Agency costs of free cash flow or Internal Capital Market Arguments in Diversification Decisions

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Abstract

The question why firms diversify is crucial for corporate governance studies. This paper intends to verify whether the decision to diversify is driven by opportunistic purposes (agency costs of free cash flow argument) or by the search for a superior means of funding through an internal capital market (internal capital market perspective). To the best of our knowledge, this is the first paper which compares these two competing theoretical arguments, especially with regard to the type of diversification (related vs unrelated). Using a unique panel of data for a large and representative sample of firms (listed and unlisted) from Italy for the period 1980-2006, our evidence indicates that, in general, firms invest outside their core business (diversify), especially unrelated, to gather benefits from the internal capital market. However, this general result revealed interesting changes for sub-groups of firms. The results support the existence of two conflicting perspectives on investment decision choices. The benefits (internal capital market perspective) and the costs (agency costs of free cash flow argument) of diversification seem to occur concurrently in the diversification decision. Moreover, the prevalent effect changed for firms with different sensitivity to asymmetric information and governance structure, and there is also a changed effect for related and unrelated decisions to diversify. This study offers insights for policy makers interested in designing approaches that reduce costs of information asymmetry associated with external finance and that improve laws and institutions protecting investors. In addition, it suggests practical implications for owner-managers interested in mitigating agency problems and attracting outside investors.

Jel Code: G30, G32

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1. Introduction

To recognize why firms diversify, identifying the main forces acting on this management decisions is a crucial question that can assist the understanding of the relation between diversification and value. In particular, financial studies offer two fundamental theoretical perspectives providing theoretical motivations for diversification[1]: the agency costs of free cash flow argument and the internal capital market perspective (Jensen 1986, Berger and Ofek 1995, Lamont 1997, Fluck and Lynch 1999, Hyland and Diltz 2002, Gourlay and Seaton 2004, Ramaswamy et al. 2004, Bottazzi and Secchi 2005). The first argument, based on the effect of agency costs of free cash flow, considers diversification as a decision taken for opportunistic reasons: power and prestige, empire building strategies and entrenchment (Jensen and Meckling 1976, Jensen 1986, Stulz 1990, Shleifer and Vishny 1989). The second argument concerns the benefits of an internal capital market in providing financial viability to firm investment, avoiding transaction costs, as well as the costs of information asymmetry associated with external finance and, in general, avoiding problems of financial constraint (Stein 1997, Khanna and Palepu 1997 and 2000, Fauver et al. 2003, Doukas and Kan 2008). These are two competing arguments that, although both based on managerial discretion, differently assume diversification decisions as an output of opportunistic behaviours or, vice versa, to foster efficiency in firms.

The results on diversification determinants are contradictory, mostly because mainly focused on the general decision to diversify. However, there should be, at least theoretically, different drivers in the decision to diversify in new industries due to the fact that these new activities can be related or not-related to the core-business. Thus, sorting diversification phenomena into related and unrelated ones has an important effect, that can enhance our understanding of the diversification determinants (Ramaswamy et al. 2004, Palich et al. 2000, Chatterjee and Wernerfelt 1991). Dundas and Richardson (1980) and Khanna and Palepu (1997 and 2000) argued that the direction of diversification is based on the specific types of market failure; imperfections in the product and technological markets lead to related-diversified firms, while financial capital market failure and

inefficiency in the financial system give rise to unrelated diversified firms. Therefore, taking into account *related* and *unrelated diversification,* differences in the diversification drivers can exist not only for management determination but also regarding the institutional environment in which firms were originally based.

The context of analysis the present paper is based on is perfectly suited for comparing the competing forecasts of the agency costs of free cash flow and that of the internal capital market perspective. The Italian economic environment presents a large number of elements of inefficiency in the allocation of funds. Italy represents an interesting case study, due to relevant problems of asymmetric information, inefficiency in the external capital market and problems of opportunism in the use of firms' free cash flow by managers and large controlling shareholders against minority shareholders and other stakeholders (Bianco and Casavola 1999, Faccio and Lang 2002).

Therefore, the goal of this study is to analyze the effectiveness of the agency costs of free cash flow argument compared to the internal capital market perspective in explaining why firms diversify. In particular, the role of these two competing arguments is analysed verifying how some financial variables affect the decisions to diversify in related or unrelated businesses. This kind of research question is analyzed for a long period of time (27 years) and for the first time in a country like Italy, where both agency problems and inefficiency in the capital market are relevant.

To our knowledge, two antecedents in empirical research analyze these two theoretical arguments. Hyland and Diltz (2002), considering U.S. firms, do not find evidence to support agency costs of free cash flow explanation and internal capital market perspective. Among U.S. corporations, recently, Doukas and Kan (2008) find evidence for internal capital market perspective.

We extend the existing literature in several aspects. This work differentiates between related and unrelated diversification because antecedents, determinants and consequences are different. In addition, this is the first analysis that compares the agency costs of free cash flow argument with the internal capital market perspective based on an institutional context such as that of Italy; which is

full of frictions in the capital markets and with potentially relevant conflicts of interests between who is in control against minority shareholders and other stakeholders.

The paper is organized as follows. Section 2 describes the background and hypothesis. Section 3 reports the sample characteristics, the methodology and the variables used. Section 4 reports the descriptives, the estimation of the general results and further tests, while section 5 shows the effect of diversification on corporate performance. The conclusions follow in Section 6.

2. Theory and Main Hypothesis

The agency costs of free cash flow and the internal capital market perspectives are two competing arguments. According to the former, based on the effect of opportunistic relationships (Jensen and Meckling 1976), diversification may benefit managers because of the power and prestige associated with managing a larger firm, and so by empire building strategies (Jensen 1986, Stulz 1990) and entrenching the position of managers by increasing the demand for managerial skills (Shleifer and Vishny 1989). Diversification as a consequence of opportunistic behaviours generates conflicts of interest jointly with coordination costs and control costs over the managers (Markides 1996). The second argument concerns the benefits of an internal capital market (Stein 1997), especially for poor financial performance firms (Doukas and Kan 2008) in inefficient and underdeveloped financial institutions (Khanna and Palepu 1997 and 2000, Fauver et al. 2003)[2]. In this case, the diversification strategy provides a superior means of funding through an internal capital market (Stein 1997, Peyer and Shivdasani 2001)[3], avoiding transaction costs, as well as the costs of information asymmetry associated with external finance and reducing the operational risk due to the imperfect correlation between the cash flows of different business units. In this view, managerial discretionary power provides benefits for the firms, because the internal capital market increases the efficiency of internal capital allocation, reducing their financial constraint.

Theoretical studies (Jensen 1986, Stein 1997, Lewellen 1971) have suggested that *cash flow* and *debt* can be important proxy of the previously mentioned arguments, affecting diversification decision according to the hypothesis showed in table 1.

Here Table 1 – Main Hypothesis

Cash flow and debt, as determinants of diversification decisions, are two financial variables that can differently support the agency costs of free cash flow argument or the internal capital market perspective. These two competing perspectives provide, as highlighted by table 1, different hypotheses about the effect of financial variables on diversification decisions. In general, according to the agency perspective, the diversification decision, determined by managerial discretionary and opportunistic behaviours, generates inefficiency and a reduction in the firm's value. Vice versa, in the internal capital market perspective, managers promote, through the discretionary decision to diversify, efficient process and value-enhancing decisions.

2.1 Agency Costs of Free Cash Flow Perspective

According to the agency costs of free cash flow argument, discretionary power pushes toward diversification as a result of opportunistic behaviours and inefficiency in the firm.

Cash flow is a typical financial variable that could be used as a proxy for the presence of problems associated with excess discretionary power. Jensen's (1986) managerial discretion hypothesis provides an explanation of problems of overinvestment due to free cash flow. With excess free cash flow, after valuable investments are carried out, managers have greater discretion to increase firm size through diversification (over-diversification) because it increases manager compensation, power and control. Jensen (1986) concludes that managers with abundant cash flow are more likely to undertake low-benefit or even value-destroying decisions in terms of diversification strategies, especially in industries far from the core-business. According to the Jensen perspective, it is possible to consider the cash flow variable as a proxy of Jensen's free cash flow and a positive relation is expected between cash flow and diversification. This effect should be particularly strong in the case of unrelated diversification.

The agency costs of free cash flow perspective (Jensen 1986) pointed out the disciplining role of debt on managerial behaviour, in that it reduces managerial discretion. Empire-building

preferences will cause managers to spend available financial funds excessively on unprofitable investment projects. In this case, debt exerts pressure for efficient behaviours because the manager of a higher levered firm will have less cash available to diversify (Jensen 1986). Debt can be considered a rule-based governance structure and equity as a discretionary governance device[4]. Debt acts as a disciplinary mechanism and firms with more debt are more likely to be monitored by their debt holders. It follows that monitored firms are less likely to diversify, as a consequence of opportunistic behaviours. Thus, the Jensen perspective supports the positive role of debt in reducing the ability of a manager to realize detrimental diversification strategies, especially unrelated ones (Morck et al. 1990). As a consequence, a negative link is assumed between leverage and diversification, especially unrelated.

2.2 Internal Capital Market Perspective

According to the internal capital markets hypothesis, corporate diversification is expected to result in efficiency gains arising from the development of internal capital markets in diversified firms (Doukas and Kan 2008).

The cash flow variable can support an alternative explanation to the agency costs of free cash flow argument, based upon the effect of asymmetric information (Stein 1997, Fluck and Lynch 1999, Hadlock et al. 2001). An important source of financial wedge may be asymmetric information and the cost of contracting between companies and potential providers of external financing (Stein 1997, Kaplan and Zingales 1997). When the external capital market fails to allocate resources in an efficient manner, managers may attempt to create an internal capital market in order to solve problems of asymmetric information (Khanna and Palepu 1997 and 2000). Transaction costs and asymmetric information costs in the external capital market raise the magnitude of financial constraints. On the contrary, the internal capital markets of diversified firms enable them to fund profitable projects that the external capital market would not be able to finance (Lamont 1997). Firms that are able to generate higher cash flow are also able to have easier access to credit, cheaper cost of capital and more finance available, especially with the diffusion of the

rating culture. Firms with low financial performance (low cash flow), operating in an inefficient external capital market, try to realize an internal capital market, able to combine the cash flows of many divisions, through diversification. As a consequence, firms with higher capacity to generate cash flow are less interested in the benefits of an internal capital market through diversification. Therefore, a negative link between cash flow and diversification is assumed, similarly to the expectations of Doukas and Kan (2008). This effect is particularly relevant referring to unrelated diversification.

The internal capital market can provide benefits with the intent to have more stability in the firm's financial needs (Lewellen 1971, Kim and McConnell 1977). An important benefit associated to the decision to diversify is the reduction in the firm's operating risk because of mutual financial support among the different business units (coinsurance effect). The use of debt requires the firm to make interest and principal payments according to a schedule stipulated in the contract. As a consequence, the firm will prefer to become diversified because the diversification makes the firm more comfortable in being able to face all the payment deadlines, essentially based on the reduction in operating risk occurring when a firm runs businesses whose cash flows are less than perfectly correlated[5]. Consistently with the coinsurance effect, a firm, especially if financially constrained, can increase its debt capacity by diversifying its business, reducing the magnitude of its financial constraint through this extra debt capacity. This effect is more important for firms that develop unrelated diversification strategies because the lack of correlation between businesses is greater (Kim and McConnell 1977 and Bergh 1997). Consistent with Kim and McConnell (1977) and Bergh (1997) this is one of the most important value-increasing sources associated to unrelated diversification. Firms that follow unrelated diversification can support more debt and benefit from the fiscal advantages related to debt financing (Bergh 1997)[6]. Therefore, a positive effect of leverage on diversification, especially for unrelated diversification, is assumed.

2.3 Why Differentiate Between Related and Unrelated Diversification?

The theoretical motivations underlining benefits and costs of diversification are not

mutually exclusive, so it is not surprising that empirical studies have produced controversial results. These outcomes can be driven by the lack of due consideration, and control, for the type of diversification. Indeed, related and unrelated diversification present different motivations, determinants and consequences. Therefore, in order to analyse the drivers of the decision to diversify, it is crucial to sort the effect for these two types of diversification. *Related diversification* is based on operational synergies related to (1) resource sharing in the value chains among businesses, and (2) transfer of skills and knowledge from one value chain to the other. Thus, related diversification is based on the sharing and transfer of skills connected to tangible resources (plant and equipment, sales forces, distribution channels) and intangible resources (brand names, innovative capabilities, know-how). Conversely, *unrelated diversification* is associated with financial synergies associated to benefit from the economies provided by an internal capital market and by an internal labour market, to obtain tax benefits, and to reduce business risk (coinsurance argument). Moreover, according to Jensen (1986) and Stulz (1990) managers diversify, in particular in unrelated business, for opportunistic purposes to pursue private benefit. A second agency explanation is that insiders diversify to reduce the idiosyncratic risk that they face (Amihud and Lev 1981, May 1995).

The question of the superiority of one of the two strategies is of no little importance. Part of the empirical literature found support for the superiority of related over unrelated diversification by sharing operational resources and skills across multiple businesses (Rumelt 1974, Hoskisson and Hitt 1990, Markides and Williamson 1994, Montgomery 1994), while many other studies found no different effect with regard to the role of relatedness or other types of relevant benefits (Lewellen 1971, Christensen and Montgomery 1981, Grant et al. 1988).

Although the evidence regarding which type of diversification is better is not clear, it is well-known that it is relevant, although it is never possible, to differentiate for related and unrelated diversification. In particular, our hypothesis is expected to show stronger effect for unrelated decisions to diversify. Combining businesses that are not correlated, because the activities are

different, distinct and without area of overlapping, provides a natural context for conflict of interests among divisions, managers and investors. Moreover, in a context in which a firm decides to combine businesses whose cash flows are less than perfectly correlated, the benefits associated to an internal capital market are greater.

2.4 Context of Analysis

As several authors have suggested, in Italy institutional context and corporate governance are different from Anglo-American countries such as the UK and USA. The Italian economic environment presents a large number of elements of inefficiency in the allocation of funds. Capital markets in Italy are relatively undeveloped compared not only to those in the US but also, to some extent, to those of other large European countries. As for other continental European countries, the stock market is not an important source of finance in Italy. Specifically, the number of listed firms is relatively small in Italy in comparison to that of other countries having a similar gross domestic product (Carpenter and Rondi 2000). Very few Italian companies trade publicly, not even companies that are quite large (e.g., Ferrero, Fininvest, Barilla). In 2000, only 297 companies traded on the Milan stock exchange (266 in 1990 and 168 in 1980). Corporate debt is not issued on the market, but is often raised from banks and other financial institutions. Due to the lack of transparency regulations and high information asymmetries, contract costs between borrowers and lenders are high. Furthermore, there is a poor presence of institutional investors on financial markets (Bianco and Casavola 1999). The development of institutional investors, such as those generated through investment funds, merchant banks, and especially pension funds, is in its early stages. In a similar context, the benefits associated to diversification can be relevant (Prowse 1990). In particular, benefits provided by diversification strategies, arising from the internal capital market, can be extremely relevant in the presence of significant external capital market constraint and imperfections. In the light of this, the lack of internal resources can increase companies' interest realizing an internal capital market to overcome asymmetric information problems and inefficiency in the external capital market that could financially constrain the firm (Yan 2006).

Another feature of the Italian economy is that, in most cases, the Italian model of corporate governance is quite far from the one proposed by Berle and Means. There is no great separation between ownership and control. If the largest shareholder holds a substantial block of shares, then that shareholder has effective control (La Porta et al. 1999). La Porta et al. (1999) found that ownership in publicly traded Italian companies is highly concentrated within single families and controlling families participate at the top levels of management. Ownership is even more concentrated among non-listed companies. This concentration is a by-product of the relative lack of protection of minority shareholders by Italian securities law. In general, large shareholders control a significant number of firms in many countries, including developed ones (Shleifer and Vishny 1997, Claessens et al. 2000, and Holderness et al. 1999). Because this is the prevailing structure especially in continental European countries and in particularly in Italy, where the business model is based on families, this kind of conflict is even more relevant compared to those related to the separation between management and control (Faccio and Lang 2002). As a consequence, Bebchuk (1999) shows that the presence of large controlling shareholders has the potential to create sizeable agency costs and may be a backlash against minority protection, especially in the case of family business firms with overlapping of ownership and management. Specifically, La Porta et al. (1998), Bebchuk (1999), Bebchuk et al. (2000) and López-de-Foronda et al. (2007) contend that this kind of firm ownership exacerbates the extent of private rents by facilitating fund diversion and favoring some forms of controlling shareholder expropriation of minority shareholders. In particular, Bebchuk et al. (2000) analyzed the agency costs associated with large shareholders who are also in control and found that large controlling shareholders can gain private benefits related to free cash flow, similarly to the inefficient availability of such free cash flow in companies with dispersed ownership. This matter is likely to be exacerbated in the presence of a context with weak disclosure requirements, governance mechanism and poorly developed financial market (La Porta et al. 1998).

In the light of these arguments, Italian firms represent an interesting case study. Our propositions are particularly relevant in a context of analysis characterized by market inefficiency

with relevant asymmetric information, and where who is in control has a relevant discretionary power to use financial resources, eventually for opportunistic behaviours.

3. Methodology and Data

3.1 Sample

The sample consisted of a unbalanced panel made up of 163 listed and unlisted Italian firms, evaluated in the period from 1980 to 2006 (27 years). We excluded firms belonging to the financial-services industry, which present specific features that make them difficult to compare to other firms, and firms belonging to the regulated utilities industries, which at the beginning of the period were government owned and subsequently involved in privatization processes. The data was provided by Mediobanca - Ricerche & Studi (R&S). The R&S Directory is an annual publication that contains a broad range of high-quality financial and non-financial information on the largest companies, in terms of total assets and income, based in Italy. Its aim is to provide a fully comprehensive financial profile of their operations, enabling the user to gain in-depth knowledge of large leading Italian companies[7]. This is a unique database, created using R&S paper-based reports until the year 2000 and PDF-files up to 2006. The whole sample comprised 2199 observations.

3.2 Model and Dependent Variable

To compare the agency costs of free cash flow argument and the internal capital market perspective, we investigate the financial determinants of product diversification, according to the direction of the diversification, related or unrelated. In general, we focused our analysis on the diversification determinants, more then on the determinant of diversification act, comparing the two theoretical competing arguments (agency costs of free cash flow argument vs the internal capital market perspective). Equation 1 describes the general formulation of the model estimated:

$$\text{Diversification } _{it} = f \,(\text{cash flow } _{it\text{-}1},\ \text{leverage } _{it\text{-}1},\ \text{control variables } _{it\text{-}1}) \tag{1}$$

Formally, the diversification activity of firm i at time t will be a function of cash flow, leverage and a set of *control variables* at time *t-1*. Diversification is proxied, as shown in table 2, in two ways, considering the probability of diversification and the intensity of diversification.

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Here Table 2 – Variable Names and Descriptions

With regards to the analysis of the **_probability to diversify_** we use, as Campa and Kedia (2002) and Gourlay and Seaton (2004) have done, a dummy variable than take the value of one when the firm operates in more then one segment (diversified firm) and zero otherwise (focused firm). The methodology we use to address the hypotheses above is to run a probit model. Formally, our dependent variable in the model is equal to:

Diversification* $_{it}$ = f (cash flow $_{it-1}$, leverage $_{it-1}$, control variables $_{it-1}$)

$$\text{Diversification } _{it} = 1 \text{ if Diversification* } _{it} > 0$$

$$\text{Diversification } _{it} = 0 \text{ if Diversification* } _{it} < 0$$

where Diversification*$_{it\ is}$ an unobserved latent variable.

In the past, controversial results could be due to the possibility that different drivers were affecting the decision to diversify in related, or unrelated, businesses (Palepu 1985). Indeed, the direction of the diversification is not random. In exploring the reason why firms diversify it is advantageous to discriminate between two major types of diversification: related and unrelated. Therefore, the argument will follow the direction of the diversification choice, scrutinizing the determinant of related diversification, for firms that diversify to industries with similar characteristics (where externalities will be easier to exploit), or the determinants of unrelated diversification, for firms that diversify into industries with different features. For decisions pertaining to the _type of diversification_, we need to classify the diversification phenomena according to how close different segments are to the core-business. We investigate the _decision to diversify related_, using a dummy related diversification (_D_Related._) taking a value of one if the firm reports business segments differences based on three or four-digit Sic code, within a two-digit Sic code, and zero otherwise[8]. Furthermore, we investigate the _decision to diversify unrelated_, using

a dummy *un*related diversification (*D_Unrelat.*) taking a value of one if at least one business division is different at two-digit Sic code and zero otherwise[9].

Our second analysis refers to the determinants of **diversification level**. In particular, to account for investment in diversification we look to the *level (intensity) of diversification,* by using directly as dependent variable continuous variables of diversification. Thus, referring to the level (intensity) of diversification, to account in deep for investment (disinvestment) in diversification, considering the different amount dedicated by a firm to diversify, we employ directly the entropy measures of diversification (Jacquemin and Berry 1979). In particular, the measure of total diversification (DT) is applied as dependent variable, to measure the whole level of diversification of a firm. In general, entropy measures are commonly used as proxy for diversification as they allowed the objectivity of the product-count measures to be combined with the ability to apply the relatedness concept categorically, weighting the businesses by the relative size of their sales (Palepu 1985). In particular the entropy measure of total diversification (DT), that measures the whole diversification of the firm, is calculated as:

$$\text{Intensity of diversification} = \ \Sigma P_j * ln(1/P_j),$$

where *P* refers to the proportion of sales in each business segment *j* and *ln(1/P_j)* is the weight for that segment. Moreover, DT can be decomposed into its related component (related diversification index or DR) and unrelated component (unrelated diversification index or DU). DR is the related entropy measure of diversification resulting from businesses different at three or four-digit segments, within a two-digit Sic code. Vice versa, DU is the unrelated diversification index resulting from businesses in different two-digit industry groups. The related diversification index (DR) and the unrelated diversification index (DU) take into account the role of all business units in which the firm is involved, without over-emphasizing only those business segments with higher proportions of sales. Using directly a continuous proxy as dependent variables and after applying the Hausman test in the correlation between the regressors and the individual unobservable effects, a fixed-effect model is applied.

3.3 Explanatory Variables

Explanatory variables, shown in table 2, were chosen to capture, first of all, the financial effect of cash flow and debt on diversification, informing on the magnitude of the two theoretical perspectives analysed. The effect of *free cash flow* is proxied by the variable cash flow, defined as the ratio of cash flow divided by total assets. Based on prior empirical studies, the role of *debt* is provided by the variable *leverage,* measured as the ratio of financial debt on total assets. These financial variables can either support an agency argument or the internal capital market perspective as determinant of diversification decisions. In general, the explanatory variables were lagged by one period in an attempt to reduce the potential problem of endogeneity. In the model we enclosed additional control variables such as *dummy family, dummy listing, ownership structure, growth opportunity, tangibility* and *size,* to underline the role of other diversification determinants. The governance of a firm is strictly influenced by *ownership structure*. The role of ownership structure in the determination of diversification activity is much debated in the literature and previous studies that examine this relation provide mixed evidence (Denis et al. 1997, Lewellen et al. 1989). In a comprehensive study, La Porta et al. (1999) found that ownership in many publicly traded companies in Continental European countries is highly concentrated. The models presented here contain an ownership concentration variable that takes into account a firm's ownership structure, measured by the percentage of shares held by the primary shareholder. To account for the governance structure, as widely documented for Italy (Bianco and Casavola 1999, La Porta et al. 1999), it is relevant to control also for the existence of a business model based on the role of family ownership. Families represent an important class of large shareholders that potentially have unique incentive structures and a strong voice in the firm's decision making. We use a binary variable (*Dummy Family*) taking a value of one if a firm's top executives belong to the same family as the controlling shareholder of the firm, and zero otherwise. Moreover, we also control for differences between listed firms, more subject to transparency regulations, and non-listed firms, more subject to asymmetric information and opacity in the relation with investors and the external market. Thus, we

use a binary variable (*Dummy Listing*) taking a value of one if firms are listed, and zero otherwise. The variable *size,* measured as the logarithm of the total assets, is traditionally considered a diversification determinant because relatively large firms have better access to more resources, especially from external capital markets, to pursue diversification strategies[10]. Following Chatterjee and Wernerfeld (1991), tangible assets "are characterized by fixed capacity". *Tangible assets* provide collateral for loans and thus provide support for firms that want to grow and are in need of external resources for financial support. Tangibility is measured as the ratio of property, plants, and equipment to total assets. In the model we control also for *growth opportunities*. Considering both listed and unlisted firms, this variable is measured by the percentage changes in sales. Coherently with Jose et al. (1986), the decision to diversify can be motivated by different reasons in order to exploit growth opportunities and create value or to pursue opportunistic choice in case these growth opportunities are lacking. Therefore, it is relevant to control for the set of growth opportunities available to the firm.

4. Results on Diversification Determinants
4.1 Descriptive analysis

Tables 3 and 4 present descriptive statistics and correlations for the study variables. In particular, table 3 presents mean, median and standard deviation of explanatory variables for the whole sample, and also compares the mean value for focused and diversified firms, reporting the t-test for the difference in means.

Here Table 3– Descriptive Statistics of the Variables.

Here Table 4 – Correlations Matrix

Considering descriptive statistics for the whole sample, approximately 54% of the firms are diversified. Some variables, such as leverage, seem to be symmetrically distributed while others, such as growth opportunity, are asymmetrically distributed. Diversified forms appear to have different features compared to their specialized counterparts. Consistently with Lang and Stulz

(1994), Hyland and Diltz (2002), diversified firms have lower cash flow than single-segment firms. For single-segment firms the mean cash flow is 0.173 compared to the values of 0.131 for diversified firms. Diversified firms tend to be more highly leveraged than focused firms. This result is consistent with Hadlock et al. (2001) and is in contrast with Berger and Ofek (1999) who found that their focusing firms have more leverage. Consistent with the findings of Denis et al. (1997) and Clarke et al. (2004), the ownership concentration is larger for the single-segment firms in our sample than for the multiple-segment firms. The mean is 0.686 for focused firm and 0.640 for diversified firms. For the variable growth opportunity the differences are not significant at conventional levels. Tangibility for focused firms is significantly smaller than for diversified firms. Diversified firms tend to be significantly larger than focused firms. 65% of the sample are family firms and 69% of those in the sample are unlisted firms. Moreover, the possibility of multicollinearity among the independent variables was tested using variance inflation factors (VIFs). The maximum VIF obtained in all of these models, calculated but not shown, was 1.35, which is far below the rule-of-thumb cut-off of 10 (or more prudently 5) for multiple regression models.

4.2 General Results

This section presents the results obtained by estimating the previous mentioned empirical model. The results of six regression that are used to test the hypotheses are presented in Table 5. Comparing the internal capital market perspective with the agency costs of free cash flow argument, the diversification decisions can be motivated by the benefits provided by financial purposes or by the costs associated to opportunistic behaviours. Each of the three models are used to explain total diversification, related diversification and unrelated diversification. In regressions (1) to (3) dependent variables take a binary variable. The most common approach is to estimate a random effect probit model where the coefficients reported in the tables are transformed to represent the change in probability for an infinitesimal change of each independent variable evaluated. In regressions (4) to (6) we use continuous diversification measures, applying a fixed-effect model.

Here Table 5 – Results for the General Model.

The results of regression (1) to (3), in which we use binary variables for diversification, jointly with the results of regressions (4) to (6), in which we use continuous variables for diversification, support the relevance of the benefits associated to the internal capital market.

The variable cash flow is negatively associated to diversification as a whole in all the regressions from (1) to (6). In particular, the variable cash flow provides insight about the role of the internal capital market when we consider related diversification level (DR). The results concerning leverage (where significant) suggested that this variable plays an important role in the diversification decision. The decision to operate in more businesses is positively associated to the use of debt, referring to decisions to diversify as a whole. In particular, the role of debt to boost diversification, in particular, is verified for decisions to diversify in unrelated businesses. The positive effect of the leverage variable suggests that the use of debt pushes the managers to diversify the company in order to reduce the operating risk, supporting the coinsurance effect rather than acting as a disciplining device against managerial opportunistic behaviours.

The variable *Dummy Listing* is significant and positive in regression (1) to (5). A possible motivation of this result is linked to the nature of unlisted firm. Probably diversification increase the complexity to manage firm that may affect negatively its organization. This imply the need of adding capabilities outside those of the existent management, for example, through partnerships with other shareholders that incorporate the needed new abilities. The Dummy Family is insignificant in all regressions. The variable *ownership concentration* differently affects the likelihood to diversify related or unrelated. A positive relation resulted between ownership concentration and diversification unrelated (regression 3 and 6), supporting Amihud and Lev's (1981) view that insiders with higher equity ownership are expected to diversify unrelated, in order to reduce their idiosyncratic risk and benefits of an internal capital market created by diversification in unrelated businesses. However, managers can diversify in unrelated industries, for opportunistic

purposes, to derive private benefits (Jensen 1986). In contrast, a negative effect on related diversification resulted (regression 2 and 5), suggesting that ownership limits the decision to diversify in related businesses. Those who are in control, increasing their ownership stake, prefer to avoid diversification in related activities, assumed as a less efficient strategy, while they prefer to invest in unrelated diversification, to maintain high financial viability. In a context such as that of Italy, with such an inefficient external capital market, owners prefer to reduce business risk and their financial constraint mainly via unrelated strategies. The variable *tangibility* showed a general negative effect associated to the decision to diversify as a whole, and this negative link is particularly evident with regard to more investment in unrelated diversification. Tangibility refers to fixed assets that reduce flexibility in moving toward diversification strategies. Moreover, we find the expected positive (where significant) relation between *size* and diversification. The variable size is relevant in affecting positively the decision to diversify, especially with regard to the decision to operate in industries different from the core business, allowing the firm to diversify unrelated. In this case, the size become relevant to provide scale economy in developing the firm as a conglomerate. Vice versa, the variable size is not significant in supporting the decision to diversify related, in activities close to the core-business. Finally, the growth opportunity variable is not statistically significant. While theoretical arguments assume the relevant role of the growth opportunity factor, the lack of any significant results could be due to the fact that we used sales growth as proxy. In general, this is not a good proxy, because it accounts for past growth and not for future opportunities. However, we could not apply better proxies such as the Tobin's Q, scrutinizing a sample of Italian listed and unlisted firms.

To sum-up, the decision to diversify seems to be directly influenced by arguments associated with the internal capital market especially with regard to decisions to diversify in industries far from the core-business if we consider leverage variable. The signs and the significance on the coefficients of cash flow variable are weakly in favour of internal capital market perspective for related diversification.

4.3 Further Test on High Cash Flow Firms

Although Italian firms seem to be particularly sensitive to internal capital market benefits in diversification decisions, the role of the agency costs of free cash flow can depends on some kind of firms-specific status the firms face. Thus, we intend to verify the effect of cash flow and leverage for firms particularly subject to agency costs of free cash flow, in which the benefits associated to the internal capital market are very low.

To account for firms particularly subject to agency costs of free cash flow, similarly to Opler and Titman (1993), we consider firms with high median-value of cash flow. In particular, it can be assumed that high cash flow firms, showing important financial performance, are less interest in the benefits associated to an internal capital market. At the same time, these firms are particularly sensitive to problems of agency costs of free cash flow, due to the possible misuse of abundant cash flow. For these kind of firm is higher the probability of opportunistic use of cash flow. Thus, high cash flow firms represent an ideal contest to test the role of the agency costs of free cash flow argument. According to this hypothesis for high cash flow firms it should be stronger the positive link between cash flow and diversification. Furthermore, in high cash flow firms, where opportunistic actions are particularly relevant, debt exerts pressure for efficient behaviours. For these firms the discipline role of debt should reduces managerial discretion to realize detrimental diversification strategies, allowing for a stronger negative link between leverage and diversification.

Empirically, we use a binary variable (Dummy_HighCash), taking a value of one if the variable cash flow is higher than its median value and zero otherwise, and then we interact it with the variable cash flow (Cash flow*Dummy_HighCash) and with the variable leverage (leverage*Dummy_HighCash). For high cash flow firms we assume to particularly report a relevant positive sign of the variable cash flow, with specific regards to the variable Cash flow *Dummy_HighCash, and a relevant negative sign of the variable leverage, with specific regards to the variable leverage*Dummy_HighCash,

Therefore, to verify the role of the agency costs of free cash flow argument in firms that theoretically should be particularly sensitive to these problems, we ran the regressions including in the general model the dummy Dummy_HighCash and then two interaction terms, between the Dummy_HighCash and the variable cash flow and the Dummy_HighCash and variable leverage. Moreover, the same previous mentioned set of control variables are enclosed. In table 6 we report the results of the general model considering firms particularly subject to agency costs of free cash flow.

Here Table 6 – Results for Firms Particularly Subject to Agency Costs of Free Cash Flow.

About the probability to diversify, the results keep to generally show the relevant effect of the internal capital market argument. This appears observing in column (1), concerning the probability to diversify, the negative and statistically significant effect of the variable cash flow and the positive and statistically significant effect of the variable leverage. Specifically, observing column (3), with regards to the effect of the variable leverage, the role of the internal capital market seems particularly relevant for decisions to diversify unrelated. For high cash flow firms debt decreases the probability to diversify, allowing to better face interest payments schedule. Vice versa, observing column (2), high cash flow firms seem to be interested in diversification related for opportunistic purposes. Indeed, the positive effect of the interaction term between the variable cash flow and the Dummy_HighCash on the decision to diversify in related businesses, jointly with the negative effect of the interaction term between the variable leverage and the Dummy_HighCash, provide insight on the agency costs of free cash flow argument.

Concerning the determinants of the intensity (level) of diversification, table 6, from column (4) to column (6), shows similar results to column (1) to (3). In particular, the results concerning the measure of unrelated diversification confirm the relevant role of the internal capital market perspective. Instead, the results regarding the measure of related diversification shows the concurrently role of both agency costs of free cash flow argument and internal capital market

perspective. Specifically, while the variable leverage in general shows the relevant role of the internal capital market perspective, considering both the variables cash flow and leverage for high cash flow firms the important role of the agency costs of free cash flow are showed to be relevant. Specifically referring to the insight provided by the variable leverage, while in general show the relevant role of the internal capital market perspective, considering high cash flow firms the important role of the agency costs of free cash flow are showed to be relevant. It means that although it is prevalent the role of the internal capital market in diversification decisions, for firms that have abundant cash flow the decision to diversify in related businesses is determined by agency costs of free cash flow argument.

To sum-up, this further test suggests that there are two forces affecting diversification decisions that have a different relevance for decision to diversify in related businesses or in unrelated businesses. The results show that, in general, the decision to diversify is still particularly determinant by the management's interest for the benefits associated to the internal capital market and so by financial purposes, especially for decision to diversify unrelated. As Pagano et al (1998) showed that Italian firms go public mainly for financial motivation - rebalancing their capital structure rather than for caught growth opportunities -, our paper shows that Italian firms mainly diversify for financial purposes – to benefits by the creation of an internal capital market and be better able to handle interest payments-. Nevertheless, although the internal capital market perspective is the predominant motivation in diversification decisions, especially in unrelated diversification, the decisions to diversify related, considering firms that have abundant cash flow and represent an ideal context for opportunistic purposes, are affected by the agency costs of free cash flow argument.

5. *Effect of Diversification on Performance*

In this section, we examine the impact of diversification on performance. The connection between diversification and performance depends on the motivation associated to this corporate strategy. If diversification is motivated by the benefits provided by an internal capital market a

positive effect on performance is expected; vice versa, if diversification is motivated by opportunistic purposes a negative effect on performance is expected.

Due to the different motivations concerning the decisions to diversify in related or unrelated activities, we intend to verify if, as it seems to appear, the decisions to diversify related, in particular for high cash flow firms, is motivated by the agency costs of free cash flow argument. As a consequence, a negative impact of related diversification on corporate performance is expected. At the same time, considering that the unrelated diversification resulted associated to the internal capital market motivation, we want to verify if the unrelated diversification has a positive effect on the corporate performance.

Empirically, we employed as dependent variable as a measure of corporate performance; we applied the return on assets, labelled ROA, which is calculated as operating profit divided by the total asset. We used the entropy measures of diversification to appreciate the existence of a positive or negative relation between diversification and performance. Moreover, to verify the effect of diversification on performance for high cash flow firms we interact the diversification measures with the variable Dummy_HighLev. All the previous mentioned control variables were included although the coefficients are not reported in the tables. From an econometric perspective, we run a fixed effect panel regression, as Campa and Kedia (2002) have done, and also the so-called system GMM (SYS-GMM) estimator of Arellano and Bover (1995) and Blundell and Bond (1998), to explicitly deal for unobservable heterogeneity and controlling for the endogeneity problem. In table 7 we report the results of diversification on performance.

Here Table 7 – Effect of Diversification on Performance.

For the SYS-GMM regressions, the key assumptions are verified. The autocorrelation tests signal a strong first order correlation in the differenced residuals, but no higher order autocorrelation, therefore supporting the assumption of lack of autocorrelation in the errors in levels, underlying the adopted estimator[11]. Further, the Hansen test cannot reject the null hypothesis of validity of the over-

identifying restrictions, and the difference in Hansen test supports the validity of the additional instruments used by the *SYS-GMM* estimator[12]. Therefore, the feature of our model was valid and well-specified.

In general, it seems that the unrelated diversification affects positively corporate performance while diversification in related businesses has a negative influence on performance.

The positive effect of unrelated diversification on performance supports the role of the internal capital market argument to diversify. As suggested by Matsasuka and Nanda (1997) and Khanna and Palepu (1997) the benefits provided by diversification strategies, arising from internal capital market, can be even greater in the presence of significant external capital market constraint and imperfections, as the Italian case. Consistent with this view Khanna and Palepu (2000) found little evidence of diversification discount in countries where external capital market constraints and imperfections are plentiful. In Italy, a typical bank-based financial system country, due to problems of asymmetric information and lack of transparency and disclosure (Bianco and Casavola 1999) inefficiency in the external financial market rises a beneficial role of the internal capital market in providing easily access to financial resources. Thus, unrelated diversification may yield performance gains by avoiding problems associated with information asymmetries and market imperfections. Moreover, the positive effect of unrelated diversification can also be motivated by the coinsurance effect and the seek of tax benefits (Lewellen 1971). Firms that follow unrelated diversification can issue more debt and benefit from the fiscal advantages related to debt financing (Bergh 1997). The tax liability of the diversified firm may be less than the cumulated tax liabilities of the different (single) business units. In Italy the tax rate is very high and, as a consequence, firms try to reduce the fiscal costs by conglomerate.

The negative effect of relatedness on firm's performance support the agency costs of free cash flow argument. As suggested by Markides and Williamson (1996) to be value-enhancing the related diversification has to provide resource sharing and skills transferring based on rare, not-imitable, valuable and not-substitutable resources. The lack of one of this properties can generate inefficiency

and costs. This results can be interpreted also according to Nayyar (1992), that suggested that relatedness can fail to create value when among the involved business units lack cooperation or incentives that generate impediments to relatedness exploitation. Also Jones and Hill (1988), Williamson (1985) and Goold and Campbell (1998) observe that agency costs among the business units, jointly with incentive distortions generated by intra-firm competition (rather than the necessary cooperation among the managers) represents obstacles to performance and outweighs the benefits of relatedness. Therefore, it seems that decisions of the Italian firms to realize related diversification is mainly motivated by opportunistic behaviours instead of search of operational synergies.

6. Conclusions

This paper investigates how diversification decisions are affected by agency costs of free cash flow or internal capital market arguments. The controversial results on diversification as value-enhancing strategy suggested the need for further research in order to understand what the drivers of the diversification choice are. Accordingly, in the present work we analyse the diversification determinants by investigating the role of financial drivers, based on the agency costs of free cash flow and the internal capital market explanations for the firms' diversification behaviour. The analysis differentiates between related and unrelated diversification, distinguishing the effect for different sets of growth opportunity available to the firms, for different sensitivity to asymmetric information and for different governance structure.

This paper enriches the literature on the agency costs of free cash flow and the internal capital market, with interesting implications for further empirical examination to explore how strategy and finance can be welded more closely. The way firms' financial variables affect diversification decision is a non-trivial topic. There is a combination of costs associated to opportunistic behaviors and benefits associated to the internal capital market. Financial variables can provide distorted investment incentives, modify market expectations, discipline management and create financial synergies. In general, financial variables exert a crucial role on diversification decisions, and therefore on value-enhancing corporate decisions.

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Moreover, the benefits (internal capital market perspective) and the costs (agency costs of free cash flow argument) to diversify seem to occur concurrently in the diversification decision, but the prevalent effect depends on some firm-specific characteristics. Controlling for some source of heterogeneity a difference of impact for the two competing arguments emerges. The general findings differ considering various sources of heterogeneity, with particular regard to firms' sensitivity to asymmetric information and comparing two governance structures that characterize the Italian context (family vs non-family firms). *Listed* firms, less subject to asymmetric information, transaction costs and financial constraint, seem to be interested in diversification for opportunistic purposes (especially with regard to diversification unrelated), while *unlisted* firms are more interested in diversification, especially in industries far from the core-business, to benefit from the creation of an internal capital market. The agency costs of free cash flow argument seems to better explain decisions to diversify for *family firms* with particular regard to unrelated diversification, while the internal capital market perspective seems to be effective in explaining decisions to diversify for *non-family firms*, with specific regard to unrelated diversification.

Therefore, as a matter of fact, the controversial results in research work on diversification and value can be motivated by two competing forces that are concurrently at work. These forces work concurrently to determine the decision to diversify but with different effects. The firm is subjected, at the same time, to a detrimental force by the agency argument and a beneficial force by the internal capital market perspective. The agency costs of free cash flow hypothesis suggest detrimental effect by diversification decision, while the internal capital market perspective supports a positive effect associated with the efficient role in resource allocation of diversified firms. The prevalence effect depends on which force is strong enough to overcome and prevail over the other.

The relation between corporate diversification and firm's value provides many insights. In Italy related diversification seems to be motivated by agency costs of free cash flow. As suggested by Markides and Williamson (1994) the decision to diversify in related businesses can be motivated by a "mirage effect" that do not provide any benefits by the expected operational synergies. Vice

versa, unrelated strategies may present some unique advantages based on financial synergies, that outperform the effect of related diversified strategies. Inefficiency in the external capital market, that characterize the Italian context, can financially constraint Italian firms. As a consequence, conglomerates provide financial support to sustain the corporate growth. The coinsurance effect and the tax benefit can also justify the positive effect of unrelated diversification on corporate value. Therefore, it seems that country-specific factors, associated to inefficiency in the external capital market, generate superior benefits from an internal capital market.

Based upon all results of our analyses, we conclude that the decision to diversify cannot be asserted without considering two important factors, in direct competitions: the agency costs of free cash flow perspective and the internal capital market arguments. These are two forces operating concurrently in such as corporate decisions. By considering the effect of these factors, a firm can optimize its diversification strategy to maximize its value.

There are several practitioner implications. As highlighted by the results, due to the prevailing relevance of the internal capital market, this study offers insights into the existence of noteworthy inefficiencies in the Italian external capital market. Policy makers should be involved in designing policies that reduce costs of information asymmetry associated with external finance and that improve laws and institutional activities protecting investors. Moreover, given the resulting importance of the typical conflict of interests between majority shareholders and minority investors that affects Italian firms, policy makers should improve the governance systems, protecting outsiders by law. In particular, the importance of agency costs of free cash flow for listed firms highlighted an important weakness of the Italian stock market; for listed firms' diversification policy, motivated by opportunism on the part of those in control, would generate disadvantages for the investors, with a noteworthy impact on the dimension of the Italian stock market. In fact, the low dimension of the Italian stock market and its low growth can be directly affected by the extent of these agency problems. Furthermore, the results of the paper suggest practical implications for owner-managers interested in mitigating agency problems by adopting good corporate governance

practices to attract outside investors. In addition, the agency costs of free cash flows resulting for

family firms suggested some inefficiency in the typical Italian business model. The use of financial

resources for opportunistic diversification choices by family firms, rather than being used to exploit

valuable growth opportunities, can limit the economic development of the country. Such a problem

appears to be particularly relevant considering that opportunism is essentially absent in non-family

firms; for the latter the management is oriented on the necessity to preserve financial business

viability.

Notes

[1] Research work explaining why firm diversify, in the management, financial and economic literature, is synthesized by Montgomery (1994).

[2] The value-creation potential of diversification depends on the quality of the economic institutions supporting the economy (Khanna and Palepu 2000).

[3] The creation and the exploitation of the internal capital market is typical of large unrelated diversified firms (Stein 1997, Peyer and Shivdasani 2001). While opposing conclusions have been proposed in the literature (Lamont 1997, Shin and Stultz 1998, Rajan et al. 2000), it is common opinion that internal capital markets have a positive influence on the creation of firm value thanks to improved capital budgeting procedures (Alchian 1969, Fluck and Lynch 1999, Stein 1997).

[4] Debt financing requires a firm to make interest and principal payments according to a schedule stipulated in the contract; in the event of default, debt holders may exercise their pre-emptive claims against the firm's assets (Shleifer and Vishny 1992). At the same time, the shareholders bear a residual-claimant status with regard to earnings and to assets liquidation. Their relations with the firms last for the lifetime of the business.

[5] High-levered firms have a higher capacity to meet scheduled debt payment by diversifying their businesses. Through diversification, creditors of high-levered firms can rely on the combined fortunes of all the diversified firm's operating units and on the reduction in variance of future cash flows.

[6] The tax liability of the diversified firm may be less than the cumulated tax liabilities of the different (single) business units

[7] R&S provides a detailed balance sheet analysis, complemented by a profile of the company's history and its operations, the names of its directors, and major shareholders, figures on production and market share, details of production facilities, sales, employees and, in the case of listed companies, stock market performance.

[8] For example, Barilla operates in the pasta production industry and in the sauce industry, two businesses which in terms of Sic code are different at four-digit within the same two-digit, adopts a related diversification strategy.

[9] For example, a firm operating in Paper and Allied Products and Textile Mill Products, two sectors which are different at two-digit industry code, is considered an unrelated diversified firm.

[10] However, Davies et al. (2001) find that this observed positive relationship might be due to an arithmetical effect. Indeed, diversification and size can move concurrently. If firms use diversification to avoid growth constraints, this must necessarily increase firm size, but the relationship is a near-identity rather than any causal one.

[11] Indeed, if the errors in level are characterized by a lack of serial correlation, the error in differences are expected to display first order autocorrelation and to be uncorrelated at all other lags.

[12] The estimates are obtained by using a subset of the available instruments. This is because, as Altonji and Segal (1994) point out, the use of all instruments implies small-sample downward bias of the coefficients and standard errors. It is worth mentioning, however, that doubling the number of instruments - or using all those available - does not affect our main results.

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Table 1 – Main Hypothesis and Expected Sign

	Agency costs of free cash flow argument: Managerial discretionary power pushes toward diversification for opportunistic reasons (Free cash flow distortions and monitoring effect).	**Internal capital market perspective:** Managerial discretionary power pushes to diversify to provide a superior means of funding through an internal capital market (financial constraint and coinsurance effect).
Cash Flow	A positive link on diversification decisions is expected, especially for unrelated decisions to diversify.	A negative link on diversification decisions is expected, especially for unrelated decisions to diversify.
Debt	A negative link on diversification decisions is expected, especially for unrelated decisions to diversify.	A positive link on diversification decisions is expected, especially for unrelated decisions to diversify.

Table 2 – Variable Names and Descriptions

Variables	Descriptions
Decision to diversify:	
Dummy Diver.	Binary variable taking a value of one if the firm diversifies and zero otherwise.
Dummy Related	Binary variable taking a value of one if the firm diversifies in related businesses and zero otherwise.
Dummy Unrelated	Binary variable taking a value of one if the firm diversifies in *un*related businesses and zero otherwise.
Level (intensity) of diversification:	
DT	Entropy measure of Total Diversification.
DR	Entropy measure of Related Diversification.
DU	Entropy measure of Unrelated Diversification.
Explanatory variables:	
Cash Flow	Ratio of cash flow from operation scaled by total assets.
Leverage	Ratio of financial debt to total assets.
Dummy Listing	Binary variable taking a value of one if firms are listed, and zero otherwise
Dummy Family	Binary variable taking a value of one if a firm's top executives belong to the same family as the controlling shareholder of the firm, and zero otherwise.
Owner.Conc.	Percentage of shares held by the primary shareholder.
Growth opp.	Percentage changes in sales.
Tangibility	Ratio of property, plants, and equipment to total assets.
Size	Logarithm of the total assets.

Table 3 – Descriptive Statistics of the Variables.

The table reports the mean, median and standard deviation for the variables used in the analysis. Moreover, the table compares the mean of focused and diversified firms. The p-value of a mean comparison t-test is reported on the last column. The sample includes 163 Italian firms, excluding banks, insurance, and pure financial companies evaluated in the period from 1980 to 2006 (27 years).

| Variables | Whole Sample | | | Focused firms | Diversified firms | Foc. vs Div. |
	Mean	Median	St.Dev.	Mean	Mean	(p-value)
D_Diver.	0.540	1	0.498			
D_Related.	0.331	0	0.470			
D_Unrelated.	0.341	0	0.474			
DT	0.398	0.240	0.452			
DR	0.192	0	0.323			
DU	0.205	0	0.363			
Cash Flow	0.137	0.124	0.155	0.173	0.131	0.014
Leverage	0.442	0.447	0.235	0.423	0.457	0.001
Owner.Conc.	0.661	0.645	0.258	0.686	0.640	0.000
Growth opp.	0.108	0.068	0.333	0.120	0.097	0.119
Tangibility	0.340	0.322	0.155	0.331	0.348	0.012
Size	20.05	20.10	1.31	0.038	0.039	0.000

Table 4 – Correlations Matrix

	D_Diver.	D_Relat.	D_Unrel.	DT	DR	DU	Cash Flow	Leverage	D_Listing	D_Family	Ow.Conc.	Growth	Tang.	Size
D_Diver.	1.00													
D_Related.	0.65*	1.00												
D_Unrelated.	0.66*	0.09*	1.00											
DT	0.81*	0.54*	0.65*	1.00										
DR	0.55*	0.85*	0.03	0.61*	1.00									
DU	0.52*	-0.09*	0.79*	0.71*	-0.13*	1.00								
Cash Flow	-0.06*	-0.07*	-0.04	-0.11*	-0.09*	-0.05*	1.00							
Leverage	0.07*	-0.00	0.11*	0.07*	-0.01	0.10*	-0.45*	1.00						
D_Listing	0.16*	0.17*	0.11*	0.16*	0.11*	0.10*	-0.08*	-0.06*	1.00					
D_Family	0.03	0.10*	-0.12*	0.03	0.11*	-0.06*	0.01	0.01	0.15*	1.00				
Owner.Conc.	-0.09*	-0.13*	-0.06*	-0,10*	-0.11*	-0.02	0.07*	0.06*	-0.41*	-0.26*	1.00			
Growth opp.	-0.03	0.00	-0.03	-0.04	-0.02	-0.03	0.04	0.06*	-0.03	-0.01\	0.00	1.00		
Tangibility	0.05*	-0.01	0.12*	0.03	-0.04	0.08*	-0.14*	0.01	0.21*	0.02	-0.12*	-0.08*	1.00	
Size	0.15*	0.03	0.21*	0.22*	0.04	0.23*	-0.09*	0.16*	0.09*	-0.11*	0.00	0.04	0.18*	1.00

Notes: *p ≤.05.

Table 5 – Results for the General Model.

The table reports the results of the probit regressions, using dummies as dependent variables, and of the fixed effect panel regressions, using the entropy measures of diversification. For the regression (1) to (3) the reported coefficients are transformed to represent the change in probability for an infinitesimal change in each independent variable. Description of the variables included in the model are provided in Table 1 and in the article. In parentheses are reported the standard errors of the regression coefficients. On the right of the standard errors, p-value are provided.

Variables	D_Diversification (1)	D_Relatedness (2)	D_Unrelatedness (3)	DT (4)	DR (5)	DU (6)
Cash Flow	-0.510	-0.170	-0.052	-0,098	-0,099	0,001
	(0.254) 0.045	(0.131) 0.195	(0.150) 0.726	(0,047) 0,038	(0,035) 0,005	(0,036) 0,984
Leverage	0.551	0.114	0.255	0,020	-0,033	0,053
	(0.169) 0.001	(0.079) 0.152	(0.120) 0.019	(0,030) 0,499	(0,022) 0,139	(0,023) 0,020
Dummy Listing	.347	.170	.174	0,054	0,069	-0,015
	(.097) 0.000	(.079) 0.031	(.092) 0.060	(0,020) 0,007	(0,015) 0,000	(0,015) 0,335
Dummy Family	-.125	.062	-.206	0,002	0,038	-0,037
	(.165) 0.447	(.053) 0.242	(.135) 0.128	(0,049) 0,974	(0,036) 0,287	(0,037) 0,322
Owner.Conc.	-.089	-.128	.068	0,049	-0,018	0,067
	(.137) 0.515	(.070) 0.070	(.093) 0.463	(0,022) 0,028	(0,017) 0,287	(0,017) 0,000
Growth opp.	-.083	.015	-.069	-0,014	-0,007	-0,008
	(.097) 0.515	(.037) 0.682	(.060) 0.256	(0,012) 0,219	(0,009) 0,447	(0,009) 0,380
Size	.095	-.028	.110	0,017	-0,006	0,024
	(.038) 0.014	(.018) 0.112	(.038) 0.005	(0,007) 0,018	(0,005) 0,239	(0,006) 0,000
Tangibility	-1.30	-.297	-.392	-0,242	-0,218	-0,024
	(.264) 0.000	(.117) 0.011	(.196) 0.046	(0,044) 0,000	(0,032) 0,000	(0,033) 0,474
Num. obs.	2035	2035	2035	2035	2035	2035
LR test	67,297	37,707	51,385			
R^2 *within*				0,027	0,044	0,025
R^2 *between*				0,010	0,002	0,011
R^2 *overall*				0,033	0,029	0,034
F-statistic				69,612	66,660	79,852

Table 6 – Results for Firms Particularly Subject to Agency Costs of Free Cash Flow.

The table reports the results of the probit regressions, using dummies as dependent variables, and of the fixed effect panel regressions, using the entropy measures of diversification. For the regression (1) to (3) the reported coefficients are transformed to represent the change in probability for an infinitesimal change in each independent variable. These interaction variables allow for different coefficients across growth opportunities, based on the median value of the sales growth, different sensitivity to asymmetric information and governance. Description of the variables included in the model are provided in Table 1 and in the article. In parentheses are reported the standard errors of the regression coefficients. On the right of the standard errors, p-value are provided.

Variables	D_Div. (1)	D_Rel. (2)	D_Unrel. (3)	DT (4)	DR (5)	DU (6)
Dummy HighCash	.075 (.161) 0.642	.110 (0.070) 0.119	.125 (.112) 0.265	-0,046 (0,029) 0,114	-0,011 (0,022) 0,598	-0,035 (0,022) 0,118
Cash flow	-.870 (0.510) 0.096	-.137 (0.237) 0.564	-.007 (.333) 0.981	-0,139 (0,081) 0,090	-0,049 (0,067) 0,463	-0,089 (0,069) 0,198
Cash flow * D_ HighCash	.135 (.658) 0.837	0.116 (0.068) 0.091	-.189 (0.401) 0.638	0,081 (0,113) 0,476	0,177 (0,086) 0,040	-0,096 (0,083) 0,248
Leverage	.560 (0.214) 0.009	.167 (0.102) 0.102	.341 (0.162) 0.035	-0,016 (0,038) 0,676	0,059 (0,033) 0,077	0,046 (0,021) 0,033
Leverage * D_ HighCash	.062 (0.245) 0.798	-0,086 (0. 040) 0.046	-.125 (0.167) 0.455	0,067 (0,045) 0,136	-0,062 (0,028) 0,027	0,008 (0,034) 0,806
Dummy Listing	.343 (.098) 0.000	.172 (.079) 0.030	.179 (.092) 0.053	0,053 (0,020) 0,035	0,068 (0,015) 0,000	-0,015 (0,015) 0,322
Dummy Family	-.124 (.165) 0.454	.059 (.052) 0.255	-.212 (.135) 0.118	0,001 (0,049) 0,986	0,040 (0,036) 0,264	-0,039 (0,037) 0,289
Owner.Conc.	-.109 (.139) 0.436	-.117 (.069) 0.090	.062 (.092) 0.498	0,048 (0,023) 0,035	-0,018 (0,017) 0,286	0,065 (0,017) 0,000
Size	.104 (.039) 0.008	-.025 (.017) 0.143	.111 (.038) 0.004	0,017 (0,007) 0,019	-0,007 (0,005) 0,221	0,024 (0,006) 0,000
Tangibility	-1.29 (.267) 0.000	-.272 (.113) 0.017	-.362 (.192) 0.059	-0,250 (0,044) 0,000	-0,224 (0,033) 0,000	-0,027 (0,034) 0,429
Growth opp.	-.089 (.099) 0.367	.011 (.036) 0.747	-.067 (.060) 0.267	-0,014 (0,012) 0,228	-0,007 (0,009) 0,411	-0,007 (0,009) 0,433
Num. Obs.	2035	2035	2035	2035	2035	2035
LR test	66,325	48,319	60,160			
R^2 within				0,028	0,047	0,027
R^2 between				0,013	0,002	0,010
R^2 overall				0,033	0,031	0,033
F-statistic				69,482	66,469	79,761

Table 7 – Effect of diversification on performance.

The table reports the results of the fixed effect panel regressions and sys-gmm regressions, using Roa as dependent variables. In all cases the table reports the results considering the interaction between the entropy measures of diversification and the *dummy High-Cash Flow (D_HighCash).* This interaction variables allow for different coefficients based on the median value of the cash flow. All the previous mentioned control variables were included although the coefficients are not reported. Description of the variables included in the model are provided in Table 1 and in the article. In parentheses are reported the standard errors of the regression coefficients. On the right of the standard errors, p-value are provided. AR1 and AR2 tests stand for Arellano-Bond test for AR in first and second differences, respectively. For the model test, the Arellano-Bond test for AR1 and AR2, the Hansen test and Difference-in-Hansen tests of exogeneity of instrument subsets (GMM instruments for levels) are reported the value of the test and their p-value.

Variables	Fixed Effect Panel Regressions				Sys-Gmm Regressions			
	ROA	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**	**ROA**
D_HighCash			.036 (0.19) 0.053	.031 (0.17) 0.060			0.710 (0.58) 0.22	.743 (0.72) 0.296
DT	.002 (0.007) 0.762	-.013 (0.007) 0.081	-.0003 (0.007) 0.960	-.024 (0.008) 0.003	.099 (0.14) 0.509	-.331 (0.14) 0.025	-.084 (.092) 0.358	-.367 (0.11) .002
DT * D_HighCash			-.009 (0.006) 0.112	-.023 (0.006) 0.000			.016 (0.046) 0.731	-.064 (.052) 0.224
DR	-.037 (0.021) 0.058		-.024 (0.014) 0.091		-.232 (0.11) 0.039		-.049 (0.029) 0.091	
DR * D_HighCash			-.023 (0.010) 0.026				-.152 (0.070) 0.029	
DU		.102 (0.027) 0.000		.142 (0.032) 0.000		.099 (0.056) 0.078		.314 (0.065) 0.000
DU * D_HighCash				.013 (0.009) 0.139				.048 (0.080) 0.545
Num. Obs.	2198	2198	2198	2198	2033	2033	2033	2033
R^2 within	0.188	0.188	0.195	0.195				
R^2 between	0.163	0.163	0.161	0.161				
R^2 overall	0.153	0.153	0.158	0.158				
F-statistic	46.98	46.98	40.93	40.93				
Model-test					134.9 *0.000*	134.9 *0.000*	86.80 *0.000*	86.80 *0.000*
AR1 test					-3.90 *0.000*	-3.90 *0.000*	-3.29 *0.001*	-3.29 *0.001*
AR2 test					-0.05 *0.964*	-0.05 *0.964*	-0.37 *0.709*	-0.37 *0.709*
Hansen test					65.31 *0.363*	65.31 *0.363*	89.09 *0.331*	89.09 *0.331*
Diff. in Hansen tests					38.74 *0.436*	38.74 *0.436*	13.12 *0.360*	13.12 *0.360*