (regions with a per capita GDP lower than 75% of the EU – 25 average), 2) Regional Competitiveness and Employment (regions not included in the previous group) and 3) European Territorial Cooperation (cross - border regions). Under the Convergence objective, the ERDF supports economic development and the creation of sustainable jobs through a variety of priorities (R&D, information society, local development, environment, tourism, culture, transport and energy) while under the Regional Competitiveness and Employment objective, public assistance is focused on three competitiveness-enhancing priorities (innovation and the knowledge economy, environment and information and communication technologies). 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 Programme (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.

As required by the article 65 of Council Regulation (EC) No 1083/2006 laying down general provisions on the European Regional Development Fund, the European Social Fund and the Cohesion Fund, each regional monitoring committee shall define the criteria for selecting the operations financed under the regional policy funds.

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 unsubsidised 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 realised, 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.

The table 3 reports, for each Italian region, the criteria – defined by each regional monitoring committee and reported in a publicly available document - directly related to financial dimension as a requirement to benefit from an investment aid under a specific operative objective in accordance with the regional Operational Programmes for the 2007 – 2013 period, the financial documents to attach and the duration of applications' assessment as it emerged after scanning the public calls for investment grants relating to each operative objective in our analysis.

Table 3 Main requirements for investment aid by Italian regions (2007 – 2013 period)

Region (by area)	**Operative Objective**	**Financial criteria**	**Attached Documents**	**Duration of applications' assessment**
South				
Abruzzo	Support to innovation, growth and research for SMEs	Congruity between funding amount and expected results Economic and financial feasibility of a project	Last approved financial statements	About 10 months after the deadline for applications' submission
Apulia	Support to R&D investments Support to ICT investments Investment aid for SMEs' competiveness	Financial viability of an investment Reliability of beneficiaries under the economic and financial profile	Declaration of specific financial statement items (equity, total assets, net earnings and financial expense) related to the last operating year Copy of loan contract	About 7 months, About 4 months, About 5 months, after the deadline for applications' submission

Basilicata	Investment aid for SMEs' growth Support to innovative investments for SMEs	Evaluation of technical and financial capacities Financial viability of an investment Reliability of beneficiaries under the economic and financial profile	Last 2 approved financial statements Copy of loan contract	About 8 months after the deadline for applications' submission
Calabria	Support to innovation investments for SMEs	Financial viability of a project Evaluation of technical and financial capacities	Last 2 approved financial statements	About 4 months after the deadline for applications' submission
	Support to digital innovation for SMEs	Financial viability of a project	Last approved financial statements Statement for financial coverage of the unsubsidised stake	About 6 months after the deadline for applications' submission
	Support to innovation investments in the tourism sector	Financial viability of a project Evaluation of technical and financial capacities	Last 2 approved financial statements Copy of loan contract	About 3 months after the deadline for applications' submission

	Investment aid for SMEs' competiveness	Financial viability of a project Evaluation of financial capacities by analysing firm's performance ratios	Last approved financial statements Statement for financial coverage of the unsubsidised stake	About 4 months after the deadline for applications' submission
Campania	Support to innovation investments in the tourism sector Support to R&D investments Support to digital innovation for SMEs	Financial viability of a project Evaluation of technical and financial capacities	Last 2 approved financial statements	About 6 months after applications submission
Molise	Support to innovation investments for SMEs Support to investments for production of renewable energy	Financial viability of an investment Congruity between funding amount and expected results	Copy of loan contract or statement for internal funding Last 2 approved financial statements Copy of loan contract or statement of internal funding	About 2 months after the deadline for applications' submission About 3 months after the deadline for applications' submission
Islands				
Sardinia	Support to investments for production of renewable energy Support to R&D and ICT investments	Financial viability of an investment	Last 2 approved financial statements Copy of loan contract	About 5 months, About 2 months, after the deadline for applications' submission

Sicily	Support to R&D investments Support to innovation and growth investments for SMEs	Financial viability of an investment Congruity between funding amount and expected results Financial viability of an investment	Last 2 approved financial statements Statement by a bank about firm's financial solidity Statement by a bank about firm's financial solidity	About 6 months after the deadline for applications' submission About 18 months after the deadline for applications' submission
Centre				
Lazio	Support to innovation investments for SMEs Support to investments for production of renewable energy	Financial viability of an investment	Last 2 approved financial statements	About 4 months after the deadline for applications' submission About 5 months after the deadline for applications' submission
Marche	Support to investments for R&D, ICT and renewable energy production	Financial viability of an investment	Declaration of specific financial statement items (total assets and turnover) related to the last operating year	About 4 or 6 months after the deadline for applications' submission
Tuscany	Support to R&D investments Support to investments for production of renewable energy	Financial viability of an investment	Last 2 approved financial statements Statement for financial coverage of the unsubsidised stake	About 4 months after the deadline for applications' submission

Umbria	Support to R&D investments Support to ICT investments Support to investments for production of renewable energy	Financial viability of an investment	Last approved financial statements	About 7 months, About 8 months, About 7 months, after the deadline for applications' submission
North–West				
Aosta Valley	Support to R&D investments Support to investments for production of renewable energy Support to ICT investments	Congruity between funding amount and expected results Financial viability of an investment	Last 3 approved financial statements	About 4 or 6 months after applications' submission
Liguria	Support to innovation investments for SMEs Support to investments for production of renewable energy	Congruity between funding amount and expected results	Last approved financial statements	About 6 months, About 4 months, after applications submission
Lombardy	Support to R&D investments Investment aid for SMEs' competiveness Support to investments for renewable energy production	Evaluation of technical and financial capacities	Last 2 approved financial statements	About 4 months after the deadline for applications' submission
Piedmont	Support to ICT investments Support to investments for production of renewable energy	Financial viability of an investment	Formal communication by a bank of lending decision	About 3 months after applications submission

North –East				
Emilia – Romagna	Support to ICT investments Support to investments for production of renewable energy	Congruity between funding amount and expected results Financial viability of an investment	Declaration of specific financial statement items (total assets and turnover) related to the last operating year Copy of loan contract	About 4 months, About 6 months, after the deadline for applications' submission
Friuli - Venezia Giulia	Investment aid for SMEs' competiveness Support to ICT investments Support to investments for production of renewable energy	Financial viability of an investment	Declaration of specific financial statement items (total assets and turnover) related to the last operating year	About 6 months, About 4 months, About 6 months, after the deadline for applications' submission
Trentino – Alto Adige	Support to investments for production of renewable energy Support to ICT investments	Financial viability of an investment	Last 2 approved financial statements Reclassification of last approved financial statements	About 2 months, About 3 months after the deadline for applications' submission
Veneto	Support to R&D investments Support to investments for production of renewable energy Support to ICT investments	Financial viability of an investment	Last 2 approved financial statements Copy of contract loan	About 1 or 2 months after applications' submission

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 realise fruitful investments as well as to collect integrative financial resources.

In addition, this behaviour 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 as showed in table 4 (ref. National Report on Governmental Grants, Italian Ministry of Economic Development; various years).

Table 4 Italian investment subsidies by macro areas (millions of Euros)

	2007 – 2013 Period		**2000 – 2006 Period**	
Investment grants (*total*)	**35,542.5** (*millions of Euros*)		**61,942.4** (*millions of Euros*)	
	Centre North	**South**	**Centre North**	**South**
	20,090.9	**12,917.1**	**20,867.8**	**35,756.5**
Investment grants (*national*)	**18,849.1** (*millions of Euros*)		**50,858.5** (*millions of Euros*)	
	Centre North	**South**	**Centre North**	**South**
	7,441.9	**8,872.9**	**12,572.8**	**32,967.6**
Investment grants (*regional*)	**16,693.4** (*millions of Euros*)		**11,083.9** (*millions of Euros*)	
	Centre North	**South**	**Centre North**	**South**
	12,648.7	**4,044.1**	**8,295**	**2,788.9**
Subsidised investments (*total*)	**131,642.9** (*millions of Euros*)		**214,152.1** (*millions of Euros*)	
	Centre North	**South**	**Centre North**	**South**
	93,860.1	**29,334.3**	**117,414.1**	**92,418.7**

These figures show that the overall level of investment grants for Italian Southern regions more than halved from 2000 – 2006 to the following period, while the Centre – Northern regions benefitted from a similar amount of capital grants with a very slight decrease in 2007 – 2013.

Given the dramatic drop in the total level of subsidisation 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 – Norther areas.

This regional reallocation of public resources in favour 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 behaviours at a macro – regional level.

3 – LITERATURE REVIEW

3.1 – **Earnings Management literature**

3.1.1 – *Accounting discretion and earnings management*

Financial statements represent the main information tool for external users to evaluate a company's financial performance for their economic decisions.

This main role of a financial reporting system (Onida, 1985) emerges with the determination of both company's earnings and net assets, respectively reported in the profit and loss account (in Italian, "Conto Economico") and in the balance sheet (in Italian, "Stato Patrimoniale").

These accounts aim to give external readers an insight into the consistency and quality of the underlying operating and financial performance. Two main constraints render this informative goal potentially difficult to reach: the actual ability of the accounting system to reliably measure an unobserved company's performance; the potential presence of opportunistic behaviour by financial statements preparers that may exploit the discretion inherent in the financial reporting process to attain objective that are different from reporting true firm performance.

On the one hand, the vast majority of financial statements items represent abstract quantities (Onida, 1970) as a result of a subjective estimation process about the conclusion of outstanding transactions, determining its effects on the representation of economic and financial aggregates for each operating period.

Abandoning the principle of the unitary management in space and time (Onida, 1985), preparers of financial statements define uncertain forecast assumptions about the evaluation of transactions not yet concluded at the end of the operating year, resulting in estimated quantities, exclusively verifiable ex – post, or in conjectured quantities, not determinable in their real value even at the conclusion of the underlying transaction (Cattaneo, 1959; Ferrero, 1988).

Considering that the past estimations exercise their impact even on the representation of the future operating and financial performance, the reported earnings,

as a synthetic measure of a company's performance, are subject to a certain extent of discretion in their determination depending on the numerousness and complexity of outstanding transactions.

On the other hand, financial reporting is aimed at satisfying the information needs of a variegated group of subjects interested in a firm's performance (stakeholders), representing specific and somehow conflicting information expectations.

More specifically, internal stakeholders (owners) are more interested in profitability information to evaluate their investment return, even though they can benefit from a privileged access to the internal reporting system. Similarly, managers require operating and financial performance, as reported in the external documents, to be in line with the owners' expectations.

Among the external stakeholders, minority shareholders, not being involved in the management, may rely only on the external information, paying particular attention on the profitability and riskiness of their investment. While lenders are interested in the long run profitability and financial solidity in order to be reassured about the capacity of a firm to honour its credit obligations, employees and suppliers (along with some strategic customers) may pursue the same information needs in order to evaluate the company's perspectives of viability and growth associated with the related impact on the quality of their relationships.

From an external perspective, also the Public Administration shows its interests in financial statements information as a tool to understand the impact of a firm's performance on employment, to determine the level of taxes payable in presence of a certain degree of alignment between accounting and taxable income (book-tax conformity) or to evaluate an entitlement to benefitting from public aid.

This wide variety of information needs reflects the presence of diverging interests, expression of subjective expectations, that influence the process of external financial reporting according to the strategic relevance of some stakeholders.

More specifically, just to mention a representative example of contrast among stakeholders, the interest of shareholders to distribute a high level of dividends impinges on the incentive of reporting a lower income in order to minimise company's taxation or

conflicts with the expectations of employees to claim for an increase in their remuneration.

Given the variety of external stakeholders demanding financial information, corporate financial reporting, in accordance with generally accepted accounting standards (GAAPs), should provide a neutral basis for satisfying all these information needs without any intentional preference for a specific reader.

The aim of a common and neutral basis of information for all different categories of stakeholders qualifies the financial statements as a tool of universal information (Dezzani, 1974; Giunta and Pisani, 2008) and is visible in the legal discipline for the preparation of private firms' annual accounts that characterises the institutional setting of this study (art. 2423 of the Italian Civil Code as a transposition of the European Community (EC) Fourth Directive n. 660/78 states, "*The annual accounts shall give a true and fair view of the company's assets, liabilities, financial position and profit or loss*").

The overriding rule of the "true and fair view" should avoid the adoption of financial statements as a tool for influencing behaviour (Cattaneo, 1966; Dezzani, 1974) in order to attain specific objectives other than providing a reliable and impartial source of information.

However, considering that financial statements items include estimated values as a result of a subjective forecast of the conclusion of outstanding transactions, preparers of annual accounts may use this implicit discretion to provide a misleading representation of a company's financial performance with the aim of influencing the economic decisions of some strategic stakeholders.

In fact, accounting discretion and subjective interpretation of management operations cannot be eliminated, in presence of a bounded rationality of human subjects (Williamson, 1985). This leads to a representation of a company's performance that is influenced by preparers' perception of reality: it is an attempt of providing the best approximation of it ("ideological discretion"), (Verona, 2006; Melis, 2008), or as an intentional orientation of information toward the satisfaction of some specific stakeholders' needs ("deceptive discretion") (Pini, 1991, Melis, 2008).

The latter opportunistic behaviour, involving a manipulation of accounting numbers, is referred to as "earnings management" or "creative accounting" in a vast empirical research literature attempting to define the phenomenon and provide useful metrics to detect it.

Despite other financial statements' components may be subject to accounting manipulation, earnings represent the ultimate object of this pernicious behaviour in line with the informativeness and stewardship role of accounting (Ronen and Yaari, 2008). On the one hand, a vast body of research underlines a stronger association between earnings and stock prices (Francis, Schipper, and Vincent, 2003) than other alternative performance measures in their role of helping investors predict future cash flows; on the other hand, earnings have traditionally represented the accounting element to align the interests of managers with those of shareholders in public firms by adopting specific compensation schemes based on it.

Given the role of earnings as an observable summary measure to enable shareholders to monitor managers and investors to formulate their expectations of future performance (Ronen and Yaari, 2008), the first main research contributions relate to the impact of accounting discretion on this performance measure within the setting of public companies in the United States.

Much of this literature rests on the seminal contributions of Ball and Brown (1968) and Beaver (1968) regarding the influence of earnings numbers in stock prices fluctuations[11] and was later influenced by the positive accounting perspective (Watts and Zimmerman, 1978) based on contracting theory.

Developed in the Seventies of the last century amongst scholars of the University of Rochester in the United States, positive accounting theory aims "to explain and predict accounting practice" (Watts and Zimmerman, 1978, p. 2), differentiating it from mainstream accounting theories "focused on policy prescriptions for management" (Jensen, 1983, p. 319). This consequent focus on empirical aspects of accounting phenomena leads the financial accounting literature to concentrate on the analysis of

[11] These studies aim to evaluate the usefulness of accounting information for the capital market, demonstrating that unexpected income (positive or negative) as emerging from annual reports engenders a market reaction in the same direction (rise or fall in stock prices) associated with an unusual volatility and volume prior to the announcement.

incentives and subjective interests as emerging from the observed contents of financial statements as a result of "an equilibrium outcome of individuals maximising their own self-interests" (Watts, 1977, p. 72).

The various definitions of "earnings management" witness the influence of this conceptual ground, linking accounting manipulations with the attempt of managers to meet contractual targets depending on reported earnings or influence the perception of external stakeholders about the underlying firm's performance and ultimately their economic decisions based on it.

Table 5 Definitions of earnings management in the extant literature

Author	Year	Definition
Davidson, Stickney and Weil	1987	"the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings"
Schipper	1989	"purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain"
Watts and Zimmerman	1990	"when managers exercise their discretion over the accounting numbers with or without restrictions. Such discretion can be either firm value maximizing or opportunistic"
Mulford and Comiskey	1996	"the active manipulation of accounting results for the purpose of creating an altered impression of business performance"
Scott	1997	"a selection of accounting policies from a set of GAAP by managers to maximize their own utility and/or the market value of the company"
Healy and Wahlen	1999	"Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers"

Noronha, Zeng and Vinten	2008	"a continuum of purposeful interventions in the external financial reporting process, from legitimate activities to fraud violating GAAP, with the intention of misleading some stakeholders about the underlying economics and performance of the company"
Scott	2011	"the choice by a manager of accounting policies, or real actions, so as to achieve some specific reported earnings objective"

However, a minority literature highlights the existence of a "beneficial" or "neutral" earnings management (Ronen and Yaari, 2008) when "managerial discretion is a means for managers to reveal to investors their private expectations about the firm's future cash flows" (Beneish, 2001, p. 3) or "such discretion can be either firm value maximising or opportunistic" (Watts and Zimmerman, 1990; Fields, Lys and Vincent, 2001, p. 260).

Despite the prevalence of a negative connotation of earnings management from the definitions adopted in the literature over time, such particular point of view considers accounting discretion as a tool for communicating private information to external stakeholders, by adopting an information perspective (Holthausen and Leftwich, 1983) in which accounting choice reduces the information asymmetries between internal and external subjects in absence of managerial opportunism (Fields, Lys and Vincent, 2001). Nevertheless, the existence of self-serving interests of financial statements preparers and the difficulty of disentangling an efficient exercise of discretion from an opportunist behaviour (Fields, Lys and Vincent, 2001), notably in a principle-based accounting system, justify the large body of empirical research investigating earnings management as a practice to mislead outsiders interested in financial reporting information.

3.1.2 – *Earnings management incentives: public vs private firms*

Given the existence of an information asymmetry between financial statements preparers and external stakeholders that can be presumably exploited to obtain some private gain, the mainstream literature on earnings management has been focusing on identifying the internal and external incentives to engage in accounting manipulations.

This large body of literature originally analysed earnings management practices in public firms (Healy, 1985; DeAngelo, 1988; Dechow and Sloan, 1991; Jones, 1991; Healy and Wahlen, 1999), extending only recently its interest also to private firms (Coppens and Peek, 2005; Burgstahler et al., 2006; Szczesny and Valentincic, 2012; Mura, Emmanuel, Vallascas, 2013).

As public and private firms differ in terms of corporate governance models, cope with different external interests and face different pressures influencing their financial reporting process, it may be expected, from an empirical research point of view, that public and private firms pursue distinct objectives when engaging in earnings management.

As regards public firm, Healy and Wahlen' (1999) literature review, identifies three specific incentives for earnings management practices in US companies: 1) capital market expectations and valuation; 2) contracts depending on accounting numbers; 3) external regulation.

In fact, these contributions demonstrate that managers adopt income – decreasing strategies prior to buyouts (DeAngelo, 1988; Perry and Williams, 1994), smooth earnings upward prior to equity and initial public offers (Teoh, Welch and Wong 1998; Teoh, Wong and Rao 1998), to meet analysts' expectations (Burgstahler and Eames 1998; Abarbanell and Lehavy 1998; Levitt, 1998; Kasznik 1999) or to avoid debt covenants violations (DeFond and Jiambalvo, 1994; Sweeney, 1994), manage earnings upward or downward when close to or falling short of compensation targets (Healy, 1985; Dechow and Sloan, 1991; Holthausen et al.,1995; Guidry et al., 1998) or decrease reported income to avoid regulatory scrutiny (Jones, 1991; Cahan, 1992; Key, 1997).

Conversely, recent studies on earnings management in public and private firms (Burgstahler, Hail and Leuz 2006), under the same accounting setting, show that publicly held firms engage in less earnings management due to a prevailing need for earnings informativeness by capital market forces (investors, analysts, regulators) over other accounting manipulation incentives, notably tax minimisation. Additionally, lower levels of earnings management are associated with stronger legal systems and enforcement mechanisms that reinforce the market demand for informative earnings in public firms

(Burgstahler et al., 2006) and limit insiders' incentives to gain private control benefits by concealing real performance (Leuz, Nanda, Wysocki, 2003).

As regards reporting incentives for private firms, the extant literature has recently found specific motives to adopt earnings management practices, due to the absence of capital markets pressure and to less pervasive agency problems (Fama and Jensen, 1983). Indeed, private firms are less affected by agency problems between owners and managers in presence of a reduced degree of separation of ownership and control and a subsequent more direct monitoring by shareholders (Coppens and Peek, 2005). However, agency issues in private firms may emerge with other external stakeholders who hold a closer relationship with its business (lenders and employees among the most strategic outsiders).

Differently from public firms, accounting discretion in private firms is less likely to be influenced by management contractual motives (Fields et al., 2001) or aimed to communicate the underlying firm performance to outsiders (Kosi and Valentincic, 2013), but it is heavily affected by other conflicting reporting objectives (Beatty and Harris, 1998). In addition, a lower pressure from capital markets to report true firm performance results in more degrees of freedom for financial statements preparers in the exercise of accounting choice and hence in less informative earnings as compared to public firms (Burgstahler et al., 2006).

The main incentives for earnings management in private firms include loss avoidance (Coppens and Peek, 2005), tax minimisation (Sercu et al., 2002; Coppens and Peek, 2005; Garrod et al., 2008), earnings smoothing (Herrmann and Inoue, 1996), leverage (Szczesny and Valentincic, 2012) and employee relations (Kosi and Valentincic, 2013).

By comparing earnings distributions between private and public firms in some European countries during the 1993 – 1999 period, Coppens and Peek (2005), following the seminal contribution by Burgstahler and Dichev (1997) for US public firms, show that private firms exhibit a positive discontinuity in the reported earnings distribution around zero, resulting in unusually high and low frequencies of small income and small losses respectively than the expected cases. These results suggest that private firms manage earnings to avoid reporting small losses, with mixed evidence for countries characterised by a high financial and tax accounting alignment: indeed, private firms in

France and Germany do not show a significant discontinuity in their earnings distribution, while Italian and Belgian private firms exhibit a loss avoidance behaviour associated with a tendency to smooth earnings by avoiding reporting large and negative profits in order to respectively reap tax savings or reduce the probability of a tax scrutiny (Hermann and Innoue, 1996).

Contrary to public firms' behaviour as shown by Burgstahler and Dichev (1997), private firms analysed in Coppens and Peek's contribution do not manage earnings to avoid earnings decreases, suggesting that only firm's level of performance influences the value of stakeholders' claims rather than change in performance, presumably interpreted as a normal fluctuation in business activities (Burgstahler and Dichev, 1997).

While Coppens and Peek's work (2005) empirically investigates the existence of earnings management determined by multiple combined reporting objectives, other studies offer an attempt to disentangle the effect of single incentives and constraints on accounting manipulations. Notably, Sercu et al. (2002) demonstrate that Belgian private firms manage earnings downwards in response to a tax incentive, though moderating their income – decreasing earnings management at higher levels of financial and operating debt in order to reassure these strategic stakeholders about their ability to honour the explicit contracts and related claims. Similarly, Garrod et al. (2008) find evidence that Slovenian private firms manage earnings to minimise tax obligations under the constrain of political costs associated with a tax audit: indeed, profitable firms adopt a downward earnings management while firms reporting small losses manage earnings upwards to limit the likelihood of a costly tax scrutiny. By isolating the impact of tax incentives to report lower income, Kosi and Valentincic (2013) show that Slovenian private firms engage in income – decreasing earnings management to obtain some non – tax benefits by storing their debt capacity for future periods (Szczesny and Valentincic, 2012) or limiting demands for higher wages by employees (Brown et al., 1992).

Hence, financial reporting in private firms responds to a balance between tax and non – tax costs, on the one hand, and tax and non – tax benefits, on the other hand, suggesting that any specific motive will be neatly dominating over the others but the outcome of financial reporting process will be the result of potentially conflicting factors (Kosi and Valentincic, 2013).

3.1.3 – *Measuring earnings management*

Regardless of the aforementioned incentives for earnings management, the literature has broadly discussed several techniques that are adopted to manipulate accounting numbers, neatly distinguishing between "accrual - accounting earnings management" and "real – activity earnings management" (Francis, 2001; Ewert and Wagenhofer, 2005), with the latter involving the management of business operations to alter cash flow levels instead of the accrual component of earnings (Rowchowdhury, 2006). In the earnings management literature, accruals represent the difference between earnings and cash flow from operations, resulting as a component of reported income traditionally considered as more subject to accounting discretion thus influencing the financial performance representation.

Specifically, among "accrual – accounting earnings management", previous studies include all that accounting choices adopted within the GAAPs boundaries, reserving the term "financial reporting fraud" to illegal manipulations outside the limits of accounting regulation (Stolowy and Breton, 2003; Kassem, 2012).

According to the classification of "accounting choice" provided in Francis (2001), "accrual – accounting earnings management" involves the main following techniques or methods:

- choice among alternative accounting treatments under GAAPs for a specific item (e.g. FIFO versus LIFO for inventories in Hughes et al (1988) and Neill et al. (1995); straight – line versus accelerated depreciation in Neil et al. (1995) and Bishop and Eccher (2000) among the others);
- opportunistic use of judgement and estimates in the evaluation of a specific item as required under GAAPs (e.g. allowance for bad debts in McNichols and Wilson (1988); assets valuation in Easton et al. (1993); asset write – offs in Strong and Meyer (1987), Elliott and Hanna (1996) and Kosi and Valentincic, 2013 among the others);
- decisions regarding the timing of adopting a new accounting standard (Ali and Kumar (1994), Balsam et al. (1995) and Amir and Livnat (1996) among the others);
- decisions regarding the timing of revenues and expense recognition (Muller, 1999; Gunny, 2005);

- decisions regarding the classification of a transaction in the financial statements schemes (e.g. operating versus extraordinary items in Godfrey and Jones (1999) and Lin et al. (2006) among the others)

Conversely, "real – activity earnings management" studies find a series of operational actions taken by managers in order to alter accounting numbers (via cash flow) in the short run, despite jeopardising future economic performance (Rowchowdhury, 2006), by reducing R&D and maintenance expenses (Baber et al., 1991; Dechow and Sloan, 1991; Bushee, 1998; Zang, 2007), building up excessive inventories to reduce the cost of goods sold (Thomas and Zhang, 2002) or selling assets (Bartov, 1993).

While "real – activity earnings management" has drawn the attention of scholars to develop measurement methods resulting in few contributions (Dechow et al., 1998; Roychowdhury, 2006; Gunny, 2005), mainstream literature on earnings management has copiously provided over time alternative detection models (McNichols, 2000; Dechow et al., 2012; Apedzan et al., 2014).

Each "accrual – accounting earnings management" models can be grouped into the following categories according to the recurring classifications adopted in the empirical research:

- aggregate accruals models (Healy, 1985; DeAngelo, 1986; Jones, 1991; Dechow et al., 1995; Kang and Sivaramakrishnan, 1995);
- specific accruals models (McNichols and Wilson, 1988; Petroni, 1992; Beaver and Engel, 1996; Beneish, 1997; Beaver and McNichols, 2003);
- frequency distribution approach (Burgstahler and Dichev, 1997; Degeorge et al., 1999; Myers and Skinner, 2006).

While the first two groups introduce econometric regressions to model the behaviour of total accruals or single accrual items with the aim of disentangling the discretionary component, frequency distribution approach studies the statistical properties of earnings to find discontinuities in the related distribution as a signal of managerial discretion.

As regards aggregate accruals models, the first models introduced in the literature debate (Healy, 1985; DeAngelo, 1986) adopt total accruals (Healy, 1985) and change in

total accruals (DeAngelo, 1986) as a proxy for discretionary accrual component without specifying a clear generation process of normal accruals reflecting adjustments in fundamental performance.

Only with the Jones model (Jones, 1991), explanatory variables try to capture the non – discretionary component of total accruals, presenting a generation process of accruals (change in working capital minus depreciation) depending on revenue growth and level of property, plant and equipment with all variables scaled by lagged total assets and residuals from regression as a proxy for discretionary or abnormal accruals.

Despite the attempt to include the main economic circumstances (sales and assets investment) influencing the physiological change in non – discretionary component of working capital accruals, the Jones model suffers from a low explanatory power due to a correlation between residuals and performance leading to misclassification errors in neatly disentangling normal and abnormal accruals (Dechow et al., 2003 and 2010).

In fact, Dechow et al. (1995) and Kasznik (1999) show that more profitable firms exhibit abnormal discretionary accruals, demonstrating that growth represents an omitted variable concern. From another point of view, in the model specification non – discretionary accruals respond only to the current change in sales, while the accrual basis accounting implies adjustments over past and subsequent periods, generating accruals depending on managers' estimates about future sales growth.

Additionally, in the Jones model, abnormal accruals capture both innate accounting estimation errors (unintentional discretion) and earning management behaviour (intentional discretion), hence explaining its extensive adoption in earnings quality studies in which both of the discretion components reduce earnings informativeness (Dechow et al., 2010).

With the attempt to reduce type II error (wrong classification of accruals as normal), Dechow et al. (1995) modify the Jones model to include the effect of sales – based manipulations, adjusting revenue for change in receivables to avoid that, as in the original version, sales could yield solely the non – discretionary component of accruals.

Despite this specification adjustment, the modified Jones model continues suffering from correlated omitted variable concerns, inducing hence successive research to cope

with this significant bias in several variants and adaptations (Chambers, 1999; Dechow et al., 2003, Kothari et al., 2005).

Besides controlling for ROA as a proxy for performance as proposed in Kothari et al. (2005), recent literature (Dechow et al., 2012) has alternatively proposed to include in the model specifications of the timing of discretionary accruals reversals, demonstrating an increase in tests power for earnings management (Dechow et alt., 2012).

Given the aforementioned misspecification concerns, a large body of empirical research has focused on a single or a limited set of accruals with a significant weight for the exercise of accounting discretion, leading to several contributions related to specific sectors (McNichols and Wilson, 1988; Petroni, 1992; Beaver and Engel, 1996; Beneish, 1997; Beaver and McNichols, 1998).

These specific accruals models allow to specify more appropriately the relation between single accrual and explanatory variables, while aggregate accruals could include some components reacting differently from the others to the same set of covariates (McNichols, 2000).

Conversely, this alternative approach hampers researchers to determine the overall magnitude of earnings manipulation, requiring the building of separate models for each accrual component (McNichols, 2000). This in turn sacrifices the generalisability of the findings to external institutional settings when studies are industry – specific.

A recent approach (Burgstahler and Dichev, 1997; Degeorge et al., 1999) examines the density distribution of reported earnings under the assumption that manipulations aimed at beating a certain target will yield a discontinuity around that threshold with a larger frequency of firms above the desired earnings amount than the expected along with a lower number of observations below the interval.

Both Burgstahler and Dichev (1997) and Degeorge (1999) find a discontinuity in the earnings levels and changes distribution around zero, demonstrating a frequent tendency of firms to manipulate accounting numbers to avoid earnings decreases and losses.

According to the authors, transactional and prospect theories (Bowens et al, 1995; Kahneman and Tversky, 1979) explain the incentive for engaging in earnings

management so as to report higher accounting numbers when firms may obtain more favourable terms in the transactions with a variety of stakeholders (customers, suppliers, lenders) and avoid bad perception of losses regardless of their absolute value.

Even though the specific institutional setting (US public companies) could affect the previous findings, the same behaviour has been observed in the EU private firms' environment (Coppens and Peek, 2005) under the diverse incentives of tax minimisation and avoidance of tax authorities' scrutiny (Herrmann and Inoue, 1996).

Compared to the consolidated accruals models, this approach offers the advantages of overcoming the adoption of a controversial measure for accounting discretion and of lessening the measurement error related to a false classification of normal and discretionary accruals by focusing on narrow intervals in which non – discretionary accruals could not presumably explain the difference in the discontinuity behaviour (McNichols, 2000). On the other hand, it presents a drawback due to a simplistic assumption about the expected frequencies as the average of the nearest intervals when manipulation may also affect the adjacent regions at a certain extent (Burgstahler and Dichev, 1997).

Finally, a last recent approach consists of adopting single earnings management measures relying on the relation between cash flow and aggregate accruals (Leuz et al, 2003; Lang et al. 2006).

In Leuz et al.'s contribution (2003), the authors propose four measures of earnings management capturing different incentives for accounting manipulation based on the extant literature:

- ratio of firm – level standard deviation of operating earnings to firm – level standard deviation of cash flow from operations, with lower values indicating an exercise of discretion to smooth reported earnings due to a less volatility of earnings with respect to cash flow;
- correlation between changes in accruals and changes in operating cash flow, with larger values indicating an opportunistic use of discretion to smooth the fluctuations in the underlying economic performance;
- ratio of absolute value of firms' accruals to absolute value of firms' cash flow from operations, with larger values indicating the magnitude of accounting manipulation;

- ratio of small profits to small losses at a country – level according to 0 – 0.1% range of total assets, indicating the magnitude of loss avoidance.

3.2 – **Capital grants and Earnings Management literature**

Prior research on capital subsidies evaluates the economic effects of single grant schemes on firms' performance in particular institutional settings, leading to conflicting findings according to the specific variables and contexts analysed (Van Tongeren, 1998; Bergström, 2000; Roper and Hewitt-Dundas, 2001; Tzelepis and Skuras, 2004 and 2006; Bronzini et al., 2006; Bernini and Pellegrini, 2011; Bondonio et al., 2012).

Bergström's (2000) analysis of Swedish firms highlights that their productivity appears to increase in the year after the receipt of the grants, while later receipts seem to depress the economic growth and value added.

Studies relating to Korean (Lee, 1996), Japanese (Beason and Weinstein, 1996) and Danish firms (OECD, 2001) show the absence of correlation between productivity and contributions.

In the United Kingdom, the influence of subsidies appears ambiguous and limited (Harris and Robinson, 2004), while in Greece, government grants related to assets show effects on the growth of firm's investments, though without improving other performance measures, such as the return on sales and the return on investments (Tzelepis and Skuras, 2004).

By contrast, findings relating to Northern Ireland (Harris and Trainor, 2005) indicate that government grants significantly improve the level of production and that grants related to assets appear the most effective in increasing productivity.

Studies on the performance of SMEs in Northern Ireland and Eire (Roper and Hewitt-Dundas, 2001) show that recipient firms grow faster, present a higher profitability, are more dynamic in terms of sales and market shares growth.

In Greece too, grants related to assets show positive effects on long-term strategic orientation and appear to support both sales and market shares of recipient firms (Tzelepis and Skuras, 2006).

Differently, Dutch evidence shows that grants related to assets have not generated additional investments (Van Tongeren, 1998) as compared to those expected without subsidies.

As regards Italy, research has been focused on evaluating the impact on employment, investments and value added of the most recurring capital grant law (Law 488/92) aimed at disadvantaged areas, leading to a common conclusion that beneficiaries show a higher profitability and firm size (Bronzini et al., 2006; Adorno et al., 2007; Bernini and Pellegrini, 2011; Bondonio et al., 2012).

Adorno et al. (2007) empirically demonstrate a positive effect of capital subsidies on employment, fixed capital and turnover, strengthened at growing relative levels of subsidisation until a certain point from which marginal effect begins to decrease (specifically, for aid intensities of about 50% and 60%).

Similar findings are confirmed in Bernini and Pellegrini (2011) with an additional analysis for SMEs, showing that small – sized firms significantly outperform the rest of the sample as a results of their ability to generate fruitful investments.

While these studies refer to beneficiary firms in the Italian Southern regions, other empirical contributions adopt a narrower macro – level analysis or focus on a variety of capital grants type related to a single region (Bondonio and Greenbaum, 2006; Bondonio and Greenbaum, 2012).

As regards Bondonio and Greenbaum's research on the impact of the EU Regional Funds on employment in the assisted Italian Northern provinces during 1995 – 1998, the findings show that regional subsidies contributed to increasing employment levels with a stronger effect on less declining areas.

Following the same research perspective, their later contribution (2012) examines the impact of various capital grants scheme (non - repayable subsidies, soft loans and mixed grants) on employment for a sample of firms in Piedmont during 2000 – 2003, showing a positive effect at growing levels of subsidisation at the expense of a higher relative policy cost, notably for non – repayable grants.

Ultimately, Bronzini and De Blasio's work (2006) questions the positive long run effects on investments, empirically highlighting a significant reduction after two years

from the receipt of subsidies as a signal of realising projects already planned even in the absence of public assistance (temporal crowding – out).

Nevertheless, these studies often present analyses that overlook the accrual basis accounting rules behind the data along with an omitted neutralisation 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.

An attempt to investigate the adoption of earnings management practices associated with the receipt of governmental subsidies results from few studies (Verbruggen and Christiaens, 2012; Jegers, 2012; Chen et al., 2008), that limit their focus on the non – profit sector and on publicly traded firms in two specific institutional contexts (Belgium and China).

Verbruggen and Christiaens (2012) and Jegers (2012) demonstrate that Belgian non – profit organisations adopt earnings management techniques to obtain governmental grants with an increasing tendency to smooth results towards zero (Burghtshler and Dichev's, 1997) at growing levels of subsidies, on the assumption that positive or negative surpluses signal an unjustified public support (Bouwens et al., 2004; Frank et al., 1990).

Verbruggen and Christiaens (2012) empirically study the presence of earnings management in a sample of about 840 large non – profit organisations following new accrual accounting regulation during the period 2006 – 2008, by adopting distribution analyses and the Jones model to disentangle non – discretionary accruals to be introduced as a dependent variable in a further regression.

As the distribution properties of reported and unmanaged earnings[12] shows a downward shift toward zero for reported earnings, the signs of estimates in a regression between discretionary – accruals, unmanaged earnings and an interaction term capturing

[12] Unmanaged earnings represent the difference between reported earnings and discretionary accruals as a result of residuals from the Jones model regression. The authors calculate total accruals in the Jones model as the change in operating assets minus the change in operating liabilities and minus non – cash expenses (depreciation and provisions).

the intensity of earning management at different levels of subsidization[13] confirms both of earnings management directions with downward manipulation intensified in presence of increased subsidies.

Adopting a very similar sample size for the only 2007 year, Jegers (2012) concludes that Belgian non – profit organisation manage earnings towards zero as demonstrated by a negative correlation between "easily manipulated" income components[14], in the author's terminology, and cash flow combined with a positive sign of the estimate in a TOBIT regression between their absolute values.

As the different signs highlight a tendency to compensate positive cash flows with negative income components at a large magnitude (absolute value), the study overlooks to adopt a broad definition of accruals and attempt to disentangle the related non – discretionary component.

Chen et al. (2008) show that Chinese regional governments are likely to provide capital grants preferably to public companies with the intention of increasing artificially their return on equity (ROE) above the minimum threshold for gaining access to regulated capital markets in order to encourage local economic growth.

As stated in the study (p. 266), earnings management "is not simply a managerial behaviour, but a joint effort of local governments and firm managers", induced by a series of political incentives related to attracting large companies in a region, ranging from an increase in revenue bases to local politicians' reputation.

Adopting a sample of more than 4,400 firms during the period 1994 – 2000, the authors estimate the likelihood of receiving a governmental subsidy conditioning on the closeness of pre – subsidy ROE to the regulatory threshold, measured with a set of dummy variables.

As hypothesised in their institutional framework, the findings suggest that firms close to meeting the minimum threshold for right offering have a higher probability of benefitting from governmental funding as well as an intertemporal analysis between

[13] In the model, the authors introduce other variables controlling for other sources of financing (donors and lenders), past profitability and previous – period discretionary accruals to check for autocorrelation.
[14] The author mentions only a few examples of "easily manipulated" income components (depreciations, write - offs, bad debt expense and provisions), without reporting an exact definition according to Belgian financial statement items.

diverse regulation regimes shows that tougher requirements for rights offering and delisting induce consistent earning management behaviour.

Our literature review shows that prior research on earnings management practices aimed at receiving governmental grants focuses only on the setting of non-profit and public firms (Verbruggen 2012; Jegers, 2012; Chen et al., 2008). As private firms dominate the entrepreneurial system of modern economies – notably in the European setting – and represent the major recipients of capital grants and in general the main target of the EU regional aid policy, our analysis aims to investigate whether Italian private firms manipulate their financial accounts to get capital grants. We thus fill the existing gap relating to the unexplored world of private firms. In addition, our study attempts to gain some insight on the impact of subsidised investments by analysing the profitability of beneficiary firms after grant's receipt in order to evaluate whether the granting procedures may effectively select the projects with high investment returns in line with the EU prescriptions on financing sound and viable regional investments. As prior research on capital grants' impact in the Italian setting (Bronzini et al., 2006; Bernini and Pellegrini, 2011; Bondonio et al., 2012) overlooks the accrual basis accounting rules behind the data, our analysis takes into account this limit by neutralising capital grant mechanical effects on operating revenues and costs (Mura et al., 2012).

4 - HYPOTHESES DEVELOPMENT

Under the institutional framework previously outlined, the research question of this analysis is to examine whether Italian private firms adopt earnings management practices in order to benefit from capital grants.

Several features justify the choice of Italy as the institutional setting of this analysis, despite of its share of GDP allocated to investment aids (0.31%) lower than the EU average (0.56%) and in comparison to the main European competitors (France and Germany) during the 2009 – 2012 period (National Report on Governmental Grants, Italian Ministry of Economic Development, 2014; State Aid Scoreboard, EU Commission, 2013).

First of all, unlisted small-medium sized enterprises (SMEs) represent 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).

European countries also share similar accounting disclosure rules due to the EU harmonisation process (Burghtshler et al., 2006, Gavana et al., 2013, Kosi and Valentincic, 2013), presumably holding similar incentives for earnings management as showed in some aforementioned empirical studies (Coppens and Peek, 2005).

In addition, in Italy over the 2007 – 2013 period SMEs benefitted from about 74% of the overall investment subsidies (National Report on Governmental grants, Italian Ministry of Economic Development, 2014), making it an interesting setting to carry out this analysis and draw some general conclusions.

The development of our first research hypothesis is strictly dependent on arguments that explain the incentives for earning management in presence of a granting selection process and an associated evaluation of creditworthiness for financial funding. This is because beneficiary firms not only have to demonstrate to granting authorities their ability to undertake new fruitful investments, but they also have to be able to cover the residual unsubsidized stake of their investments through either internal or external financial sources.

As financial performance represents an essential requirement to benefit from capital grants, in line with the EU provisions to realise fruitful investments in terms of regional development and job creation, the objective of reporting true economic performance in their financial statements may be sacrificed in favour of the objective of achieving a higher score in the granting evaluation. Firms may have a similar temptation in order to persuade lending institutions on the need to finance the uncovered part of a subsidised investment. In effect, lenders may heavily rely on external information about past financial performance to assess the ability of a firm to honour its debt obligations.

Under our institutional framework, bank funding represents a main complementary source of financing rather than shareholders' internal resources, notably in an institutional setting heavily dependent on banking indebtedness (Mura, Emmanuel and Vallascas, 2013).

As the EU Commission, Directorate – General for Enterprise and Industry (2005) empirically demonstrates that bank funding decisions are influenced by quantitative key factors (debt ratio, liquidity and profitability), investment subsidies are expected to be granted to firms that respect the above pre – conditions for credit access as detectable by analysing financial ratios from external financial reporting.

In the same way, several studies (Danos et al., 1989; Coppens and Peek, 2005; Sercu et al., 2006) show that financial stakeholders impact earnings management of privately held firms, inducing them to moderate their income – decreasing behaviour in order to manage the perceptions of lenders about their financial performance.

While Danos et al. (1989) emphasise the usefulness of historical and forward – looking financial data for lenders' decisions, Sercu et al. (2006) find a positive association between earnings – increasing manipulations and leverage in a private firm institutional setting, apparently motivated by the need to reassure banks about the risk of financial distress in a less lenient relationship in comparison to other stakeholders' behaviour.

In this respect, previous research has showed that firms can also adopt an upward earnings management behaviour to benefit from improved conditions for funding (Rodriguez-Perez and van Hemmen, 2010) or to raise additional debt in the future (Ronen and Yaari, 2005).

However, the non-tax benefits of gaining access to public subsidies and to residual financial sources to finance the investments complicate the balance between tax and non-tax costs and benefits influencing the reporting process of private firms (Cloyd, Pratt and Stock, 1996; Mills and Newberrys, 2001; Kosi and Valentinčič, 2013). As multiple reporting objectives drive private firms in the direction of lowering their reported income – tax minimisation (Coppens and Peek, 2005; Garrod et al., 2008), dividend payouts (Burgstahler et al., 2006) and employee relations (Brown et al., 1992) – the benefit of getting capital grants and integrative financial resources may coexist or prevail in the weight between tax-non tax benefits and tax-non tax costs of reporting a higher income to convince granting authorities and lenders about firm's profitability and financial solidity. In this respect, a private firm may attain a non – tax benefit as gaining access to public subsidies and to residual financial sources by reporting an improved financial performance without altering – or at least outweighing - the level of tax-non tax costs associated with such a choice. Potentially, a firm may exercise accounting discretion – as allowed by GAAPs - on some specific income accruals without fiscal implications (provisions, bad debt expense[15], deferred taxes) to minimise their reported amounts in order to disclose an improved financial performance[16] and at the same time avoiding higher tax costs. As these accounts have no fiscal implications, it is unlikely that fiscal authorities put their sights on it and hence the potential risk and tax cost of a fiscal audit may remain low and not relevant in the reporting choice. In addition, manipulations in income accruals – within the framework of the accounting standards – do not configure a falseness in juridical terms punished with the revocation of capital grants so firms do not have to include a related non-tax cost when evaluating an income-increasing reporting choice. Conversely, other income accruals – such as change in inventory – engender higher tax costs for an increase in their amounts but, under a tax and non-tax cost/benefit framework, this choice may be justified by a positive balance in favour of non-tax benefits in the form of significant amounts of capital grants and more favourable terms of

[15] According to the Italian tax law, bad debt expense has no fiscal implications (tax savings) for reported amounts higher than 0.5% of accounts receivable at the end of a fiscal year or regardless of any reported amount if allowance for doubtful accounts has reached 5% of accounts receivable at the end of a fiscal year.

[16] A reduction in these accruals without fiscal implications leads to a higher reported income and to an increase in net assets due to lower liabilities related to provisions and deferred taxes.

transaction with lenders (Bowens et al, 1995; Burgstahler and Dichev, 1997) for integrative financial sources to finance the unsubsidised stake of an assisted investment.

In our analysis we will focus on such income accruals – as an aggregate - to investigate whether Italian private firms manipulate these accounts to get capital grants as a result of a prevailing non-tax benefit to report an improved financial performance not yet investigated in the literature relating to private firms. Hence, from our previous considerations we develop a first research hypothesis:

H_1: Italian private firms adopt earnings management practices to show an improved financial performance in order to benefit from capital grants.

As discussed in the institutional framework section, the 2007 – 2013 period determined a significant reduction in the permissible aid intensity to SMEs, especially for the Italian Southern regions (25% - 50% against the former range of 40% - 67.5% with the highest ceiling of 90% reserved for Calabria) whereas the Northern and Central areas benefitted from a slight increase, from 15% to 20%.

As previously mentioned, due to worsening economic conditions, national and regional resources dropped dramatically in 2007 – 2013 compared to the previous period (for Italy as a whole 35.5 and 61.9 billion of Euros respectively, for the only Southern regions 12.9 and 35.8 billion of Euros respectively).

Additionally, the percentage of approved applications for investment grants in the Italian macro-areas during the 2007 – 2013 period reflects a greater effort for Southern firms to compete for a lower slide of public resources: indeed, Centre-Northern regions benefitted from a rate of accepted subsidy requests above 80% of the overall applications under regional intervention schemes, while Southern regions remained dramatically under the threshold of 20% (National Report on Governmental Grants, Italian Ministry of Economic Development; 2014).

Due to such an increased competition for resources, in the light of a consolidated dependency of the Italian Southern regions on governmental subsidies (Scalera and Zazzaro, 2010; Sprovieri, 2011), we develop a second research hypothesis:

H_2: Italian private firms located in the Southern regions show a stronger tendency to manipulate accounts to meet specific financial targets with the purpose of receiving capital subsidies.

Credible business plans and investment budgets are also fundamental documents for selecting beneficiary firms in the granting process. As the EU regional aid policy prescribes to finance "viable and sound investments with a real and sustained contribution to regional development" (2007-2013 Guidelines, art. 40), public calls for capital grants – as examined in our study - generally require to include a technical – financial report on the expected benefits and costs related to the assisted investment in order to evaluate its economic and financial feasibility and its contribution to the growth of some firm's performance measures (added value or turnover).

As the EU regional aid policy imposes a maintenance of the assisted investment for a minimum period of at least five years after its completion (2007-2013 Guidelines, art. 40), we expect that granting authorities select those projects with an increased long-term contribution to firm's profitability as a condition to sustain regional development. We then state our third research hypothesis to evaluate the impact of the subsidised investments of beneficiary firms on their profitability after grant's receipt as follows:

H_3: Italian private firms benefit from capital grants related to investments that trigger an increase in firm's profitability after grant's receipt with respect to the non-subsidised firms.

5 - RESEARCH DESIGN

5.1 - **Sample selection**

The analysis will focus on a vast sample of Italian private firms that comprises a group of subsidised firms during the programming period 2007 – 2013 and a control group of non – subsidised firms.

As regards beneficiary firms, our research is mainly focused on a consistent regional source of investment grants - the European Regional Development Fund (ERDF) - which accounted for about 54% of the total granting amount during the 2007 – 2013 period (19,045 million of Euros, Opencoesione.gov.it).

Previous studies often analyse either specific region and multiple programmes (Bondonio and Greenbaum, 2006; Bondonio and Greenbaum, 2012), or a specific programme relating to a large territory (Adorno et al., 2007; Bernini and Pellegrini, 2011). As we needed to ensure rich and detailed information at firm-level (on the nature of the subsidy, the granting programme, localisation, 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 subsidised 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 Programme 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 (Opencoesione.gov.it/opendata, European Structural Funds 2007/2013 section).

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 – subsidised 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. Table 3 and Table 4 show how the initial sample is distributed amongst geographical Italian areas and industry sectors.

Table 3 Initial sample composition by geographical areas

Area	Beneficiaries	Non Beneficiaries	Total	% Beneficiaries
North – West	2,392	9,240	11,632	30.03%
North - East	2,221	6,801	9,022	27.88%
Centre	1,483	8,863	10,346	18.62%
South	1,752	4,872	6,624	22.00%
Islands	117	1,402	1,519	1.47%
Overall (Italy)	7,965	31,178	39,143	

Notes:
North – West includes Aosta Valley, Liguria, Lombardy and Piedmont.
North – East includes Emilia – Romagna, Friuli – Venezia Giulia, Trentino – Alto Adige and Veneto.
Centre includes Lazio, Marche, Tuscany and Umbria.
South includes Abruzzo, Apulia, Basilicata, Calabria, Campania and Molise.
Islands include Sardinia and Sicily.

Table 4 Initial sample composition by industry sectors (ATECO sections)

ATECO Section	Beneficiaries	Non Beneficiaries	Total	% Sectorial Beneficiaries	% Overall Beneficiaries
C Manufacturing	4,046	3,132	7,178	56.37%	50.80%
D Electricity and water supply	170	245	415	40.96%	2.13%
F Construction	654	6,064	6,718	9.74%	8.21%
G Wholesale and retail trade	803	4,106	4,909	16.36%	10.08%
H Transportation and storage	115	589	704	16.34%	1.44%
I Accommodation and food service activities	236	1,349	1,585	14.89%	2.96%
J Information and communication	920	1,322	2,242	41.03%	11.55%
K Financial and insurance	16	971	987	1.62%	0.20%
L Real estate activities	72	8,564	8,636	0.83%	0.90%
M Professional and technical activities	586	2,612	3,198	18.32%	7.36%
N Administrative activities	164	1,056	1,220	13.44%	2.06%
P Education	23	153	176	13.07%	0.29%
Q Health and social work activities	76	335	411	18.49%	0.95%
R Arts, entertainment and recreation	35	389	424	8.25%	0.44%
S Other service activities	49	291	340	14.41%	0.62%
Overall (Italy)	7,965	31,178	39,143		

5.2 - **Model choice and variables**

As many firms of our sample adopt an abridged version of the financial statements in accordance with the simplifications allowed by the Civil Code (art. 2435-bis)[17], there is a consistent lack of detailed information in their balance sheets that prevents us from accurately identifying accruals components[18] as the discretionary accrual models adopted in the extant literature typically require (see the Jones model and its adaptations). These models are not applicable to our analysis in their integral form, as they would suffer from missing data, biased and noisy estimates of earnings management along with a low predictive power.

However, "focusing on earnings components provides insights into how earnings are managed" (Stubben, 2010, p. 1). In this respect, the income statement as prescribed by the Civil Code offers a rich choice of accrual components that have to be separately displayed even when the abridged version of the financial accounts is adopted[19]. Our model specification relies thus on these accrual components to determine whether beneficiary firms manage earnings upward with the aim of altering their financial performance in the pre – granting period.

In effect, previous studies examine accounting discretion in inventory valuation (Hughes et al., 1988; Neill et al., 1995), bad debt allowance (McNichols and Wilson, 1988), depreciation (Bishop and Eccher, 2000), provisions (Lybaert et al., 2005) or deferred taxes (Kasipillai et al., 2013), with the purpose of determining whether firms adopts increasing-income practices by overstating revenues or understating operating expense. Yet, as stated in Stubben (2010, p. 7), an ideal accrual to detect earnings management should be "common across industries, subject to discretion and represent a

[17] Companies may draw up an abridged financial statement when they do not exceed the limits of two of the three following criteria for two consecutive administrative periods: balance sheet total 4,400,000 Euros; net turnover 8,800,000; average number of employees 50 (art. 2435 of the Italian Civil Code).

[18] By showing only items preceded by letters and roman numerals, the abridged version of balance sheets does not disclose separate information on trade creditors and other current liabilities, indicating instead the sum of all liabilities in an aggregation of operating and financial debts as included in the overall account item D) Debts (art. 2424 and 2435-bis of the Italian Civil Code). This simplification prevents us from determining the change in creditors and other current liabilities as adopted in accruals calculation (Ball and Shivakumar, 2005).

[19] For the relevance of the present work, abridged version of profit and loss accounts determines solely an aggregation of depreciation and assets write - offs (items B10(a), B10(b), B10(c) in the Italian scheme), while other income accruals (change in inventory, bad debt expense, provisions and deferred taxes) are separately disclosed (art. 2435 of the Italian Civil Code).

large portion of the earnings discretion available to firms".

In our model, we hence adopt an aggregated measure of revenues and expenses subject to discretion, consisting of change in inventory, bad debt expense, provisions and prepaid and deferred taxes. All these income components are measured as differences between the reported amount in a specific year and that of the previous one, with change in inventory calculated as difference between closing inventory values reported in two consecutive balance sheets. Analysing the change in income accruals allows us to determine whether firms tend to manage earnings upward by increasing revenues (i.e. positive change in inventory and prepaid taxes) and/or reducing expenses (i.e. negative change in bad debt expense, provisions and deferred taxes) in a comparative view with the previous reporting period. In addition, it is relevant to underline that in the Italian context change in provisions, prepaid and deferred tax have not fiscal implications. That is, they give the chance to influence accounting income without interfering with taxable income.

Within the evaluation of these income items, financial statement preparers can largely exercise their accounting discretion, choosing alternative valuation methods for inventory or making less conservative predictions about the collectability of accounts receivable and future operating risks. We exclude from our accrual variable the amount of depreciation in order to eliminate any mechanical and economic effects of capital granting on the level of amortisation, as firms might start to undertake the assisted investments before the granting period.

Hence, our accrual variable can be expressed as follows:

$$\Delta \text{ Income Accruals } (\Delta IA) = (\text{Inventory}_t - \text{Inventory}_{t-1}) - (\text{Bad debt expense}_t - \text{Bad debt expense}_{t-1}) - (\text{Provisions}_t - \text{Provisions}_{t-1}) - (\text{Prepaid and deferred taxes}_t - \text{Prepaid and deferred taxes}_{t-1}). \quad (1a)$$

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 we only know the year during which the application is formally accepted, which in turn determines the starting period for the recognition of a capital grant in the accounting system[20] – we focus our analysis on the financial accounts relating to both one and two years before beneficiary firms are informed on the acceptance of their request. This choice should allow us to take into account the different lengths of requests' appraisal among regions and specific programmes.

Our empirical analysis will consist of several tests – in the univariate and multivariate settings - to provide corroborating evidence on the existence of earnings management practices aimed at getting capital grants in the setting of Italian private firms. As regards univariate tests, we adopt a mean difference test (student's t-test) to determine whether beneficiary firms tend to report higher changes in income accruals in the periods prior to the recognition of a capital grant (one and two years before) in comparison to non – beneficiary firms within the same comparative period. The same analysis is replicated by focusing on a different geographical level (Southern versus Northern – Central regions) to verify the presence of significant differences in our accrual variables due to a specific regional impact of the EU aid policy as underlined in our hypothesis H_2.

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 (Bronzini et al., 2006; Bernini and Pellegrini, 2011). Indeed, previous studies related to the impact of capital grant on firm's performance in the Italian setting (Bronzini et al., 2006; Bernini and Pellegrini, 2011) indicates profitability, firm's financial solidity, size and sector as

[20] In accordance with the Italian accounting standards (OIC 16 "Tangible assets" and OIC 24 "Intangible assets"), capital grants are recorded in the accounting system when there is a reasonable assurance that the conditions for their recognition are met and then they are gradually reported as a revenue in the income statement (item A)5 – Other revenues) over the useful life of the assisted asset.

factors influencing the probability of being subsidised. Control variables for other firm's characteristics and industry complete our model.

Hence, our probit model is as follows:

$$\Pr(BEN_{i,t} = 1) = \beta_0 + \beta_1 \Delta IA_{i,t-1}/TA_{t-1} + \beta_2 \Delta IA_{i,t-2}/TA_{t-2} + \beta_3 \Delta IA_{i,t-1}/TA_{t-1}*South_i + \beta_4 \Delta IA_{i,t-2}/TA_{t-2}*South_i + \beta_5 EBITDA_{i,t-1}/TA_{t-1} + \beta_6 QuickRatio_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 SIZE_{i,t-1} + \beta_9 \Delta Debts_{i,t-1}/Debts_{t-2} + \beta_{10} \Delta Equity_{i,t-1}/Equity_{t-2} + \beta_{11} IntangibleAssets_{i,t-1}/TA_{t-1} + \beta_{12} AGE_{i,t-1} + \beta_{13} FullFinancialStatement_{i,t-1} + \beta_{14} AUDITOR_{i.} + \beta_{15} \text{Macro Area Dummies} + \beta_{16} \text{Year Dummies} + \beta_{17} \text{Industry Dummies} + \varepsilon_{it}, \quad (1b)$$

where:

$BEN_{i,t}$ = 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 amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets for firm *i* in year *t-1*;

$QuickRatio_{i,t-1}$ = Current assets (except inventory) on current liabilities for firm *i* in year *t-1*;

$LEV_{i,t-1}$ = Total debts on total assets for firm *i* in year *t-1*;

$SIZE_{i,t-1}$ = Natural logarithm of total assets for firm *i* in year *t-1*;

$\Delta Debts_{i,t-1}/Debts_{t-2}$ = 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*;

$AGE_{i,t-1}$ = Natural logarithm of firm *i*'s number of years in period *t-1*;

$FullFinancialStatement_{i,t-1}$ = Dummy variable taking on the value of 1 if firm *i* files a non – abridged financial statement in year *t-1* or 0 otherwise;

$AUDITOR_{i.}$ = Dummy variable taking on the value of 1 if firm *i* is subject to auditing or 0 otherwise;

Macro Area Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro area of Italy (North-West, North-East, Centre, South (Islands included)) or 0 otherwise;

Year Dummies = Dummy variables taking on the value of 1 for a specific year (from 2007 to 2014) or 0 otherwise;

Industry Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro-sector (15 identifying letters from ATECO statistical classification of economic activities) or 0 otherwise.

The dependent variable $BEN_{i,t}$ for the beneficiary group takes on the value of 1 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. By omitting the values in the dependent dummy variable for years other than that of the recognition of a capital grant, in the estimation procedure of our empirical model only values relating to one and two year-lagged change in income accruals with respect to the recognition year will be considered for the group of beneficiary firms.

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_1, we expect a positive sign of the coefficient related to this variable, resulting in an intertemporal upward earnings management behaviour of beneficiary firms aimed at receiving capital subsidies.

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_2, we expect a positive sign of the coefficient of this variable.

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 unsubsidised stake of the assisted investments with external financing.

In line with prior research on capital subsidies in the Italian institutional setting (Bronzini et al., 2006; 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.

In our set of covariates, the variable $\Delta Debts_{i,t-1}/Debts_{t-2}$ is introduced with the aim of determining whether beneficiary firms increased the relative amount of long – term debts in the period prior to the recognition of a capital grant in order to finance the residual stake of the assisted investment with external financing rather than internal resources. In the absence of an explicit representation of financial debts in the abridged version of a balance sheet, we use the long – term amount of total debts as a proxy for financial debt given its predominance in the long – term component of total debts. Conversely, the variable $\Delta Equity_{i,t-1}/Equity_{t-2}$ should measure an increase in internal funds if the preference for additional financing is satisfied with new shareholders' resources. As

Italian private firms heavily depend on the banking system for funding their investments (Mura, Emmanuel and Vallascas, 2013), we expect a positive sign of the coefficient associated with the variable $\Delta Debts_{i,t-1}/Debts_{t-2}$.

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.

We offer no prediction for the coefficient sign of the other variables we added in our analysis as controlling variables, potentially capable of influencing the granting process.

To take into account the presence of outliers, we dropped from our analysis the extreme observations at the 1st and 99th percentile of the distribution of all continuous variables and we estimated our model with robust standard errors in order to control for heteroscedasticity. As a robustness check, we further estimate our model by adopting clustered standard errors by firm resulting in unchanged significance levels for the coefficients of our set of explanatory variables.

5.3 - **Descriptive statistics**

Table 5 shows descriptive statistics for the set of variables used in our model, respectively for beneficiary and non – beneficiary firms.

Table 5 Descriptive statistics by groups (Beneficiary and non-beneficiary firms)

Beneficiary Firms						
Variable	N. Obs	Mean	Median	Std	Min	Max
BEN	7,187	1	1	0	1	1
$\Delta IA_{t-1}/TA_{t-1}$	7,187	0.0080	0	0.0664	-0.5746	0.5413
$\Delta IA_{t-2}/TA_{t-2}$	7,187	0.0116	0	0.0738	-0.5341	0.6001
$\Delta IA_{t-1}/TA_{t-1}$ South	7,187	0.0038	0	0.0371	-0.3614	0.5413
$\Delta IA_{t-2}/TA_{t-2}$ South	7,187	0.0052	0	0.04489	-0.3893	0.6001
$EBITDA_{t-1}$ / TA_{t-1}	7,187	0.0946	0.0825	0.0854	-0.3923	0.5049
$QuickRatio_{t-1}$	7,187	0.5847	0.5794	0.2482	0.0007	3.2830
LEV_{t-1}	7,187	0.6386	0.6703	0.2084	0.0117	1.9579
$SIZE_{t-1}$	7,187	14.8574	14.9292	1.4096	9.6881	17.7641

$\Delta Debts_{t-1}$ /$Debts_{t-2}$	7,187	0.0268	0	0.1756	-0.8063	1.6332
$\Delta Equity_{t-1}$ /$Equity_{t-2}$	7,187	0.1696	0.0444	0.6795	-3.8326	7.7657
$IntangAssets_{t-1}$ /TA_{t-1}	7,187	0.0495	0.0124	0.0894	0	0.5966
AGE_{t-1}	7,187	2.6866	2.7726	0.8069	0	4.6540
$FullFinStat_{t-1}$	7,187	0.3153	0	0.4647	0	1
AUDITOR	7,187	0.3334	0	0.4715	0	1
$Subs_t/TA_t$	7,187	0.0156	0.0104	0.0148	0.0001	0.0550

Non Beneficiary Firms						
Variable	N. Obs	Mean	Median	Std	Min	Max
BEN_t	156,740	0	0	0	0	0
$\Delta IA_{t-1}/TA_{t-1}$	156,740	0.0004	0	0.0794	-0.6379	0.4242
$\Delta IA_{t-2}/TA_{t-2}$	156,740	0.0018	0	0.0868	-0.6389	0.4242
$\Delta IA_{t-1}/TA_{t-1}$ South	156,740	0.0005	0	0.0384	-0.6347	0.4237
$\Delta IA_{t-2}/TA_{t-2}$ South	156,740	0.0007	0	0.0417	-0.6384	0.4239
$EBITDA_{t-1}$ /TA_{t-1}	156,740	0.0507	0.0322	0.1054	-0.4699	0.5167
$QuickRatio_{t-1}$	156,740	0.5195	0.4427	0.4687	0.0001	3.7200
LEV_{t-1}	156,740	0.5917	0.6535	0.3234	0.0001	2.0813
$SIZE_{t-1}$	156,740	13.0709	13.0496	1.4636	9.0852	17.7695
$\Delta Debts_{t-1}$ /$Debts_{t-2}$	156,740	0.0138	0	0.2100	-0.8415	1.6990
$\Delta Equity_{t-1}$ /$Equity_{t-2}$	156,740	0.0779	0.0133	0.7019	-3.8524	7.8849
$IntanAssets_{t-1}$ /TA_{t-1}	156,740	0.0237	0	0.0717	0	0.5976
AGE_{t-1}	156,740	2.6408	2.5649	0.6338	0.6931	5.3706
$FullFinStat_{t-1}$	156,740	0.0611	0	0.2394	0	1
AUDITOR	156,740	0.0498	0	0.2175	0	1
$Subs_t/TA_t$	156,740	0	0	0	0	0

Notes: This table reports the basic descriptive statistics for the variables employed in the analysis, respectively for beneficiary and non–beneficiary firms (firm-year observations). BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the

natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise; $Subs_t/TA_t$ represents the subsidy intensity calculated as total grants on total assets in the recognition year t. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables.

Comparing the descriptive statistics between the two groups, it emerges that beneficiary firms tend to report a higher positive difference in income accruals in the period prior to the recognition of capital grants ($\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$) with an average percentage of 0.8% and 1.16% of lagged total assets – for one and two years prior to the recognition year - against a 0.04% and 0.018% for non–beneficiary firms.

Similarly, at a regional level, beneficiary firms located in the South area of Italy show a more positive change in income accruals in comparison to their non–beneficiary counterparts.

In line with prior research on capital subsidies in the Italian institutional setting (Bronzini et al., 2006; Bernini and Pellegrini, 2011), descriptive statistics confirm that beneficiary firms show a higher profitability and increased levels of indebtedness and size. In addition, beneficiary firms adopt a full set of financial reporting more frequently than non–beneficiary firms, confirming the crucial role that a detailed financial statement may play in the granting process and in collecting complementary financial resources, along with a remarkably higher percentage of audited firms.

Table 6 presents bivariate Pearson's correlation coefficients between pairs of the variables used in our analysis. Beneficiary firms show a higher change in income accruals in the periods prior to the recognition year and in the values of the variables capturing the main characteristics of a firm (profitability, financial position, leverage and size) with respect to non – beneficiary firms.

Overall, the magnitude of correlation coefficients does not raise any relevant multicollinearity issues, showing high expected values exclusively for the interaction terms paired with their main variable component.

Table 6 Bivariate Pearson correlation coefficients

	BEN_t	$\Delta IA_{t-1}/TA_{t-1}$	$\Delta IA_{t-2}/TA_{t-2}$	$\Delta IA_{t-1}/TA_{t-1}$ South	$\Delta IA_{t-2}/TA_{t-2}$ South
BEN_t	1.0000	0.0182 ***	0.0213 ***	0.0164 ***	0.0207 ***
$\Delta IA_{t-1}/TA_{t-1}$	0.0182 ***	1.0000	0.0624 ***	0.4946 ***	0.0329 ***
$\Delta IA_{t-2}/TA_{t-2}$	0.0213 ***	0.0624 ***	1.0000	0.0326 ***	0.4931 ***
$\Delta IA_{t-1}/TA_{t-1}$ South	0.0164 ***	0.4946 ***	0.0326 ***	1.0000	0.0668 ***
$\Delta IA_{t-2}/TA_{t-2}$ South	0.0207 ***	0.0329 ***	0.4931 ***	0.0668 ***	1.0000
$EBITDA_{t-1}/TA_{t-1}$	0.0776 ***	-0.0244 ***	0.0066 ***	-0.0055 ***	0.0024
$QuickRatio_{t-1}$	0.0270 ***	-0.0597 ***	-0.0440 ***	-0.0332 ***	-0.0269 ***
LEV_{t-1}	0.0200 ***	0.0494 ***	0.0608 ***	0.0306 ***	0.0343 ***
$SIZE_{t-1}$	0.2007 ***	0.0433 ***	0.0571 ***	0.0190 ***	0.0254 ***
$\Delta Debts_{t-1}/Debts_{t-2}$	0.0074 ***	0.1170 ***	0.0396 ***	0.0525 ***	0.0198 ***
$\Delta Equity_{t-1}/Equity_{t-2}$	0.0219 ***	-0.0065 ***	0.0307 ***	0.0039 **	0.0154 ***
$IntAssets_{t-1}/TA_{t-1}$	0.0708 ***	-0.0011	-0.0009	-0.0021	-0.0018
AGE_{t-1}	0.0044 **	-0.0487 ***	-0.0471 ***	-0.0422 ***	-0.0412 ***
$FullFinStat_{t-1}$	0.1757 ***	-0.0038 **	-0.0003	-0.0042 **	-0.0028
AUDITOR	0.2001 ***	0.0016	0.0020	-0.0032	-0.0037 *

	$EBITDA_{t-1}/TA_{t-1}$	$Quick\ Ratio_{t-1}$	LEV_{t-1}	$SIZE_{t-1}$	$\Delta Debts_{t-1}/Debts_{t-2}$
BEN_t	0.0776 ***	0.0270 ***	0.0200 ***	0.2007 ***	0.0074 ***
$\Delta IA_{t-1}/TA_{t-1}$	-0.0244 ***	-0.0597 ***	0.0494 ***	0.0433 ***	0.1170 ***
$\Delta IA_{t-2}/TA_{t-2}$	0.0066 ***	-0.0440 ***	0.0608 ***	0.0571 ***	0.0396 ***
$\Delta IA_{t-1}/TA_{t-1}$ South	-0.0055 ***	-0.0332 ***	0.0306 ***	0.0190 ***	0.0525 ***
$\Delta IA_{t-2}/TA_{t-2}$ South	0.0024	-0.0269 ***	0.0343 ***	0.0254 ***	0.0198 ***
$EBITDA_{t-1}/TA_{t-1}$	1.0000	0.1300 ***	-0.1256 ***	0.0379 ***	-0.0527 ***

QuickRatio$_{t-1}$	0.1300 ***	1.0000	0.1022 ***	-0.1442 ***	0.0826 ***
LEV$_{t-1}$	-0.1256 ***	0.1022 ***	1.0000	0.1056 ***	0.0828 ***
SIZE$_{t-1}$	-0.1442 ***	-0.1442 ***	0.1056 ***	1.0000	0.0367 ***
ΔDebts$_{t-1}$ /Debts$_{t-2}$	0.0826 ***	0.0826 ***	0.0828 ***	0.0367 ***	1.0000
ΔEquity$_{t-1}$ /Equity$_{t-2}$	0.0012	0.0012	-0.0404 ***	0.0534 ***	-0.0098 ***
IntAssets$_{t-1}$ /TA$_{t-1}$	0.0508 ***	-0.0103 ***	0.0574 ***	-0.0794 ***	0.0018
AGE$_{t-1}$	-0.0587 ***	-0.0913 ***	-0.2383 ***	0.1845 ***	-0.0296 ***
FullFinStat$_{t-1}$	0.0539 ***	-0.0019	-0.0232 ***	0.3524 ***	-0.0108 ***
AUDITOR	0.0290 ***	-0.0536 ***	-0.1033 ***	0.4779 ***	-0.0067 ***

	ΔEquity$_{t-1}$ /Equity$_{t-2}$	**IntAssets$_{t-1}$ /TA$_{t-1}$**	**AGE$_{t-1}$**	**FullFinStat$_{t-1}$**	**AUDITOR**
BEN$_t$	0.0219 ***	0.0708 ***	0.0044 **	0.1757 ***	0.2001 ***
ΔIA$_{t-1}$/TA$_{t-1}$	-0.0065 ***	-0.0011	-0.0487 ***	-0.0038 **	0.0016
ΔIA$_{t-2}$/TA$_{t-2}$	0.0307 ***	-0.0009	-0.0471 ***	-0.0003	0.0020
ΔIA$_{t-1}$/TA$_{t-1}$ South	0.0039 **	-0.0021	-0.0422 ***	-0.0042 **	-0.0032
ΔIA$_{t-2}$/TA$_{t-2}$ South	0.0154 ***	-0.0018	-0.0412 ***	-0.0028	-0.0037 *
EBITDA$_{t-1}$/TA$_{t-1}$	0.1595 ***	0.0508 ***	-0.0587 ***	0.0539 ***	0.0290 ***
QuickRatio$_{t-1}$	0.0012	-0.0103 ***	-0.0913 ***	-0.0019	-0.0536 ***
LEV$_{t-1}$	-0.0404 ***	0.0574 ***	-0.2383 ***	-0.0232 ***	-0.1033 ***
SIZE$_{t-1}$	0.0534 ***	-0.0794 ***	0.1845 ***	0.3524 ***	0.4779 ***
ΔDebts$_{t-1}$ /Debts$_{t-2}$	-0.0098 ***	0.0018	-0.0296 ***	-0.0108 ***	-0.0067 ***
ΔEquity$_{t-1}$ /Equity$_{t-2}$	1.0000	-0.0069 ***	-0.0634 ***	0.0034 *	0.0148 ***
IntAssets$_{t-1}$ /TA$_{t-1}$	-0.0069 ***	1.0000	-0.1134 ***	0.0081 ***	0.0013
AGE$_{t-1}$	-0.0634 ***	-0.1134 ***	1.0000	0.1524 ***	0.1677 ***
FullFinStat$_{t-1}$	0.0034 *	0.0081 ***	0.1524 ***	1.0000	0.5109 ***

AUDITOR	0.0148 ***	0.0013	0.1677 ***	0.5109 **	1.000

Notes: This table reports correlation coefficients for dependent and explanatory variables employed in our Probit regression model. BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

6 – RESULTS

6.1 - **Model's 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_1. Our second concern is to focus on the Southern area of Italy in line with our hypothesis H_2, in order to determine the existence of a more emphasised upward earning management practice in the pre – granting period.

First, we adopt a univariate test (student's t-test) to determine whether beneficiary firms tend to report higher changes in income accruals in the periods prior to the recognition of a capital grant (one and two years before) as compared to non–beneficiary firms within the same comparative period. A student's t-test is used to determine if mean values of a certain variable for two independent samples are significantly different under the assumption that the observed variable is normally distributed. Hence, we test for the normality of our accrual variables by adopting the Shapiro – Wilk test in order to subsequently use the test for mean difference if they are normally distributed.

Table 7 reports the values of Shapiro – Wilk statistics relating to the changes in income accruals and their interaction terms with the South dummy for the subsamples of beneficiary and non–beneficiary firms. Higher values of this statistics – ranging from 0 to 1 – lead to not reject the null hypothesis that data come from a normally distributed population. In our case, results show that all accrual variables are normally distributed by subsamples.

Table 7 Normality distribution test (Shapiro – Wilk test) for accrual variables (by groups)

Variables	Shapiro – Wilk test values	
	Beneficiary (BEN_t=1)	**Non–Beneficiary (BEN_t=0)**
$\Delta IA_{t-1}/TA_{t-1}$	0.7745***	0.6487***
$\Delta IA_{t-2}/TA_{t-2}$	0.7822***	0.6581***
$\Delta IA_{t-1}/TA_{t-1}$*South	0.4934***	0.5375***
$\Delta IA_{t-2}/TA_{t-2}$*South	0.4961***	0.5440***

Notes: This table reports the Shapiro – Wilk values to test whether the accrual variables employed in our Probit regression model are normally distributed for the beneficiary and non-beneficiary groups. BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

Table 8 reports the differences in the mean values (paired Student's t-test) between beneficiary and non–beneficiary firms for the variables measuring the changes in income accruals in the period prior to the recognition of a capital grant - $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ – and their interaction with the South dummy - $\Delta IA_{t-1}/TA_{t-1}$*South and $\Delta IA_{t-2}/TA_{t-2}$*South – by grouping observations for single years – from 2008 to 2014. Results of this univariate test show that beneficiary firms tend to report statistically significant higher changes in income accruals in both periods prior to grant's recognition – one and two years before – in comparison with non–beneficiary firms for all years examined. By focusing on a regional level, Southern beneficiary firms report positive differences in the mean values as compared with the other Italian private firms in each year – except for 2008 – gaining statistical significance from the year 2010 onwards.

Table 8 Mean difference test (paired Student's t-test) for accrual variables (by years)

Variables	Years						
	2008	2009	2010	2011	2012	2013	2014
$\Delta IA_{t-1}/TA_{t-1}$							
Ben=0	0.0050	0.0042	0.0027	0.0006	0.0005	-0.0022	-0.0026
Ben=1	0.0147	0.0093	0.0062	0.0130	0.0079	0.0120	0.0051
Diff.	(0.0097) **	(0.0051) **	(0.0035) *	(0.0124) ***	(0.0074) ***	(0.0142) ***	(0.0077) ***
N. obs.	22,094	34,579	37,039	37,527	37,887	38,176	38,435

$\Delta IA_{t-2}/TA_{t-2}$							
Ben=0	0.0065	0.0050	0.0042	0.0027	0.0006	0.0005	-0.0022
Ben=1	0.0191	0.0160	0.0093	0.0035	0.0148	0.0237	0.0045
Diff.	(0.0126) **	(0.0110) ***	(0.0051) **	(0.0008) *	(0.0142) ***	(0.0232) ***	(0.0067) ***
N. obs.	18,989	22,094	34,579	37,039	37,527	37,887	38,176
$\Delta IA_{t-1}/TA_{t-1}$ *South							
Ben=0	0.0023	0.0013	0.0009	0.0004	0.0002	-0.0004	-0.0003
Ben=1	0.0017	0.0015	0.0049	0.0015	0.0006	0.0123	0.0031
Diff.	0.0006	(0.0002)	(0.0040) ***	(0.0011) *	(0.0004)	(0.0127) ***	(0.0034) ***
N. obs.	22,094	34,579	37,039	37,527	37,887	38,176	38,435
$\Delta IA_{t-2}/TA_{t-2}$ *South							
Ben=0	0.0017	0.0023	0.0013	0.0009	0.0004	0.0003	-0.0004
Ben=1	0.0007	0.0015	0.0054	0.0010	0.0027	0.0175	0.0018
Diff.	0.0010	0.0008	(0.0041) ***	(0.0001)	(0.0023) ***	(0.0172) ***	(0.0022) **
N. obs.	18,989	22,094	34,579	37,039	37,527	37,887	38,176

Notes: This table reports the mean values of accrual variables employed in our Probit regression model for the beneficiary and non-beneficiary groups for single years from 2008 to 2014 and the related test for mean difference (Student's t-test). BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise. Negative differences in brackets. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

We now move into a multivariate setting to verify whether the results of our univariate tests remain unchanged after other variables enter the analysis.

Table 9 reports the results of our Probit regression as modelled in (1b).

Table 9 Probit regression for the likelihood of getting a capital grant

Probit Regression Dependent Variable: BEN_t		
Explanatory variables	**Coefficients**	**Robust Standard Error**
Constant	-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
$\Delta IA_{t-1}/TA_{t-1}$*South	0.5489***	0.2125
$\Delta IA_{it-2}/TA_{t-2}$*South	0.6677***	0.2005
$EBITDA_{t-1}/TA_{t-1}$	2.6358***	0.0869
$QuickRatio_{t-1}$	0.1762***	0.0139

LEV_{t-1}	0.4210***	0.0277
$SIZE_{t-1}$	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
$IntangibleAssets_{t-1}/TA_{t-1}$	1.8263***	0.0782
AGE_{t-1}	-0.2343***	0.0142
$FullFinancialStatement_{t-1}$	0.2491***	0.0214
AUDITOR	0.3109***	0.0253
Area Dummies	Yes	
Industry Dummies	Yes	
Year Dummies	Yes	
N. Obs	163,927	
Wald chi2	12,422.68	
Prob > chi2	0.0000	
Pseudo R2	0.4084	

Notes: BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

As expected according to hypothesis H_1, 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_2, 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 subsidisation 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 ($EBITDA_{t-1}/TA_{t-1}$) and financial solidity ($QuickRatio_{t-1}$), 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 (Bronzini et al., 2006; Bernini and Pellegrini, 2011), 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 unsubsidised stake of investments. Along with the positive coefficient of the variable $\Delta Debts_{t-1}/Debts_{t-2}$, this result reflects the consequence of an incremental contribution that beneficiary firms have to bear to finance the unsubsidized stake of an investment after the reduction in aid intensity and hence in public financial assistance for the 2007 -2013 regional aid policy.

As regards the remaining variables, results show that audited firm have a higher likelihood of benefitting from capital grants, given the certification role of auditors in the reliability of financial reporting, while older firms tend to be penalized in the recognition of a capital grant being probably less proactive than younger firms in seeking public assistance for their investments.

6.2 - **Additional analysis**

Our empirical work will be enriched with some additional analysis relating to: 1) the replication of our multivariate model in a matched sample of beneficiary and non – beneficiary firms; 2) the determinants of subsidisation levels; 3) the effect of earnings management on the likelihood of receiving capital grants according to the subsidy programme (Tangible assets or Innovation); 4) the impact of capital grants on future profitability.

As our control group (non-subsidised firms) is observed for any year and regardless of taking into account their similarities with beneficiary firms, the issue in 1) aims to corroborate the results of our multivariate model by comparing - under the same period - beneficiary firms with non-beneficiary firms showing a similar probability to get capital grants (propensity score matching).

As various factors (size, profitability and regional location) affect the amount of capital grants enjoyed by beneficiary firms, we additionally investigate whether earnings management practices intensify as subsidisation levels grow.

In order to take into account different schemes of capital grants programmes aimed at financing tangible and intangible assets, the additional analysis in 3) aims to verify whether earnings management practices are sensitive to specific features of subsidy types as regards their requirements to gain access to public support.

As credible business plans and investment budgets are also fundamental documents for selecting beneficiary firms in the granting process in line with the EU regional aid policy prescription to finance "viable and sound investments with a real and sustained contribution to regional development" (2007-2013 Guidelines, art. 40), we evaluate the impact of the subsidised investments of beneficiary firms on their profitability after grant's receipt as in our hypothesis H_3.

6.2.1 - *Propensity – score Matching*

In our multivariate analysis, we have compared a sample of beneficiary firms – focusing on their changes in income accruals in the periods prior to grant's recognition (one and two years before) – with respect to a control group of non–beneficiary firms by observing their values in any year.

In order to compare the values of the covariates in our model for beneficiary and non-beneficiary firms under the same time period, we adopt a matching procedure by pairing observations of each beneficiary firm with those of a non–beneficiary firm in correspondence to the same years by selecting pairs (beneficiary and counterfactual firms) that have a similar probability of receiving a capital grant (propensity score matching; Rosenbaum and Rubin, 1983) and belong to the same macro area. This also allows us to better control for pre-existing differences in some firms' characteristics

affecting the probability of receiving capital grants (selection bias). This is allowed by comparing firms showing a similar propensity to get granted, but differentiate themselves from the fact that one group receives the benefit (treated group) and the other does not (control group).

Previous studies related to the impact of capital grant on firm's performance in the Italian setting (Bronzini et al., 2006; Bernini and Pellegrini, 2011) indicates profitability, firm's financial solidity, size and sector as factors influencing the probability of being subsidised. In addition, we add other variables capturing the quality of financial reporting (adoption of a full set of financial statements and presence of an auditor) to take into account the relevance of historical accounting information in the granting procedure.

The probability of receiving a capital grant is modelled with a Probit specification as follows:

$$\Pr(BEN_{i,t} = 1) = \beta_0 + \beta_1 EBITDA_{i,t-1}/TA_{t-1} + \beta_2 QuickRatio_{i,t-1} + \beta_3 LEV_{i,t-1} + \beta_4 SIZE_{i,t-1} + \beta_5 AGE_{i,t-1} + \beta_6 FullFinancialStatement_{i,t-1} + \beta_7 AUDITOR_{i.} + \beta_8 Industry\ Dummies + \varepsilon_{it}, \quad (1c)$$

where:

$BEN_{i,t}$ = 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;

$EBITDA_{i,t-1}/TA_{t-1}$ = Earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets for firm *i* in year *t-1*;

$QuickRatio_{i,t-1}$ = Current assets (except inventory) on current liabilities for firm *i* in year *t-1*;

$LEV_{i,t-1}$ = Total debts on total assets for firm *i* in year *t-1*;

$SIZE_{i,t-1}$ = Natural logarithm of total assets for firm *i* in year *t-1*;

$AGE_{i,t-1}$ = Natural logarithm of firm *i*'s number of years in period *t-1*;

$FullFinancialStatement_{i,t-1}$ = Dummy variable taking on the value of 1 if firm *i* files a non – abridged financial statement in year *t-1* or 0 otherwise;

$AUDITOR_i$. = Dummy variable taking on the value of 1 if firm *i* is subject to auditing or 0 otherwise;

Industry Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro-sector (15 identifying letters from ATECO statistical classification of economic activities) or 0 otherwise.

By conditioning on year and macro area, the matching procedure leads to 8,002 pairs of year-observations with a beneficiary coupled with a single non – beneficiary firm (matching one to one). As estimator to determine the propensity scores, we adopt the nearest neighbour matching by which treated (beneficiary) and control firms (non – beneficiary) are paired among those having the closest value of the propensity score as determined in (1c). To reinforce the variety of our control group, we additionally impose the no replacement condition by which a single control firm is associated with a unique treated firm.

Table 10 reports the results of our multivariate model (1b) applied to our matched sample. Results confirm the signs of the coefficients of our model's variables and their significance – though the statistical significance of the coefficient of the interaction terms $\Delta IA_{t-1}/TA_{t-1}$*South and $\Delta IA_{t-2}/TA_{t-2}$*South decreases from 1% to 5% and 10% respectively.

Table 10 Probit regression for the likelihood of getting a capital grant (Matched pairs)

Probit Regression Dependent Variable: BEN_t		
Explanatory variables	**Coefficients**	**Robust Standard Error**
Constant	-1.5744***	0.1762
$\Delta IA_{t-1}/TA_{t-1}$	0.9243***	0.1895
$\Delta IA_{t-2}/TA_{t-2}$	0.7879***	0.1787
$\Delta IA_{t-1}/TA_{t-1}$*South	0.8814**	0.3553
$\Delta IA_{it-2}/TA_{t-2}$*South	0.4216*	0.3072
$EBITDA_{t-1}/TA_{t-1}$	0.6463***	0.1243
$QuickRatio_{t-1}$	0.0275*	0.0320
LEV_{t-1}	0.0970**	0.0472
$SIZE_{t-1}$	0.0673***	0.0109
$\Delta Debts_{t-1}/Debts_{t-2}$	0.1508***	0.0596
$\Delta Equity_{t-1}/Equity_{t-2}$	-0.0048	0.0153
$IntangibleAssets_{t-1}/TA_{t-1}$	2.3608***	0.1636
AGE_{t-1}	0.0823***	0.0178
$FullFinancialStatement_{t-1}$	0.3722***	0.0331

AUDITOR	0.1437***	0.0342
Area Dummies	Yes	
Industry Dummies	Yes	
Year Dummies	Yes	
N. Obs	14,395	
Wald chi2	1,054.87	
Prob > chi2	0.0000	
Pseudo R2	0.06	

Notes: This table reports the results of our Probit model specification in (1b) on a sample paired according to a propensity – score matching procedure as in (1c) with no replacement. BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

6.2.2 – *Determinants of subsidisation levels*

As a further analysis, we investigate the determinants of subsidy intensity (calculated as the amount of capital grant on total assets), after controlling for some firm's characteristics (profitability, financial solidity, leverage, size, regional location and corporate governance).

We then estimate our model using the Tobit regression (Tobit, 1958; Maddala, 1983):

$$Subs_{i,t}/TA_t = \beta_0 + \beta_1 \Delta IA_{i,t-1}/TA_{t-1} + \beta_2 \Delta IA_{it-2}/TA_{t-2} + \beta_3 \Delta IA_{i,t-1}/TA_{t-1}*South_i + \beta_4 \Delta IA_{i,t-2}/TA_{t-2}*South_i + \beta_5 EBITDA_{i,t-1}/TA_{t-1} + \beta_6 QuickRatio_{i,t-1} + \beta_7 LEV_{it-1} + \beta_8 SIZE_{i,t-1} + \beta_9 AUDITOR_{i.} + \beta_{10} \text{Macro Area Dummies} + \beta_{11} \text{Year Dummies} + \beta_{12} \text{Industry Dummies} + \varepsilon_{it}, \quad (1d)$$

where:

$Subs_{i,t}/TA_t$ = Total amount of capital grant on total assets for firm *i* in year *t,* with a missing value for beneficiaries in the periods other than that of the recognition of a capital grant;

$\Delta IA_{it-1}/TA_{t-1}$ = 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 amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets for firm *i* in year *t-1*;

$QuickRatio_{i,t-1}$ = Current assets (except inventory) on current liabilities for firm *i* in year *t-1*;

$LEV_{i,t-1}$ = Total debts on total assets for firm *i* in year *t-1*;

$SIZE_{i,t-1}$ = Natural logarithm of total assets for firm *i* in year *t-1*;

$AUDITOR_i$. = Dummy variable taking on the value of 1 if firm *i* is subject to auditing or 0 otherwise;

Macro Area Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro area of Italy (North-West, North-East, Centre, South (Islands included)) or 0 otherwise;

Year Dummies = Dummy variables taking on the value of 1 for a specific year (from 2007 to 2014) or 0 otherwise;

Industry Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro-sector (15 identifying letters from ATECO statistical classification of economic activities) or 0 otherwise.

There are substantially two reasons for the choice of estimating our model with a Tobit regression: 1) dependent variable (subsidy intensity) does not assume negative values, resulting in a left-censored variable at zero and leading to biased estimates in case of option for an OLS estimator (Tobit, 1958; Maddala, 1983); 2) the probability of benefitting from capital grants and the level of related subsidy intensity are not fully independent, given that the amount of an investment aid is already determined in the application process by multiplying aid intensity to the admissible costs related to a subsidised investment. As a result, the probability of receiving a capital grant and the subsidy intensity must be modelled together in a Tobit model instead of being treated separately.

Table 11 reports the results of the Tobit regression as modelled in (1d).

Table 11 Results of Tobit regression for subsidy intensity

Tobit Regression **Dependent Variable: $Subs_t/TA_t$**		
Explanatory variables	**Coefficients**	**Robust Standard Error**
Constant	-0.2674***	0.0041
$\Delta IA_{t-1}/TA_{t-1}$	0.0126***	0.0033
$\Delta IA_{t-2}/TA_{t-2}$	0.0070**	0.0033
$\Delta IA_{t-1}/TA_{t-1}$*South	0.0239***	0.0076
$\Delta IA_{it-2}/TA_{t-2}$*South	0.0309***	0.0070
$EBITDA_{t-1}/TA_{t-1}$	0.0824***	0.0030
$QuickRatio_{t-1}$	0.0037***	0.0005
LEV_{t-1}	0.0168***	0.0009
$SIZE_{t-1}$	0.0141***	0.0002
AUDITOR	0.0048***	0.0007
Area Dummies	Yes	
Industry Dummies	Yes	
Year Dummies	Yes	
N. Obs	170,508	
LR chi2	239.50	
Prob > chi2	0.0000	
Pseudo R2	1.3586	

Notes: This table reports the estimates of a Tobit model for the determinants of subsidy intensity. $Subs_{it}/TA_t$ represents the subsidy intensity calculated as total amount of capital grant on total assets for firm *i* in year *t,* with a missing value for beneficiaries in the periods other than recognition year; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on

current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

In line with previous research on earnings management associated with the receipt of capital subsidies (Verbruggen and Christiaens, 2012; Jegers, 2012), results show that by intensifying the earnings management practices firms seem to benefit from a higher level of investment grant, as the highly significant positive coefficient of income accruals variable suggests.

In addition, this behaviour tends to be more intense for firms located in the Southern regions or with higher levels of leverage and size, while the presence of an auditor seems to moderate the incentive effect of the capital grant intensity.

6.2.3 – *Subsidy type and earnings management*

As another additional analysis, we replicate our Probit model in (1b) by distinguishing among subsidy type (Tangible or Intangible assets) to investigate whether earnings management practices differ according to capital grant schemes.

Results in table 12 show that the manipulative behaviour remains significant at a national level – regardless of the specific asset financed with a capital grant. At a regional level, earnings management practices intensify for Italian private firms located in the Southern regions only for capital grants aimed at financing tangible assets. This may be explained by a major prevalence of this subsidy type in the policy mix for the disadvantaged regions of South Italy (National Report on Governmental Grants, Italian Ministry of Economic Development; 2014).

Table 12 Probit regression for the likelihood of getting a capital grant by subsidy type

Probit Regression **Dependent Variable: BEN_t**				
	Tangible Assets		**Intangible Assets**	
Explanatory variables	**Coefficients**	**Robust SE**	**Coefficients**	**Robust SE**
Constant	-8.0614***	0.1547	-8.1198***	0.1851
$\Delta IA_{t-1}/TA_{t-1}$	0.2825**	0.1439	0.7198***	0.1970
$\Delta IA_{t-2}/TA_{t-2}$	0.3261***	0.1328	0.7342***	0.1842

$\Delta IA_{t-1}/TA_{t-1}$*South	0.7560***	0.2397	-0.2840	0.3358
$\Delta IA_{t-2}/TA_{t-2}$*South	0.6478***	0.2200	-0.2053	0.3461
$EBITDA_{t-1}/TA_{t-1}$	2.6145***	0.1151	2.2677***	0.1282
$QuickRatio_{t-1}$	0.0494***	0.0197	0.2457***	0.0191
LEV_{t-1}	0.3225***	0.0366	0.4239***	0.0405
$SIZE_{t-1}$	0.4221***	0.0091	0.4453***	0.0112
$\Delta Debts_{t-1}/Debts_{t-2}$	0.1391***	0.0438	0.0488*	0.0514
$\Delta Equity_{t-1}/Equity_{t-2}$	0.0083	0.0127	-0.0084	0.0143
$IntangibleAssets_{t-1}/TA_{t-1}$	1.2053***	0.1060	2.2535***	0.1106
AGE_{t-1}	-0.2427***	0.0205	-0.1346***	0.0217
$FullFinancialStatement_{t-1}$	0.1957***	0.0288	0.3106***	0.0297
AUDITOR	0.2962***	0.0354	0.3372***	0.0361
Area Dummies	Yes			
Industry Dummies	Yes			
Year Dummies	Yes			
N. Obs	159,471		159,304	
Wald chi2	5,072.59		5,293.64	
Prob > chi2	0.0000		0.0000	
Pseudo R2	0.3550		0.4536	

Notes: This table reports the estimates of the Probit regression for the likelihood of getting a capital grant by subsidy type (Tangible or Intangible assets). BEN_t is a dummy variable taking on the value of 1 if a firm 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; $\Delta IA_{t-1}/TA_{t-1}$ and $\Delta IA_{t-2}/TA_{t-2}$ represent change in income accruals on total assets in year *t-1* and *t-2* respectively; $\Delta IA_{t-1}/TA_{t-1}$ *South and $\Delta IA_{t-2}/TA_{t-2}$*South are interaction terms between change in income accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

6.2.4 – *Capital grants impact on future profitability*

In accordance with our hypothesis H_3, as an additional analysis not related to earnings management practices we investigate whether beneficiary firms improve their profitability after grant's receipt with respect to a control group of non-beneficiary firms.

We adopt a matching difference-in-difference approach (Bernini and Pellegrini,

2011) in order to estimate the average change in profitability between the periods prior and after grant's receipt as a difference between the two groups (beneficiary and non-beneficiary firms). Indeed, by using a sample of non-beneficiary firms as previously selected among those having a similar probability of getting capital grants to that of beneficiary firms (propensity score matching as in 1(c)), the change in profitability for our control group represents the performance that would have been experienced by beneficiary firms in the absence of a treatment (counterfactual scenario). Thus, the difference-in-difference estimator is calculated as the difference in average profitability in the beneficiary group before and after the grant's receipt minus the difference in average profitability in the matched non-beneficiary group over the same period. This method allows us to control for trend effects and for all time-invariant unobservable firm's characteristics that engender differences in performance between beneficiary and non-beneficiary firms in the period prior to the grant's receipt (Bernini and Pellegrini, 2011).

We then estimate the following difference-in-difference regression, after controlling for some time-varying firm's characteristics influencing profitability as follows:

$$EBITDA_{i,t}/TA_t = \beta_0 + \beta_1\, BEN_i + \beta_2\, POST_t + \beta_3\, BEN_i{*}POST_t + \beta_4\, BEN_i{*}POST_t{*}South_i + \beta_5\, QuickRatio_{i,t-1} + \beta_6\, LEV_{i,t-1} + \beta_7\, SIZE_{i,t-1} + \beta_8\, IntangibleAssets_{i,t-1}/TA_{t-1} + \beta_9\, AGE_{i,t-1} + \beta_{10}\, Macro\ Area\ Dummies + \beta_{11}\, Industry\ Dummies + \varepsilon_{it} \quad (1e)$$

where:

$EBITDA_{t-1}/TA_{t-1}$ = Earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense minus other revenues (item A)5 of Income Statement), on total assets in year *t-1*;

BEN_i = Dummy variable taking on value 1 for beneficiary firms or 0 otherwise;

$POST_t$ = Dummy variable taking on value 1 for years after grant's receipt (included) or 0 for 3 years prior to grant's recognition;

$BEN_i{*}POST_t$ = Interaction term between the beneficiary dummy and the time dummy, whose estimated coefficient indicates the change in profitability from before to after the grant's receipt with respect to the absence of a treatment;

BEN_i*$POST_t$*$South_i$ = Interaction term between the beneficiary and time dummy and an indicator variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise;

$QuickRatio_{t-1}$ = Current assets (except inventory) on current liabilities in year *t-1*;

LEV_{t-1} = Total debts on total assets in year *t-1*;

$SIZE_{t-1}$ = Natural logarithm of total assets in year *t-1*;

$IntangibleAssets_{t-1}/TA_{t-1}$ = Net intangible assets on total assets in year *t-1*;

AGE_{t-1} = Natural logarithm of a firm's number of years in period *t-1*;

Macro Area Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro area of Italy (North-West, North-East, Centre, South (Islands included) or 0 otherwise;

Industry Dummies = Dummy variables taking on the value of 1 if firm *i* belongs to a specific macro-sector (15 identifying letters from ATECO statistical classification of economic activities) or 0 otherwise.

Table 13 Matching Difference-in-Difference regression

Difference-in-Difference Regression Dependent Variable: $EBITDA_t/TA_t$		
Explanatory variables	**Coefficients**	**Robust Standard Error**
Constant	0.1314***	0.0065
BEN_i	0.0072***	0.0020
$POST_t$	-0.0490***	0.0018
BEN_i*$POST_t$	-0.0260***	0.0023
BEN_i*$POST_t$*South	-0.0017***	0.0022
$QuickRatio_{t-1}$	0.0359***	0.0014
LEV_{t-1}	-0.0576***	0.0021
$SIZE_{t-1}$	-0.0013***	0.0004
$IntangAssets_{t-1}/TA_{t-1}$	-0.0967***	0.0068
AGE_{t-1}	-0.0031***	0.0007
Area Dummies	Yes	
Industry Dummies	Yes	
N. Obs	68,259	
Test F	1477.57	
Prob > F	0.0000	
R2	0.1519	

Notes: This table reports the results of a difference-in-difference regression on our matched sample in order

to evaluate the effect of capital grants on firm's profitability. $EBITDA_t/TA_t$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t*; BEN_t is a dummy variable taking on the value of 1 for beneficiary firms and 0 otherwise; $POST_t$ is a dummy variable taking on value 1 for years after grant's receipt (included) or 0 for 3 years prior to grant's recognition; BEN_i*POST_t represents an interaction term between the beneficiary dummy and the time dummy, whose estimated coefficient indicates the change in profitability from before to after the grant's receipt with respect to the absence of a treatment; $BEN_i*POST_t*South_i$ is an interaction term between the beneficiary and time dummy and an indicator variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

We remove all mechanical effects related to grant's receipt by subtracting the amount of the item A-5 of the Italian Income Statement that includes the accrual component of capital grants from our profitability variable. This allows us to evaluate the impact of a capital grant on firm's profitability taking into account its pure influence due to the accounting treatment of governmental subsidies as overlooked in previous studies (Bronzini et al., 2006; Bernini and Pellegrini, 2011; Bondonio et al., 2012).

As the coefficient associated with the interaction term BEN_i*POST_t measures the effect of capital grants on firm's profitability, results show that beneficiary firms decrease on average their ex-ante profitability by about 2.6% of total assets in comparison to the non-beneficiary group. At a regional level, Southern beneficiary firms slightly reduced their profitability by an additional 0.17% with respect to the other Italian private firms. Hence, the negative impact of capital grants on firm's financial performance may be attributable to very optimistic business plans and investment budgets as further documents for selecting beneficiary firms or to some inefficient impact on firm's productivity due to free resources lowering incentives to improve performance (Bergström, 2000).

6.3 – **Robustness analysis**

To corroborate the results of our main model in (1b), we adopt an alternative measure of earnings management as the discretionary component of total accruals based on the Jones model adjusted for performance (Jones, 1991; Kotari, 2005). Instead of total accruals calculated as the difference between earnings and cash flow from operations

(Ball and Shivakumar, 2005), we adopt the level of income accruals as follows:

IA_t = Change in inventory$_t$ – Bad debt expense$_t$ – Provisions$_t$ – Prepaid and deferred taxes$_t$. (1f)

We then estimate – by industry - the Jones model adjusted for performance to determine the residuals (ε_{it}) as a measure for earnings management (discretionary accruals) as follows:

$$IA_{i,t} = \beta_0\ 1/TA_{i,t-1} + \beta_1\ \Delta Sales_{i,t}/TA_{t-1} + \beta_2\ PPE_{i,t}/TA_{t-1} + \beta_3\ ROA_{i,t-1} + \varepsilon_{it} \quad (1g)$$

where:

$IA_{i,t}$ = Income accruals for firm *i* in year *t*;

$TA_{i,t-1}$ = Total assets for firm *I* in year *t*;

$\Delta Sales_{i,t}/TA_{t-1}$ = Change in revenues from sales on lagged total assets for firm *i* in year *t*;

$PPE_{i,t}/TA_{t-1}$ = Property, plant and equipment (PPE) on lagged total assets for firm *i* in year *t*;

$ROA_{i,t-1}$ = Return on Assets (ROA) for firm *i* in year *t-1*.

We then replicate our Probit model in (1a) using $DA_{i,t-1}$ and $DA_{i,t-2}$ instead of $\Delta IA_{i,t-1}$ and $\Delta IA_{i,t-2}$ (also in the interaction terms with the South dummy).

Table 14 reports the results of our Probit model for the probability of getting a capital grant by using discretionary accruals (DA).

All the coefficients of the variables introduced in our Probit model remain unchanged in their signs and significance, confirming the conclusions of our analysis.

Table 14 Probit regression for the likelihood of getting a capital grant (Discretionary accruals)

Probit Regression Dependent Variable: BEN_t		
Explanatory variables	**Coefficients**	**Robust Standard Error**
Constant	-8.7527***	0.1282
DA_{t-1}/TA_{t-1}	0.6272***	0.1223
DA_{t-2}/TA_{t-2}	0.4645***	0.1090
DA_{t-1}/TA_{t-1}*South	0.6350***	0.2027
DA_{it-2}/TA_{t-2}*South	0.7929***	0.1817
$EBITDA_{t-1}/TA_{t-1}$	2.5696***	0.0989

QuickRatio$_{t-1}$	0.1348***	0.0174
LEV$_{t-1}$	0.3743***	0.0320
SIZE$_{t-1}$	0.5233***	0.0081
ΔDebts$_{t-1}$/Debts$_{t-2}$	0.0919***	0.0393
ΔEquity$_{t-1}$/Equity$_{t-2}$	0.0130	0.0114
IntangibleAssets$_{t-1}$/TA$_{t-1}$	1.5924***	0.0871
AGE$_{t-1}$	-0.2523***	0.0153
FullFinancialStatement$_{t-1}$	0.1432***	0.0243
AUDITOR	0.3757***	0.0283
Area Dummies	Yes	
Industry Dummies	Yes	
Year Dummies	Yes	
N. Obs	116,227	
Wald chi2	11,073.26	
Prob > chi2	0.0000	
Pseudo R2	0.4209	

Notes: This table reports the results of our Probit model specification in (1b) by using discretional accruals calculated as the residual of the estimation of the Jones model adjusted for performance in (1g). BEN_t is a dummy variable taking on the value of 1 if a firm 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; DA_{t-1}/TA_{t-1} and DA_{t-2}/TA_{t-2} represent discretionary accruals on total assets in year *t-1* and *t-2* respectively; DA_{t-1}/TA_{t-1} *South and DA_{t-2}/TA_{t-2}*South are interaction terms between discretionary accruals on total assets in year *t-1* and *t-2* respectively and a dummy variable taking on the value of 1 if a firm is located in the South of Italy (Islands included) or 0 otherwise; $EBITDA_{t-1}/TA_{t-1}$ represents earnings before interests, taxes, depreciation and amortisation (EBITDA), calculated as operating income plus amortisation, provisions and bad debt expense, on total assets in year *t-1*; $QuickRatio_{t-1}$ represents current assets (except inventory) on current liabilities in year *t-1*; LEV_{t-1} represents leverage calculated as total debts on total assets in year *t-1*; $SIZE_{t-1}$ is the natural logarithm of total assets in year *t-1*; $\Delta Debts_{t-1}/Debts_{t-2}$ represents the percentage change in long – term debts in year *t-1*; $\Delta Equity_{t-1}/Equity_{t-2}$ is the percentage change in equity in year *t-1*; $IntangibleAssets_{t-1}/TA_{t-1}$ represents net intangible assets on total assets in year *t-1*; AGE_{t-1} is the natural logarithm of a firm's number of years in period *t-1*; FullFinancialStatement is a dummy variable taking on the value of 1 if a firm files a non – abridged financial statement in year *t-1* or 0 otherwise; AUDITOR is a dummy variable taking on the value of 1 if a firm is subject to auditing or 0 otherwise. Extreme observations dropped at the 1st and 99th percentile of the distribution for all continuous variables and standard errors robust to heteroscedasticity. Unchanged significance levels for clustered standard errors by firms. * Significance at 10%, ** Significance at 5%, *** Significance at 1%.

CONCLUSIONS

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 emphasised 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-subsidised counterparts, confirming that capital grants do not trigger efficient investments capable of enhancing existing financial performance (Mura et al., 2012). 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 (Bronzini et al., 2006; Bernini and Pellegrini, 2011; Bondonio et al., 2012) 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. 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 favour of firms that are really capable of realising 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 generalisability of our results to other settings. 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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